

Design of Study

A project was designed to monitor the impact of nationally developed curriculum statements and profiles on the thinking and practical theories of teachers, but it also had a much broader focus. The project was also intended to monitor the implementation of these reforms in curriculum, assessment and reporting at system, regional and school levels in selected schools in three states and/ or territories (Kennedy et al , 1995; 1996). The project, *The Influence of Political Constraints, Organisational Contexts and Teachers'Implicit Theories on the Implementation of the National Curriculum*, was funded as an Australian Research Council Large Grant for three years, 1995 - 7.

The objectives of the study were to:

investigate the multi-level implementation of the nationally developed curriculum statements and profiles;

explore the complex interactions across and between various levels of curriculum policy making at state/territory and federal levels; and

identify changes to teachers' practical theories arising from these reforms.

To fulfil these objectives, a series of multi-site case studies were

planned for selected state or territory education systems, selected schools and teachers of English and mathematics within those schools. In all, three systems, nine schools and 36 teachers were to be involved. The choice of systems was to have reflected as wide a spectrum of approaches to implementation as possible but, in the end, the decision was significantly influenced by political and economic considerations and the activities of other research groups with interests similar to our own. Industrial action rendered access to schools in some systems highly problematic and budget constraints imposed further limitations. Eventually, the three jurisdictions selected were Queensland, the Australian Capital Territory and Tasmania.

Access to three state schools in each system was to be negotiated, if possible within one region or district, with schools to be as representative as possible in socioeconomic terms of the region or district.

Data for the project were gathered from documents provided by each of the eight state and territory systems and then by interviews with relevant personnel at system and region or district level where appropriate. At the school level, interviews were conducted with key school personnel involved in the implementation process in English and mathematics and questionnaires were completed by all teachers of English and mathematics. The study of the impact of the curriculum, assessment and reporting reforms on teachers' practical theories

involved four teachers in each school, two in English and two in mathematics.

Focus of This Report

This paper reports on the impact of the reforms on teacher thinking in

three schools in the Queensland state education system. Some information from questionnaires completed by staff in each school will also be drawn on in discussion of data from the practical theory interviews.

Details of Samples

The three schools, Crabtree, Planetree and Tallowood (names are fictitious), were from the same educational region and well outside the Australian metropolitan zone. Tallowood was a large secondary school in a provincial city and drew students from families across the socioeconomic spectrum but mainly from within the middle level.

Planetree secondary school was located in a small rural town and had an enrolment of about 400 students from middle to low socioeconomic levels. Crabtree was a P to 10 school, also in a rural community, and with students of similar socioeconomic background to that of Planetree.

From each school, four secondary teachers, two of English and two of mathematics, were selected to be interviewed about changes to their

practical theories. One of the two English teachers and one of the two mathematics teachers in each school were heads of English and mathematics respectively, the remaining two teachers being classroom teachers with a teaching major in one of the two subject areas.

Method

Access to changes in teachers' thinking was gained through in-depth, semistructured interviews, with the interviewers' main role being that of facilitating teacher disclosure of changes to their practical theories through asking openended questions, listening intently to what teachers said and using a recursive style, by reflecting terminology employed by the interviewees, to encourage elaboration, clarification and exemplification of the material presented by the teachers.

To prepare teachers for their role in these interviews, briefing notes were prepared which outlined the purpose and nature of the interviews and the role of the interviewee and provided details of practical theories including the functions they serve and their principal components. These briefing notes were given to, and discussed with, interviewees well prior to the interviews being conducted.

The structured format of interviews was largely shaped by a research-based conception of the components and structure of practical theories of teaching and by a view about how best to facilitate disclosure of changes to practical theories. Research over the last

decade or so (Cooper and McIntyre, 1997; Brown and McIntyre, 1993; Marland, 1997; Grossman, 1995; Elbaz, 1983) has indicated that teachers' talk about why they teach the way they do can be represented using a variety of constructs such as values, beliefs, goals or aims, actions (including methods, tactics, strategies and techniques), principles, personal attributes, contextual factors and normal desirable student states. In addition to these more micro elements, 10 chunks of teachers' practical theories can be represented by means of images, metaphors and pedagogical content knowledge.

Interviews were designed to elicit teacher talk about changes to these components, however, the difficulties teachers encounter in making the implicit explicit influenced the order in which these elements were discussed. Because teachers normally find it relatively easy to talk about what they do, the interviews commenced with invitations to teachers to outline changes to strategies (especially those in planning, teaching, assessing and reporting), tactics, principles that guide their own behaviour and the student states that they are seeking to establish. Disclosure of these first, it was felt, would then allow changes to the more implicit aspects of their theories, such as values and beliefs, to be articulated more easily. However, no set sequence

was adopted, the order being determined largely by the flow of ideas from the interviewees.

All interviews with teachers were audiotaped and later transcribed. One 40 to 45 minute interview with each teacher was found to be sufficient to have teachers outline changes they had made to their practical theories as a result of the curriculum, assessing and reporting reforms.

Data Analysis

Each interview transcript was read a number of times by two members of the research team who then attempted separately to place the changes that teachers had outlined into categories corresponding to the components of practical theories described earlier - values, beliefs, goals, principles guiding teacher action, strategies, student states, personal attributes, and contextual factors (the latter included changes to school policy, furniture arrangements in the classroom, relationships with students, resources, etc.). Any changes which were described in terms of metaphors or images were also to be recorded.

Coding differences were then discussed until agreement was reached and the changes in each category were tallied for each teacher. An attempt was also made to rate the significance of the change based on a number of criteria. A change to a practical theory was rated as significant if there were clear and reliable indications in the interviews that it was lasting, had an impact on practice and/or other elements of a practical theory and was related to important rather than non-trivial aspects of teaching. Other indicators of significance were teacher

comments about their level of commitment to the change or its importance to them and whether their discussion of the change reflected a degree of certainty about its existence. Not all criteria or even a majority of them had to be met for a change to be rated as significant.

Results

The analysis of transcripts yielded the results show in Table 1.

Generally, teachers in the smaller, rural schools, whether classroom teachers or subject coordinators, reported no changes, or very few changes, to their practical 1 04 theories as a result of the curriculum and profiling forms. The situation in Tallowood, the large provincial secondary school, was in marked contrast to that, with two of the teachers, a classroom teacher of mathematics and the subject coordinator in English, reporting numerous changes ($n = 18$ and $n = 33$) to their thinking about teaching and the third, the subject coordinator of Mathematics, also reporting some changes ($n = 8$).

Table 1

Component No. of Changes to Components
of Prac. Theory

Teachers

C = Crabtree School e = English

P = Planctree School m = mathematics

T = Tallowood School * indicates subject coordinator

Ce Cm Ce/ Pe Pm Pc* Pm* Te Tm Te* Tm*

M*

Valu 0 0 2 0 0 0 0 0 5 4 1

Belief 0 0 0 0 0 1 0 0 2 3 1

Coal 0 0 0 0 0 0 0 0 2 6 -

Stud. 0 0 0 0 0 0 0 0 1 4 1

State

Strat 0 0 0 0 0 1 3 1 6 11 2

Princ 0 0 0 0 0 0 0 0 0 1 1

Pers. 0 0 0 0 0 1 0 0 0 1 1

Attri

Cont. 0 0 0 0 0 0 1 1 2 2 1

Fact.

Total 0 0 2 0 0 3 4 2 18 32 8

The display of data in Table 1 highlights a number of features in the data:

The negligible or zero impact of the reforms on the practical theories of eight of the 11 teachers.

The substantial impact on the practical theories of the three remaining teachers.

The disparity between these two sets of teachers, given that the reform in question was a state-wide one.

The fact that all of the teachers in (2) came from the same school.

In the case of the three teachers, the spread of changes, as shown by cell entries, across virtually all of the components of practical theories. These entries suggest that, for these three teachers, the reforms (statements and profiles) had required modification to many features of their thinking about teaching, a result consistent with the

general teacher perception reported in Lokan (1997) that adoption of profiles and statements requires a fundamental rethink of one's approach to teaching.

These features will be discussed later in the paper, following case studies of the three teachers who reported substantial changes to their practical theories.

Barry

Barry was a mathematics teacher at Tallowood State High, the large secondary school in a non-metropolitan education region in Queensland. He had recently taken up a teaching post in Tallowood after many years of teaching service in another state where he had quite extensive experience with statements and profiles. This experience involved rewriting outcomes (student performance standards [SPSS] in Queensland) to suit the needs of reporting to parents.

He described his interest in the statements and profiles as 'quite considerable', asserting that they have had a 'big effect' on him, though also claiming that they confirmed for him a long-term trend in his thinking about teaching but especially assessment of students.

From his perspective, his personal interest in these initiatives stemmed from his teaching experience in the other state and not from developments in Tallowood: ... (I) n this school we have very little contact and very little to do with the National Statements'. Barry was

also very critical of the method of reporting, using the SPSS, to

parents of Grade 8 students at Tallowood. Both parents and students, he claimed, '... had no idea what we were on about and didn't understand what was going on at all. So unless we can make the thing comprehensible to the parents, then we are wasting our time so far as reporting is concerned...!'

In his interview, Barry reported some changes to his educational values but was not certain that these changes all stemmed from the statement and profile reforms. It appears, however, that these reforms did provide a stimulus to changes that had been underway for some time to his values. He indicated that he now values more strongly an open social context in the classroom (featuring much more student-student discussion), groupwork, and communication with parents and students, with profiling and assessment tinent to these contacts. He also attaches much importance to student's ability to 'take stock' of their performance in mathematics and 'see where they are'. At the same time, there has been a corresponding decline in his faith in a form of assessment which is just adding up numbers from examinations.

Of importance to Barry, too, are the changes that he believes have occurred to student learning and to the provisions he can make for individual student learning. He believes that outcomes allow a greater focus on students rather than content and that student learning has

improved as a result. The more positive attitudes of students to mathematics, which he claims he sees in his students, is evidence of this change. It is not clear, however, whether it was his deliberate teaching plan to induce this more positive attitudinal state or whether it was an unanticipated outcome of changes to his teaching strategies. Moreover, he believes that SPSs allow him to look at student ability in detail and that, as a result, he now has the capacity to match outcomes to the specific needs of particular individuals in mathematics and of particular student groups such as Aborigines and girls.

The changes Barry has made to his values and beliefs as outlined above are also reflected in changes to his teaching strategies. The reforms have encouraged him to place a much greater reliance on discovery and discussion methods so that he is no longer so content driven, can adopt a more relaxed teaching style and is able to make more effective allowances for the different capacities of students in the various branches of Maths. The classroom context has also been changed with tables arranged in triangular fashion rather than in rows to facilitate student discussion. Relationships between himself and the students have become more cordial because teaching is now a 'cooperative thing'.

Neil

In spite of being Head of mathematics at Tallowood, the large, provincial secondary school in Queensland, Neil reported 'very little contact' with the nationally developed curriculum statements and

profiles. He expressed curiosity about these initiatives and considered that the statements, but not the profiles (or Student Performance Standards as they were known at the time in Queensland), were likely to be of value to him in his teaching. He may well have adopted this view on profiles because, although he had been involved in implementing SPS in Grade 8 mathematics in his school, his teaching responsibilities were only at the senior secondary level.

Neil reported a greater valuing of variety in learning styles which he said was 'fully endorsed in the National Curriculum Statements'. This shift in his valuing of variety in learning styles resulted in a greater acknowledgment of differences in learning styles on his part which, he believed, could help student learning. Associated with this shift in values and beliefs was a greater emphasis on the discovery learning technique. He aimed to use more interesting ways of learning though he saw the use of discovery learning and related techniques (group work and 'investigations') as '... happening very rarely, just

enough to keep the kids interested'. His occasional use of group work required just one change to the classroom context - '... a little rearranging of furniture, but very occasional - I'm only talking about once a year at the moment'. Neil also recognised that a new student mindset might also emerge, as evidenced by their suggesting an area of interest for investigation. The implication was that he would be monitoring students to identify this student state.

Apart from these changes to his practical theory of teaching, Neil also indicated that he was slightly more flexible about content to be taught, was more open towards the 'assignment culture' of which he was previously contemptuous, and welcomed the questioning which the National Curriculum initiatives had prompted him to engage in. On the whole, the changes reported by Neil appear to be somewhat preliminary or embryonic at this stage and have resulted in only slight and occasional adjustments to his teaching practice.

Les

Les, the Head of English at Tallowood, appeared interested in, and knowledgeable about, the National Curriculum initiatives, including their scope and rationale. Though he claimed that the impact of these initiatives on his own teaching at the time of the interviews was 'negligible', he was able to speak freely and fluently about what the adoption of the national curriculum-related reform agenda in Queensland would mean for his practical theory. He spoke also of the mounting pressure to implement some of these changes and the progress he had already made in this direction.

The advent of student profiling had caused Les to attach greater value to student outcomes and competency-based assessment. Accordingly, he now placed more value on student development of subject-related skills and less on student consumption of content. He recognised in himself,

however, a conflict in regard to the right balance between skills and content and believed that other teachers were also trying to resolve this dilemma. Finally, Les's comments revealed his greater valuing of cooperative learning, cooperative relationships with students and a form of 'guided democracy' in his classroom: '[T]eachers have to be a bit more receptive to guided democracy in the classroom. ... Students should be able to make contributions a bit more than they were able to in the past'.

Hand-in-hand with these changes to his values are corresponding changes to beliefs. Les believes that his role as teacher has become much more that of coach, 'bring(ing) them (students) to competence', rather than that of assessing and categorising students. He believes that he now has to accept much more responsibility for student learning whereas formerly, if they failed, that was '... the end of the matter'.

Moreover, he believes that it is his role to develop in students more positive attitudes to their course of study and to learning.

The goals that underpin Les's teaching have also undergone substantial reform. Now he sets out to develop in students subject-related competencies, rather than just content mastery, as well as social and personal skills. He places much more emphasis on teamwork and sets out to develop students' ability to organise their learning through the kinds of learning tasks he sets and to inculcate more positive attitudes towards learning and course-work.

In addition, Les has indicated that he has made a number of significant changes to strategies and tactics to accommodate the changes to values, beliefs and goals outlined above. He now gives greater emphasis to team work and cooperative learning and relies much more on negotiation with students in defining learning processes and learning tasks. This last-mentioned change has obliged him to find new ways of relating to students. Furthermore, in the planning of tasks, he has had to

accommodate the requirement that students be given opportunities to demonstrate social and personal skills. He has also had to reduce the number of short-term tasks in favour of longer-term ones, to provide him with the 'wider picture' of student learning that he now feels is necessary. As well, homework plays a much less central role in his conception of teaching and learning than it once did. Les has also found it necessary to change his reporting practice, with attention now focussed on a much wider range of skills with a much greater need for precision in reporting. He claims to have adopted a different perspective on student assessment, with student outcomes at the end of a course figuring much more prominently in his assessment of student performance.

Comments by Les about contextual factors and their implications for his practical theory were limited. Only one reference was made to a factor linked to national curriculum statements and profiles and that was to a new emphasis on the links between education and vocational preparation.

He acknowledged that this contextual change does require teachers to think about the relevance to job skills of what they teach. He also reported an awareness that many students over 15 years of age had part-time work and that many have 'fairly unstable domestic circumstances' and may be 'living with friends, aunts, uncles and (in) other temporary situations'. These changes to family and social circumstances affecting students, though not derived from curriculum and reporting reforms, required, in his view, a lot less emphasis on the control model and more receptivity to principles of guided democracy in classroom relationships. Such a change is not easily wrought as this comment shows: '[T]he effort in successfully running a modern classroom is quite daunting. These kinds of changes (more democratic classrooms) can arouse as much resentment as they do affection'.

Another area of significant change to his practical theory was to the kinds of student states he tried to inculcate or be responsive to.

Through careful design of learning tasks, Les planned to improve their ability to organise themselves over the long term. In this way he tried to counter an increase in student bewilderment about how to cope with the extra responsibility offered to them in a more democratic classroom. This state of uncertainty and confusion, he reasoned, arose in those students who still needed firm direction. He also noted a rising level of student concern about employment prospects which caused them to be more critical of their education and of the content of subjects -they are more inclined to '... question ... the relevance of

what they are doing at school'. His response to this challenge was to give more attention in the planning phase to lesson content and to place more emphasis on life relevance.

Finally, Les recognised that possession of a keen awareness of, and interest in, developments in English and in the background to these developments was essential to success in teaching. This was the attribute he sought to maintain and which he appears to have demonstrated throughout the interview process.

Discussion

The above results indicate that reforms related to the use of profiles and nationally developed curriculum statements appear to have had surprisingly diverse impacts on the thinking or practical theories of the Queensland secondary teachers in this study. The impact on two of the 11 teachers has been quite extensive and substantial but that on another 8 teachers almost negligible. The thinking of one other teacher appears to have undergone slight change as a result of the reforms.

These results raise a number of important questions:

Are the reported degrees of change to practical theories at an acceptable level? Or should there have been more evidence of change in

at least eight of the teachers, given that, at one stage, they were

expected, by late October 1996, the time when interviews were conducted, to be well down the path of implementation in regard to these reforms?

What could account for the apparent limited change to the thinking of the majority of these teachers? Can this outcome be attributed to state, regional, or school-level factors?

What could account for the marked differences among the teachers in respect of the degree of change to their practical theories?

Finally, what lessons can be learnt from the outcomes of this study?

Before we begin to outline some possible answers to these questions, it will be helpful to have a brief overview of developments in Queensland in relation to the Statement and Profile reforms.

Brief History of the National Statement and Profile Reforms in Queensland

A detailed account of these developments has been provided by Grace and Ludwig (1997). They reported that, as far back as June 1992, the Queensland Government had announced that performance standards would be introduced in English and mathematics, with reporting to begin in 1994.

Because there was no consensus as to the meaning of performance standards, the term was expanded to Student Performance Standards (SPS)

in that year. Copies of the National Statements in mathematics were provided to all schools as an additional curriculum resource but not to supplant the Queensland syllabus. Little consideration appears to have been given to ensuring a match between the Queensland syllabus and the SPS in mathematics (aka the National Profiles). In English, considerable work was undertaken to establish a degree of compatibility between the Queensland syllabus in English, currently under development at that time, the National Statements in English and the SPS in English.

In 1993, trials of the draft SPS materials in mathematics and English were conducted, with at least 70 schools involved in each of these trials. As indicated by Grace and Ludwig, the outcomes of these trials were generally negative, with many impediments to success being identified. Grace and Ludwig concluded: 'The only possible practical interpretation of the trial feedback, especially from the secondary sector, was that the implementation of SPS should not continue without massive support and much longer timelines' (p. 147).

In the first half of 1994, considerable resources were committed in Queensland to the provision of support materials, particularly in mathematics, to give effect to the original plan to introduce SPS in 1994. However, no release time or advisory support was made available to teachers who were expected to attend professional development programs in their own time. This resourcing occurred at a time when concern about SPS among Queensland teachers and their union was

mounting and becoming ominous. Eventually, the Queensland Teachers' Union imposed a ban on the implementation of SPS. Many teachers, Grace and Ludwig contend, were persuaded by this ban to believe that the demise of SPS was nigh. This ban also contributed, in the view of these authors, to a reluctance on the part of teachers, to explore the meaning of outcomes-based education and prepare for its introduction. Later that year, the ban was lifted and the plan to implement SPS in three strands of mathematics in 1995, and in English and the remaining strands of mathematics in 1996, was approved. However this plan applied only to Grades 3 to 8, with no mention of an extension of SPS to higher grades of secondary schools. This, as Grace and Ludwig assert, proved to be a 'significant distracter in secondary schools' (p. 149).

Another major distraction to the implementation of SPS occurred early in 1995 with implementation of the response of the Queensland Government to recommendations of the Wiltshire Report. The Queensland Government had accepted the Report's proposal to appoint a considerable number of education advisors, including some for mathematics and English. Unfortunately, many appointees to these positions came from those who had been working in a National Professional Development Program (NPDP) project, managed by the Queensland Association of Mathematics Teachers and university and system stakeholders, and aimed at helping teachers to prepare for the implementation of SPS. The loss of these personnel and a sudden change of heart in Queensland in

respect of release from teaching for professional development purposes - which contrasted with NPDP guidelines - were serious impediments to the realisation of NPDP project goals. In this and other respects, the recommendations of the Wiltshire Report diverted teacher attention away from implementation of SPS.

Throughout 1995, numerous concerns emerged in relation to the preparation for use of SPS in mathematics. Much progress had been made, however, in the amelioration of these concerns through the provision of extra support and events such as 'moderation day'. By the end of the year, it appeared that a degree of optimism had surfaced about the continued introduction of SPS in Queensland.

Early in 1996, plans to proceed with the introduction of SPS were well underway when a change of government in March resulted in a suspension of these plans. Thus, the implementation of SPS was placed on hold pending the outcomes of a review. A draft of the report of the review group was distributed in November of 1996. In the meantime, interviews with the 11 teachers about the changes which they had made to their practical theories as a result of the curriculum, assessment and reporting reforms had occurred - actually in late October of 1996.

Degree of change to practical theories - acceptable or unacceptable?

The question being raised here is: How much change could reasonably be expected to the practical theories of teachers as a result of the

curriculum and profile reforms? The brief account of reforms in Queensland given above shows that the change had been underway for at least four years in that state. Is four plus years long enough for teachers to effect substantial change to their thinking? One might reasonably expect that this period of time should be long enough for reforms, if professionally managed, to begin to take root in teachers' minds. However, as Waugh (1994) points out, the process of change is a lengthy one, especially if it requires a substantial restructuring of teachers' beliefs. Successful reform, he claims, '... must proceed over many years' (p. 14), even the preparatory or pre-implementation phase requiring considerable time - 6 years and 10 years in two highly successful and large-scale reforms cited by that author. Given the time-frames mentioned by Waugh, it does seem reasonable to expect that, after four years, some changes to the practical theories of teachers would have occurred, provided of course that the plan for the reform process had been well conceived in the first place and was being implemented conscientiously and successfully .

Another way of answering the question at the head of this section is to enquire whether an outcomes based approach to education involves any substantial re-construction of teacher thinking. Lokan (1997), as we saw earlier, thinks that it would. Teachers in her national study reported that '... a re-organisation of their whole professional life has been brought about by the implementation of statements and profiles' (p. 285). She shared their view: 'Taken together, these activities constitute a very substantial program of change for any school and its

community to undertake' (p. 286). A similar view was expressed by Brady (1994): 'There was general agreement that outcome based education had potentially far-reaching implications for schools' (p. 9). Yet, in his

study of the implementation of an outcomes approach in four progressive schools, all actively engaged in implementing profiles, '... most teachers believed that it had not changed the nature of teaching' (p. 9). Presumably, this would also mean no change to the practical theories underlying the practice of teaching.

The question posed in this section is, therefore, not easily answered. Adding further to the uncertainty is the fact that at least two of the teachers in our Queensland study reported quite substantial change to their practical theories in contrast with most others who reported little or no change. As we have seen, interviews with three teachers contained evidence of change and, in the case of two of those teachers, substantial changes to their practical theories. On balance, it does seem that the introduction of the curriculum and profile reforms would require significant changes to practical theories.

Why did some teachers report so little or no change to their practical theories?

'[T]he crux of change', according to Fullan (1982), 'involves the development of meaning in relation to a new idea, program, or set of

activities. But it is "individuals" who have to develop new meaning, and these individuals are insignificant parts of a gigantic, loosely organised, complex, messy social system which contains myriad different subjective worlds' (p. 79). If individual teachers are to develop new understandings in respect of a reform, an extensive literature suggests that a large number of conditions need to be met. Moreover, the conditions vary according to the phase the reform is in - initiation; implementation; and continuation or institutionalisation. Fullan (1982) cited 10 factors affecting reform in the initiation phase. These included: The desirability or quality of the reform; access to information about the reform; strong, persistent advocacy of central administrators; presence of consultants and change agents; availability of funds; and incentives for adoption.

Conditions applying to the implementation phase include, according to Waugh and Godfrey (1993): Rewards and benefits from change, such as greater satisfaction and evidence of better learning; evidence of classroom practicality; alleviation of teacher concerns; teacher participation in decision-making; and perceptions that senior staff enthusiastically support the reform.

Reference to the historical account of the initiation and implementation phases of the reform in Queensland clearly indicates that many of these conditions were not present, or if present, not sufficiently robust, at the school and state levels. The major impediments to success in the initiation and implementation phases of

the reform in Queensland were:

Insufficient 'road testing' of the reform. Problems identified with aspects of the reform in the trial phase were: A huge data collection load for teachers; lack of congruence between curriculum and outcomes; difficulties in making judgments about student levels; lack of precision as to the meaning of outcomes; and reporting difficulties.

These problems eroded teacher confidence in the quality of the reforms and raised questions about their practicality (Grace and Ludwig, 1997).

Inadequacy of support for teachers (release time and advisory services) in the critical early stages of the reform.

Vacillation at the state level about when the reform would proceed, giving rise to teacher expectations that the reform would be abandoned.

Proliferation of change in other areas which created major distractions for teachers. Evidence suggests that an overall plan, including an appropriate time table for coping with the changes had not received sufficient attention.

In addition to these system-wide impediments to change, there were also clusters of factors in each of the schools which exacerbated the difficulties associated with the implementation of reforms and which impeded changes to practical theories. These came to light in data from an extensive questionnaire which had been completed by teachers of

English and mathematics in the three schools, including heads of English and mathematics departments and/or curriculum coordinators of those subjects. Their responses showed that:

80% of teachers across the three schools felt that they were not well informed about either the statements or profiles. However, the proportion of teachers in Tallowood, the large urban secondary school, who regarded themselves as well informed or very well informed was nearly four times higher than the proportions in either of the two rural high schools.

Only 20% of teachers had received some training in curriculum mapping and program planning. Once again, the proportion was much higher at Tallowood.

Whereas virtually all teachers had received training in areas related to use of profiles, and had valued this training, close to three out of four teachers wanted more training. This pattern was uniform across the three schools.

25% of English teachers and 70% of mathematics teachers had used profiles in 1995 but only at a familiarisation level. Very few had had any experience with the national curriculum statements in that year.

The use of profiles and curriculum statements by teachers at Tallowood was far more widespread than in either of the other two schools.

60% of teachers who used profiles in 1995 had rated their commitment to

them as low, with only slight variations from one school to the other;
and

Profiles were not used at all by any teacher in the three schools in
1996.

In general, the patterns outlined above are consistent with, and can probably be explained in large part by, data on implementation strategies. Teachers of English at the three schools reported a very limited set of strategies for supporting teachers in their use of statements and profiles. More strategies were reported as being used across the three schools in mathematics but teacher exposure to these appears to have been very restricted. Only one in five teachers reported that they had been provided with documents on statements and profiles and had attended staff meetings but experience of other strategies such as collaboration with other groups or schools, release time, pupil-free days, meetings with key staff and creation of leadership positions was rare indeed. Teachers also indicated that SPS had had little impact on their teaching and had a quite unfavourable view of the value of statements and profiles, not only for themselves but also for students, parents and employers. The context for reform at Tallowood was more favourable than in the other two schools in terms of teacher exposure to implementation strategies.

Given this rather bleak scenario, it is perhaps not at all surprising that teachers reported few changes to their practical theories or their

thinking about teaching stemming from the National Curriculum Statements and Profiles. Many of the 11 teachers did report some changes to their thinking but attributed these to other developments occurring in their schools, state or professional thinking. Some expressed uncertainty about what had caused the changes they identified. This trend among teachers in the study tends to confirm their claim that they were not well informed about the reforms and that outcomes based education had assumed a low profile in their

professional lives. If this reform had achieved some prominence in their minds, then it seems likely that they would have been much more articulate about its impact on them and their teaching.

Another reason for the low level of reporting of change to practical theories that cannot be dismissed has to do with the interview method and the assumptions on which it was based. Certainly, it is not easy to make explicit the foundations of our teaching, especially those which are inherently implicit. However, teachers as a whole were able to speak freely about some changes to their thinking. Furthermore, there were two teachers who did report substantial change arising from the National Curriculum statements and profiles.

What accounts for the substantial differences among teachers in respect of the number of changes to their practical theories?

As Table 1 showed, the virtual lack of change to the practical theories of eight of the 11 teachers contrasted sharply with that of the remaining three teachers. Of the total of 69 changes to practical theories, 58 were reported by three teachers with 50 of these being cited by just two teachers.

Table 1 also shows that all three teachers came from the one school, Tallowood. Two of these, Les and Neil, were heads of English and mathematics departments respectively, and the third, Barry, was a teacher of mathematics. Evidence from the questionnaires completed by teachers of English and mathematics showed that heads and subject coordinators generally were better informed about the changes, held more positive attitudes to them and had had more involvement with implementing the changes and exposure to the implementation strategies. These generalisations certainly appear to apply to Les and Neil. The leadership positions they held in their respective subject areas probably accounted for the marked differences between them and the eight. They were expected to take a major role in implementing the reforms and one, Les, the English Head of Department (HOD), had clearly reflected at length on what the reforms meant for his teaching. His professional vitality and enthusiasm and his positive attitude to change, so clearly evidenced in the interview, appear to have been major reasons for the extent of changes to his thinking.

The extent of changes made by Neil, HOD mathematics, was limited in comparison to those made by Les, partly because of Neil's grudging

acceptance of the changes, a strong commitment to traditional practice and no direct need to use profiling in his own teaching because he taught only senior secondary classes.

The other member of this trio, Barry, was a mathematics teacher who indicated that the most important influences in the substantial accommodation in his thinking of reforms were his interstate teaching experience and the congruence between the reform philosophy and his own thinking prior to the reform. Despite the more favourable context for reform at Tallowood relative to the contexts in the other two schools, Barry did not find the environment at Tallowood to his liking at all, as far as the curriculum reforms went. He was critical of the reporting there and of the state of preparedness for the reforms of students and parents and even of teachers.

Despite this, the greater receptivity to change on the part of the three Tallowood teachers could also have been due to a more proactive stance toward the changes on the part of the school as a whole (this was revealed in the wider range of implementation strategies and the wider exposure of teachers in Tallowood to these). It is also possible that school size and location were contributing factors. The larger school may have had more time and personnel to commit to the business of adapting to change, as well as easier access to regional and state resources. It seems likely that teachers at Crabtree, the school with a

secondary department, and Planetree, the rural secondary school, may not have received the same level of support. Perhaps not too much weight should be given to these factors because a clear impression gained from the interviews is that professional commitment and interest played a marked role in distinguishing Les (HOD English) from all the others, while changes by Barry probably owed much to his professional development in an interstate context and to his own search, prior to the introduction of the reforms, for answers to classroom problems in assessment and making school learning relevant to all students. In other words, the changes to the thinking of these three teachers could well owe more to personal factors, rather than institutional ones.

What lessons about reform can be learnt from the findings of this study?

As we have seen, there were major impediments to the successful implementation of the statements and profiles in the three Queensland schools: The trial versions of the reforms had too many deficiencies, creating much teacher disquiet and negativity towards the reforms; too little release time and advisory support for teachers were provided at crucial times; other major developments, namely those arising from the Wiltshire Report, diverted teacher attention away from statements and SPS, and commitment to the reforms was undermined by decisions to put them on hold on two separate occasions. These were the more obvious impediments but there were other problems too (Grace and Ludwig, 1997). In their totality, these present persuasive explanations for why the

reforms appear to have had little impact on teacher thinking.

The situation in these three Queensland schools does not appear unique. Other schools round the nation encountered serious implementation problems stemming from similar causes. Following a national survey of curriculum and profile implementation, Lokan (1997) reported that successful implementation of statements and profiles rested on the presence in schools of four essential factors: 'Congruence between the curriculum and outcomes-based approaches; A sense of the inevitability of implementation; The existence of a teacher leader in the school; A commitment of teacher time' (p. 291). Where these were not present, success was also usually absent. It appears, then, that some of the crucial conditions for the successful adoption, implementation and institutionalisation of a major system-wide reform in the three Queensland schools were not met.

Yet, most of these factors are not novel ones. Over the last decade and a half at least, the literature on curriculum change reveals an acknowledgment of the complexity and difficulty of introducing wide-scale reform and an awareness of the typical impediments to change [see, for example, Fullan (1982)]. Unanticipated events, such as a change in government, can impact on the best laid plans of curriculum change agents. Nevertheless, attention to lessons from best practice, experience and research, on the part of those who manage curriculum reforms and school change, would also probably ensure that many of the mistakes of the past are not repeated and that change is facilitated.

Another lesson that might be learnt from this study concerns what is involved in changing teacher thinking about teaching, that is, their practical theories. Whereas it is acknowledged that changing teaching practice requires teachers to change the personal theories that underpin their practice, and that the reconstruction process can be undertaken successfully only if initiated and guided by teachers themselves, there is no comprehensive view of what practical theories comprise. Fullan (1982) asserted that 'significant educational change consists of change in beliefs, teaching style and materials which can only come about ... through a process of personal development in a context of socialisation' (p. 121). Earlier, he had said that 'if educational change is to happen, it will require that teachers understand themselves' (p. 107) and '... that (in reforms) there are a

number of things at stake - changes in goals, skills, philosophy or beliefs, behaviour, etc.' (p. 29). In similar vein, Briscoe (1996) urges teachers to consider not only their actions and consequences, but also '... the beliefs, values and other knowledge which contribute to motivating and creating a rationale for that action' (p. 315). Her own study of teacher change focussed on images. Blumenfeld et al. discovered that change in teaching also requires attention to principles and contextual variables.

The problem is that all of the above conceptions of teachers' practical

theories are incomplete. If teachers are to revise the way they teach, attention may need to be given to changing all of the components of practical theories referred to above - goals, values, beliefs, skills, action, teaching style, principles, contextual variables, and images - and still others (see Table 1 and Marland, 1997). Moreover, these elements of practical theories must not be considered one at a time or individually because, as in all theories, the components interact with each other. A change to one component will often impact on others and require changes to them. What is required then is a conceptualisation of teachers' practical theories which identifies components and their inter-relationships and allows teachers to consider all the implications of change for their practical theories - components and structure - and practice.

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