Goal Transformation In Professional Development Programs

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One strand of curriculum implementation research concerns itself with the faithful implementation of an innovative curriculum. From this perspective, it is reasonable to suppose that the successful implementation of a curriculum change will be significantly affected by the congruency between the goals of the curriculum change initiative and the goals of the professional development program designed to achieve that change. There are at least five stages in the development and implementation of a professional development program designed to support curricular reform. These can be identified with the actions of specific individuals: Program initiators; program developers; trainers of workshop presenters; workshop presenters; and, teachers. The goals of the curriculum and consequently of the professional development program must be reinterpreted at each stage. This study documents the ways in which the goals of a professional development program were transformed in the course of its development and implementation.

The introduction of the *Curriculum Standards Framework: Mathematics* (CSF) (Board of Studies, 1995a) into the Victorian education scene has lead to a number programs and publications whose aim it has been to explain the CSF and smooth its introduction. The professional development program *Linking Mathematical Instruction and Assessment through the CSF,* a program put in place by the Victorian Board of Studies in 1995, and its related publication *Mathematics assessment activities using number tools and procedures* (Board of Studies, 1995b) are examples. This professional development program has provided the opportunity to research some key concepts to do with curriculum implementation and professional development.

Since we are exploring the transformation of goals, which exist only as statements, the careful use of terms is imperative. In this study,*Curriculum* has been taken to be a plan of the content, the instructional actions and the learning experiences intended. *Implementation* of curriculum involves the putting into place or into action of that curriculum. This term assumes that the curriculum has some concrete nature, so that a direct check is possible to ascertain whether or not it is in place or in action. The distinction between the *intended* curriculum, the *implemented* curriculum and the *assessed* curriculum is at the heart of the CSF implementation, since the CSF aims to effect curricular prescription through the specification of learning outcomes. *Professional development* has been defined as the processes that develop or improve employment related knowledge; in this case the attitudes or skills of teachers. *Implementation* of a professional development program, is taken to involve the stages of *conception, development* and *practical implementation. Conception,* in this case, involves identifying a need to be met by the intended program, *development* involves forming a plan of actions to meet the identified need, and *practical implementation* involves the putting into place or action of that plan. *Assessment* has been defined as "the process of gathering evidence about a student's knowledge of, ability to use, and disposition toward mathematics and of making inferences from that evidence for a variety of purposes" (NCTM, 1995, p. 87). This definition is broader than definitions of the past which have been analogues of terms such as testing, measurement and evaluation.

The structure and the focus of *Linking Mathematical Instruction and Assessment through the CSF*, and the current climate of change in assessment practices, made it eminently suitable for an investigation into the transforming of goals in the delivery of a professional development program. It is clear from the literature (for example Boomer, 1989; Fullan and Pomfret, 1977), that the maintenance or transforming of goals in a professional development program affect the extent to which a given curriculum change is implemented. In particular, the number of stages involved in this program's implementation, allowed for ample examination of the goals at each stage, and for changes both of an overt and of a subtle nature in the way these goals were implemented

and understood. The five stages of development and implementation can be identified with the actions of persons engaged in the following roles: program initiators, program developers, trainer of presenters, presenters and teachers.

Theoretical Context

Curriculum implementation

Much research has taken place regarding the conditions that allow or restrict the implementation of curriculum. There has been considerable discussion regarding whether the term "implementation" is completely appropriate. It has been suggested that the word might better be replaced by "enactment", given the acknowledgment that wholesale insertion of curriculum is impossible, and that there will always be adaption by the players in the process of change. As Doyle and Ponder (1978, p. 4) state: "Teachers adapt, rather than adopt innovative practices". Generally, however, the term "implementation" continues to be used, but with the aforementioned qualification kept in mind.

Planned changes in curriculum usually involve the altering of one or more of the following aspects: goals, organisation, role of the teacher, content, instructional strategies, classroom management, materials or evaluations (Snyder, Bolin and Zumwalt, in Jackson, 1992, p. 402). A number of factors can impact on the extent of the fidelity of implementation of a curriculum change. Such factors are considered significant from both a fidelity perspective and from the mutual adaption view (Snyder, Bolin and Zumwalt, 1992, p. 416). Fullan (1982) relates several of the factors capable of affecting implementation to the *characteristics of the change*, specifically: the need and relevance of the change; clarity; complexity and the quality and practicality of the program. He identifies the following factors as *characteristics at the school district level*: the district's history of innovative attempts; the adoption process; district administrative support; staff development and participation and time-line and information systems (evaluation). *School level* factors affecting curriculum implementation are listed as: the role of the principal; teacher-teacher relationships and teacher characteristics and orientations. Factors of an *external* nature are to do with government agencies and external assistance.

Clarity is one of these factors that is said to influence the implementation of curriculum. According to Snyder, Bolin and Zumwalt (1992, p. 416), clarity, in this sense refers to "the understanding of goals and means of innovation by users". It has been found that the greater the understanding of the goals of an intended curriculum change and what is to be gained from its being taken up, the greater is the magnitude of implementation. The importance of the clarity of goals has been acknowledged elsewhere as a factor of influence when curriculum is being implemented. Fullan and Pomfret (1977) and Hall and Loucks (1981, pp. 46-47) when referring to different studies into the implementation of curriculum change, refer to the lack of clear goals by program facilitators as mitigating factors retarding the success of their implementation.

Furthermore, it has been found by Bird (1986) and acknowledged by Snyder, Bolin and Zumwalt, in Jackson (1992, p. 417) that the process of adaption actually enables participants to clarify their understanding of the philosophy and goals of the intended curriculum change, and that of their own goals. The analysis which follows was motivated by our acknowledgement of the centrality of goal recognition and goal formation in the process of professional development.

The need for a clear understanding of the goals of a proposed implementation of curriculum or professional development program was specifically referred to by Boomer (1989). He refers to the difficulty in maintaining a clear understanding of the resons underlying professional development programs, and hence the goals, in the "controlled process approach - system initiated" model: "No matter how well the ELIC tutors control, monitor, and insist on the grasping of principle, the process eventually loses its grip as it gets further from the enlightened source. It is a problem at the heart of the central working of any curriculum document, textbook, or innovative program"(p.167).

Boomer's use of the term "enlightened source" appears to challenge the legitimacy of practitioners re-interpreting program goals. We see this interpretive process as inevitable. Individuals have a professional responsibility to reconstruct program goals in forms that reflect local issues and priorities. The essential point is that the interpretation of the goals of a curriculum change initiative, and the congruent goals of the professional development program designed to achieve that change, play a significant part in its chance of successful implementation.

Changes in mathematics curricula and assessment in Victoria:

In Victoria, the *Curriculum and Standards Framework (*CSF*)* (Board of Studies, 1995a) has been developed with the National Mathematics Profile as its basis. The CSF is also an example of the world wide trend towards "accountability of schooling", including an attempt to measure what is learned using outcomes (Stacey, 1994). In accord with the world wide change to the use of a variety of assessment practices, the Victorian Board of Studies (BOS), the body charged with the implementation of the CSF in Victorian schools, is encouraging teachers consider the use of alternative assessment techniques to measure student learning using the CSF.

The Victorian Board of Studies responded to the concerns of teachers and schools with a pilot professional development activity, publication of a related book, and a state-wide professional development program. The pilot program was conducted in seventeen schools in 1994. Teachers, assisted by tertiary mathematics educators, developed assessment activities linked to the CSF. The book, entitled *Mathematics assessment activities using number tools and procedures* (Board of Studies, 1995c), detailed in an annotated form, a selection of the activities that were developed during the pilot program. The book has now been used as a resource for a professional development program entitled *Linking Mathematical Instruction and Assessment through the CSF* (henceforth to be referred to as The Program), which was conducted at the district network level for teachers of Preparatory grades to Year 8 across the state of Victoria. The Program has been used as a basis for this investigation into the transforming of goals in the delivery of professional development programs.

Methodology

Aims

The aims of the investigation were twofold; firstly to describe the goals as understood by the initiators, developers, trainers of presenters, presenters and teachers involved in The Program; and secondly to describe the ways the key terms and phrases, which make up the goals, change from stage to stage of The Program's implementation. The investigation involved description and analysis of the language used by participants in The Program and how it communicated the nature of their goals, given that a participant's understanding of the goals impacts upon the way a program is implemented. Here, *participant* refers to an individual involved at any of the stages of implementation.

Data collection

Data was collected during interviews, questionnaires and observations of training sessions. It was also collected from a range of documents used in The Program. A summary of the data sources is in Table 1. In the development and implementation of this program, the developers and trainers of presenters were the same individuals. Accordingly, the two stages of implementation - developers and trainers of presenters - were combined reducing the five stages of implementation to four.

Table 1
Summary of data collection

STAGE OF IMPLEMENT -ATION	PARTICIPANT	WRITTEN MATERIAL	INTERVIEW	OBSERVATION
1	**INITIATORS/ POLICY MAKERS**	DOCUMENTS	INTERVIEW	OBSERVATION TRAINING SESSION
2	**DEVELOPERS/ TRAINERS OF PRESENTERS** *See note below*	DOCUMENTS	INTERVIEWS WITH TWO PRESENTERS	OBSERVATION TRAINING SESSION
3	**PRESENTERS**	Q'NNAIRES	INTERVIEWS WITH TWO PRESENTERS	OBSERVATION PROFESSIONAL DEVELOPMENT PROGRAM
4	**TEACHERS**	Q'NNAIRE	INTERVIEWS WITH FOUR TEACHERS	

A range in data sources satisfied the need in qualitative research to provide corroboration and comprehensiveness. In addition, the dangers of the exclusive use of self reporting techniques, such as questionnaires and interviews in data collection was acknowledged through the use of multiple sources to cross validate the data. Content analysis was undertaken for all data sources. Data from the interview transcripts, questionnaires, observation records, and documents were examined. All references to program goals and purposes, both explicit and implicit were collated.

In many cases the goals addressed a number of key points. In order to accurately and succinctly describe and summarise the goals, they were annotated with code letters according to the key points implicit in each. Table 2 shows a selection of the key points and letter codes. Table 3 shows an example of the annotation of goals with the key point code letters. The first code letter represents to the most dominant key point for that goal.

Table 2
Letter codes for key points - selection

KEY POINTS	CODE LETTER
assessment - in general	A
the CSF - in general	C
rich assessment tasks - development	T
relevance to teachers' classroom practice	R
linking	L
instruction	I
Reporting	r

Data collation and categorisation: A frequency analysis was conducted on appropriate data from the presenter and teacher questionnaires. Collated key words and phrases from completed questionnaires were entered into the Statview statistical analysis computer program or analysis. Results were used in conjunction with the descriptive data to compile accurate descriptions of the goals. Consideration of the ways the goals of the program are transformed was made by investigating the changes in meaning of key words and phrases, with respect to several key areas into which the goals have been categorised. Each of the four stages of implementation of the program are included: program initiators, program developers, presenters and teachers.

Table 3
Examples of annotating goals with key point codes

GOAL	CODED KEY POINTS
To assist schools to link assessment in mathematics to instructional decision making	L A I
To bring the CSF closer to teachers' classroom practice	C R
To enable teachers to link the results of assessment to the schools' current mechanisms for reporting	L A r
Assisting teachers to use the CSF to develop assessment tasks which address the questions: ⇒ What do these tasks tell me about what my students understand and can confidently do? ⇒ How can I build upon what I've learned about my students? ⇒ Do some students need additional help as we move on?	L C T A I

The key areas have been chosen because of the extent to which each has been addressed by the players in each of the stages of implementation. Alternatively an area of goal has been chosen because of the fact that it has *not been addressed* at one or more stage, and the possible impact that lack of being addressed might have on how a goal has been transformed. In the second case the identified goal arose from the research literature and the document analysis undertaken in this study. The key areas of goals investigated were:

- the linking of instruction and assessment;
- relevance or usefulness of the CSF;
- provision or development of rich assessment tasks;
- teachers sharing and discussing;
- a variety of assessment methods;
- outcome-by-outcome approach to assessment;
- link between assessment and reporting.

Choice of examples of goals: As this section of the investigation was concerned with how the understanding of words and phrases changes from stage to stage of the implementation process, the selection of the examples by which to characterize the goals at a particular stage was undertaken with the specific purpose of capturing diversity. The choice of extreme examples, in terms of their variation from the meaning of particular words and phrases from that employed by other individuals at other stages of implementation, allows the *extent* of the changes to be more readily considered. The additional selection of a small number of other less extreme examples provides opportunity for consideration of the more subtle nuances of meaning.

Results and Discussion

Key groupings of goals were chosen to investigate the changes in meaning of the terms and phrases in the goals at each of the four stages of implementation of the professional development program. Each table below conveys a description of the transformation of a particular key grouping of content expressed in the goals of the professional development program. An example of a goal from each of the four stages of its implementation is provided along with annotations to assist description of the changes in which are referred to. A discussion of the transformations is presented under each table. A further more general discussion follows. The key groupings chosen for inclusion in this paper were *the linking of instruction and assessment; relevance or usefulness of the CSF* and *teachers*

sharing and discussing. The goal transformations associated with each grouping are set out in Tables 4, 5, and 6.

Table 4: *The linking of Instruction and Assessment*

EXAMPLES OF GOALS AS EXPRESSED AT EACH STAGE OF IMPLEMENTATION	ANNOTATIONS
INITIATOR *To improve teachers' understanding of important milestones in students' mathematical development , and their ability to move students towards and then beyond these milestones*	A goal directed at *all* teachers, showing an understanding of the terms *assessment* and *instruction* and the link between them
DEVELOPER *Putting a state-wide focus on the process (of) generating good assessment activities, which may be very well related to instructional activity; or stated another way: "linking their instruction and assessment .."*	A developers' concern is shown for the process of encouraging teachers to develop rich assessment tasks - the assessment vehicle being introduced.
PRESENTER *To provide(teachers with) exemplary materials, and show how they link in with assessment.*	The emphasis is moved from 'instruction' in general as described in the first two stages, to the *elements* of the instruction process - in this case, *exemplary materials.*
TEACHER *To relate the CSF to what we are doing in our classes, particularly in reference to assessment and recording*	The term 'instruction' is changed to the broader phrase of 'what we are doing in our classes'.

Discussion: Differences in goals in this category were differences of focus and of scale. The progression in scale goes from general decontextualised statements (Initiator), through statewide practice (Developer) to the provision of exemplary materials (Presenter), and finally to the level of "what we are doing in our classes" (Teacher). The change in focus appeared to be a shift from seeking to improve teachers' practice to relating the CSF to "what we are doing."

Table 5: *Relevance or usefulness of the CSF*

EXAMPLES OF GOALS AS EXPRESSED AT EACH STAGE OF IMPLEMENTATION	ANNOTATIONS
INITIATOR *To show teachers in the field how other teachers have used the CSF in creative and sensible ways to inform their teaching and assessment.*	• Inference that teachers *are not using* the CSF or are *not using it in correctly.* • Inference that teachers will see relevance and usefulness of a teacher practice *if other teachers are involved.*
DEVELOPER - PERSONAL GOAL *To demystify some of the things about the CSF....to make teachers feel ' this is not going to be something that is going to burden me so much, that I don't do the job I'm supposed to do which is teaching my kids'*	Recognition that • teachers currently find the CSF *removed from their experience* • teachers need reassurance that use of the CSF may *assist* their teaching *rather than take away from it*
PRESENTER *To make the teachers see that the CSF is not far from what they are actually doing now*	Acknowledgment of the need to connect the CSF with current classroom practice
TEACHER *Making the CSF relevant to our teaching and our needs*	Inference that the CSF will have to change - not the teachers' practice.

Discussion. The initiator's goal can be contrued as an attempt to inform and reform teachers' practice through the application of the CSF. The developer describes the need to mediate between teachers and the CSF. The presenter's goal is to show the relevance of the CSF to current classroom practice. In this, the Presenter appears to take the Developer's more general goal and reinterpret it in practical terms. In framing his goal, the teacher adopts the position that the CSF *is* removed from classroom practice, but that its content can be adapted to be made more relevant to that practice.

Table 6
Teachers sharing and discussing

EXAMPLES OF GOALS AS EXPRESSED AT EACH STAGE OF IMPLEMENTATION	ANNOTATION
INITIATOR *Workshops will enable teachers to: analyse students' work gathered by teachers in the schools themselves; make links between teaching and assessment in topics currently being taught."*	• The term *workshop* and *the nature of the activities* infers that teachers will be working together. • Sharing or discussing are *not directly* stated.
DEVELOPER *This is a vehicle for getting the teachers together to discuss things... getting them together to share ideas*	Strong emphasis on sharing and discussion.
PRESENTER *To get people to talk about what they are doing, and share...*	Strong emphasis on sharing and discussion.
TEACHER *The actual sharing of information with other teachers: what works and what doesn't .*	• Strong emphasis on sharing and discussion . • Acknowledging the *value teachers place on learning from other teachers' practice*

Discussion: Developer, presenter and teacher all acknowledge the value of sharing and discussion in a professional development program. The initiator's goal assumes that sharing and discussion will take place, but implies (by omission) that sharing and discussion represent the means to the achievement of other goals, rather than a goal in themselves. It appears the *developer* has either initiated a goal independently of the initiator or inferred one from information provided by the initiators. Here, the goal of sharing and discussing, as constructed by the developers was endorsed by the presenters and the teachers in increasingly specific and practical terms.

General Discussion regarding the Transformation of Goals: The initiator's goals were generally concerned with *altering teachers' practice.* Consider for example the use of phrases such as "... to improve ...their ability to ..." and "Assisting teachers to ... develop ...". The developer's goals, were also concerned with changing teacher practice but were *less prescriptive.* An example of this is shown in the use of terms such as "...teachers will explore...". The presenter's goals were to do with promoting a *change in attitude* or an *awareness* in teachers rather than changing their practice. Consider for example the expressions "To develop the ability of teachers to see..." and "...to make the teachers more aware of". The presenters' goals were perhaps a closer match to the teachers' goals and to the realities of professional development outcomes than were those of the initiator or the developers, as evidenced by the teachers' goals which often did not entertain a change in practice. Rather, the teachers' goals sought "to relate" the proposed change to their *existing teaching practice.* This is demonstrated when a teacher's goal is stated as "Making the CSF relevant to our teaching..." So the goal is to change the CSF, rather than the teaching. In general, at each stage, the goals were reinterpreted, so that they met three criteria specific to the needs and perspectives of the particular role of the individual and the demands of that stage in the implementation of the professional development program. These three criteria were that the particular goal: made sense; was

achievable; and, conformed to the nature of the individual's perceived role in the professional development program.

Conclusions

When Doyle and Ponder (1978) say that "Teachers adapt rather than adopt innovative practices" they could well be referring to *innovative goals* as far as this study is concerned. For example, from stages 1 through to 4, a particular goal was variously interpreted as certain terms were replaced with "synonyms" and key linkages appeared and disappeared. For example, *Instruction* broadened to become *Classroom Practice,* and the *CSF* was only sometimes linked with *assessment* .

The notion of adaption concurs with the curriculum enactment perspective to curriculum implementation (Snyder, Bolin and Zumwalt, in Jackson, 1992, p. 404), which applies to goals also, as far as this study is concerned. A feature of some of the goals as understood by the initiators was that of altering teachers' practice. The general thrust for teachers is not to alter their practice but to *adapt* or *interpret* the proposed innovation *to suit* their practice.

The link between curriculum implementation and professional development is clear in this study. For example, the *relevance* of The Program to teachers' practice was one of the *characteristics of the change* as described by Fullan (1982). And, indeed, relevance was a goal characteristic emphasised by developers, trainers and teachers in The Program . The relative significance of the other factors in this category of Fullan's varied across the four respondent role types. The *need* for the change, its *complexity* and its *practicality* were all addressed in the goals of the developers. The goals of presenters related to complexity and practicality (for example: manageability of the recording assessment information) and aim to demonstrate a need (for example: encouragement of the use of a range of strategies). The teachers' goals also referred to the need for manageable recording practices, and acknowledged the need for the curriculum implementation.

It is clear that the key terms and phrases can alter greatly in meaning in many ways, from stage to stage of the process of implementation of a professional development program. At times the change appears slight, a mere juxtaposition of words, but the change in meaning is great. At other times the words of a goal might be completely different and yet the meaning remains essentially as intended, the choice of words merely reflecting the task of the person at a particular stage of implementation.

Many of the goals as understood by the participants in the process of implementation of the professional development program *Linking Mathematical Instruction and Assessment through the CSF* were found to change, at times subtly and at other times profoundly. The fundamental character of this change can be seen in the comparison of the goals of the program initiator and the teachers, and this transformation exemplifies the difference between a policy perspective and a practice perspective. The first takes policy as central and immutable and seeks to inform and reform practice; the second takes practice as central and seeks to interpret or reconstruct policy in order to relate it to practice. This difference of perspective drives the process of goal transformation and plays a major part in determining the outcomes of any professional development program.

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