

TEACHER PROFESSIONAL DEVELOPMENT:
AN EVALUATION OF THE ATKIN MODEL OF TEACHING AND LEARNING AND ITS
EFFECTS ON STUDENTS

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ABSTRACT

Professional development for teachers, frequently in the form of in-service workshops, appropriates a large slice of educational funding. This professional development typically, is aimed at improving the quality of student education, cognitively, affectively and socially. However little research has been conducted in Australia to ascertain the outcomes for students as a result of their teachers attending in-service workshops.

A study conducted in Tasmania over a three year period (1992-4)

examined a model of professional development, as disseminate in a series of three workshops entitled Teaching for Effective Learning, the level of its implementation by six teachers, and the extent to which they adapted and refined the model to suit their special needs. Student learning was also examined in two classrooms where the model was implemented at a significant level.

Atkin (1992) claims that use of her model will lead to 'effective learning'. Therefore two other teachers, unfamiliar with the Atkin model but matched on grade levels taught, were also studied. The purpose was to ascertain whether they, recommended as 'best practice' teachers, would be using similar strategies, and achieve similar student outcomes as those who had attended the Atkin workshops, or

whether Atkin was in fact, introducing new and more effective learning experiences.

Results show that the Atkin Model of Integral Learning, 'a general model of the process of learning: a deliberate design of learning experiences for integrative whole brain learning' (Atkin, 1992) has been received positively by teachers. Levels of implementation however varied from 'use' to 'limited use'. It was found that the model provided teachers with a strategic view of teaching, and that their understanding of teaching and learning was predicated on the model. Non-Atkin teachers achieved similar outcomes in some areas. When implemented, some learning experiences do appear to have positive results for student learning.

INTRODUCTION

It is a self evident truth that schooling in general and teaching in particular are designed to enrich the lives of students academically, socially and affectively, and that one of the most significant resources in the school system is its teachers. It is they who utilise the immense resources provided by governments, and it is they who are responsible for shaping the early learning experiences of the nation's children. The quality of teachers determines the quality of the school system (Coulter & Ingvarson, 1985).

According to Fullan (1993) the moral purpose of schooling is to enhance the lives of all children, regardless of race colour or creed, and to help them accommodate to the demands of the ever changing and complex societies in which they live. Such a mission puts teachers in the forefront of change; they are, in fact, 'in the business of making improvements' (p.4). But improving the quality of education for

students may mean new behaviour on the part of teachers, and when change demands that teachers alter professional practice there must, according to Coulter & Ingvarson (1985), be appropriate and continual professional development programmes.

Eraut (1987) has stated that attempts to change educational practice without relevant in-service and training of teachers are likely to fail, but providing these factors does not necessarily lead to success. According to Fullan (1991)

nothing has promised so much and been so frustratingly wasteful as the thousands of workshops and conferences that led to no significant change in practice when the teachers returned to their classrooms (p.315).

CONTEXT OF THE STUDY: PROFESSIONAL DEVELOPMENT

In the 1980s, throughout Australia, a devolution of power from public systems to individual schools saw the concept of self managing schools widely promulgated and implemented. In Tasmania the devolution of power of management from the Tasmanian Department of Education and the Arts (DEA) to its schools followed the trend of other states, but the DEA still maintains an influence over school policy decisions, particularly in the area of staff development. In Tasmania the focus for school development and teacher improvement is dictated by a set of priorities established by a committee appointed by the DEA. For example, the priorities for 1993-4 were established as science and technology, literacy and gender equity. The DEA maintains a watchful

eye on chosen professional development programmes through its monitoring of the schools' strategic plans. In these plans schools are required to set out their short and long term goals, their rationale for professional development expenditure, and provide an indication of how their budgets address the stipulated priorities. District superintendents and their staff monitor the plans. While districts, school communities and principals may have their own priorities, those of the DEA must take precedence. Professional development programmes must be justified, particularly if they are not directly addressing the current priorities. While the school districts take responsibility for some of the professional development programmes through their own consultants, outside experts can still be employed.

BACKGROUND TO THE STUDY

This study arose from a general interest in the outcomes of the 'expert' or 'guru' phenomenon in professional development programmes for teachers in Tasmania. In the field of education experts in management, content, pedagogical and administrative matters demonstrate ideas and methods which they claim will enhance the lives of students in classrooms, but despite the extensive funding provided by schools and governments for professional development programmes, follow-up

evaluations, according to Fullan (1991), occur infrequently.

Teachers who attended the Atkin workshops, entitled Teaching for Effective Learning, expressed and displayed enthusiasm both for Atkin as a presenter, and her theories about teaching and learning. It was a speculation about the outcome of this enthusiasm - whether it would translate into change in practice for the teachers and improved learning for students, and the question of whether it was the singer or the song (or both) which engendered such enthusiasm, which led to the current study.

The Atkin framework for effective teaching and learning
Over approximately a 16 year period Atkin had developed a framework for effective teaching and learning which she disseminated in the series of three Teaching for Effective Learning workshops. By 1992 this included the Atkin Model of Integral Learning. Anecdotal evidence from NSW and Queensland indicated that, when implemented, Atkin's framework for effective teaching and learning was having a significant impact on professional practice and student learning. Greater professional satisfaction on the part of teachers, and evidence that some major learning problems were being overcome, were two reported outcomes from use of the model. Atkin is in considerable demand throughout Australia, both in education and industry. A study of her model was timely, and she accepted the opportunity to have its impact examined. Briefly, Atkin's framework or model of teaching for effective learning covers two broad areas: the relationships between students and teachers and the designing of learning experiences, two elements which she describes as the warp and weft of teaching. The second component (the designing of learning experiences) includes what Atkin (1992) describes as the psychological conditions for learning (e.g., motivation; readiness to learning; a degree of freedom to foster ownership; emotional involvement), and the engaging of appropriate mental processes. Her framework is represented graphically in Figure 1.

EMBED Word.Picture.6 Figure 1

In 1992 the Teaching for Effective Learning workshops dealt almost exclusively with the component of her framework which she describes as the engaging of appropriate mental processes. Atkin (1992) claims that effective learners know, consciously or unconsciously, which

appropriate mental or cognitive processes to apply in specific contexts. Atkin's (1991) examples of the engaging of appropriate mental processes involves both the acquisition of skills and understanding. In the development of skills, appropriate processes may be, for example, the integration of visualisation and phonics for spelling, or ways of seeing for drawing. When new learning involves understanding, new meaning, new ideas or new theories, engaging

appropriate mental processes, according to Atkin (1991) involves the integration of experience; grasping in the mind's eye; reflection; the use of language and symbols to represent the ideas, and the application of new learning. It is this latter concept which forms her Model of Integral Learning (1992).

Atkin's framework had its genesis in a PhD study in 1977, a study of cognitive learning strategies. High school teaching experiences, particularly with difficult to motivate students, 'were the catalysts for thinking out details of the more general and comprehensive model' (1994) which is disseminated today. Atkin's early thinking about effective teaching and learning which developed in the early 1980s 'has now been confirmed (and) refined ... by the thousands of teachers, parents and students with whom (she has) worked '89 - '94' (1994). In refining her model Atkin drew on the work of Herrmann (1989), finding that his Whole Brain Model provided an explanation for what she believed she had understood intuitively about the different ways in which people process information. Aspects of her model also bear some resemblance to Kolb's Experiential Learning Model, though she believes that she owes a greater intellectual debt to the 'thousands of teachers and students' previously mentioned (Atkin, 1994).

FOCUS OF STUDY

The study addressed four questions:

- What is the theoretical underpinning of Atkin's framework for effective teaching and learning (including the Atkin Model of Integral Learning) and how do they compare/contrast with other theories and models of teaching and learning?
- Does attendance at the Teaching for Effective Learning workshops result in changes in teachers' attitudes and professional practice ?
- What are the outcomes for students of those teachers attending the workshops?
- If Atkin claims that her model describes effective teaching, would teachers, identified as 'best practice', but not having attended her workshops, display similar characteristics of those having attended the workshops?

SPECIFIC AIMS

The first aim of study was to comprehend the nature of the Atkin's framework for effective teaching and learning, and the process of its dissemination in a series of three workshops. Without a clear understanding of the content there would have been no guidelines from which to make informed judgements about its implementation. The nature or configuration of an innovation (Hall & Hord, 1987) must be known before implementation can be gauged. The configuration could be examined from many perspectives including its philosophical orientation 'its goals and outcomes, its behavioural functions or implementation requirements' (Hall & Hord, 1987, p. 110). In this study Atkin's model was examined from the point of view of her philosophy, and the goals, outcomes and functions of the model. Atkin's philosophy was clearly articulated in the initial stages of the workshop. However, 'when a

philosophical orientation is the basis for defining an innovation, it is difficult to make real and concrete descriptions of practice' (Hall & Hord, 1987, p. 112). Since the Atkin workshop focussed on both theory and practice, evaluating the the innovation from other perspectives was possible. All orientations were also examined on a

continual basis through repeated contact with Atkin over a three year period (1991-4). Implementation requirements necessitated more specific instructions than Atkin was willing to provide. She wanted teachers to create their own design or blueprint, based on the theories of effective teaching and learning.

The second purpose in analysing Atkin's theories of teaching and learning was to compare and contrast them with other similar models to ascertain whether she was simply repackaging existing theories or if bringing new understanding to the issue of learning.

Atkin was espousing her theories about effective teaching and learning. It would therefore seem appropriate for her to model her theories. One aim of attending the workshops was to see if there was a gap between theory and practice.

The second aim was to ascertain the extent of implementation of the model, and for those who were, how they adapted and redefined the ideas and practices to suit their own teaching style and circumstances. Hall & Hord's (1987) approach in establishing an innovation configuration also emphasises functional alternatives but does so with the developer's "archetype" always in mind. Thus, alternative ways in which an innovation can be implemented and made operational are continually related to the developer's implementation requirements, philosophy and model (p. 115). Joyce & Showers (1983) describe the pain necessary for the successful adoption of an innovation. In making contact with teachers through observations and interviews, their understanding and degree of comfort in using the model could be ascertained.

The third aim of the study was to evaluate student outcomes. While this was the most challenging task of the study, it seemed the most important. The *raison d'être* for schooling is the enhancement of learning of its students. If a professional development programme was designed to improve teaching and learning the evaluation of such a programme was deemed significant. Just as important was the question of the practices of other teachers who had not attended the workshops. If the programme was designed to 'teach for effective learning', would teachers, not familiar with the model, yet recommended as high quality teachers, be using similar strategies?

DESIGN CONSIDERATIONS

The way in which a researcher gathers and analyses data will depend on

the nature and purpose of the study and the questions or hypotheses which direct it. Given the complexity and multiplicity of events and influences in this study (described below), the major consideration in choosing an appropriate methodology was whether or not causal links could or should be established between Atkin's workshops and the learning outcomes of students.

Three workshops, Teaching for Effective Learning were planned and held over the period of one year (1992). Teachers came to them with differing levels of commitment, skills, knowledge, attitudes, training, experiences and range of information processing styles. Teachers were shaped by, and in turn shaped, the events of the workshop. Teachers returned to their schools, each school with its own budgetary policy, culture and administrative environment. Each school had a culture that constrained or reinforced aspects of what teachers brought back. The 'message' and attitude that teachers brought back (enthusiasm, neutrality, etc.) may have influenced decisions in different ways, and lead to greater or lesser support. The students came to lessons, each with their own level of commitment, interest and ability. The teacher

interacted with the students and these interactions influenced each teacher's learnings from the workshop. Finally, students interacted with their peers and with other influences which shape their thinking.

CONCEPTUAL FRAMEWORK

According to Novak & Gowin (1984) educational researchers, while having usefully appropriated theories and methodologies from other disciplines such as psychology, sociology and philosophy, must now construct new knowledge based on educators' own 'unique set of phenomena' (p. 150). Building its own conceptual-theoretical framework which are uniquely educational will lead to new ways of gathering and analysing information and new understanding of teaching and learning. This construction of new knowledge should evolve slowly to allow existing theories to be modified or discarded (Novak & Gowin, 1984). A heuristic device, the knowledge Vee (Gowin, 1977) was developed specifically to help students understand the structure of knowledge, and how knowledge is constructed. A heuristic is a discovery method for solving problems or understanding procedures.

Gowin's Vee provided a framework for this study because it brought together the concepts, focus questions and methodology of the inquiry. The Vee shape points to the events or objects (the base of the Vee) from which the knowledge is produced (right side) and to which concepts, theories and principles relate (left side). Iteration between the two types of knowledge ensures that new knowledge is guided by theory, and the research questions constantly in focus. While this study should be seen as a complete picture of professional development from in-service workshops to student outcomes, a heuristic Vee was developed for each of the three phases because each had its own

concepts, focus questions and methodology. An example, that used for the first phase, is shown in Figure 2.

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Figure 2

METHODOLOGICAL CONSIDERATIONS

To facilitate the making of a choice of appropriate methodology for such a complex study, the two most widely used approaches to educational research, positivism and interpretivism, each with its own structure and knowledge base (Tom & Valli, 1990), were examined critically. Fenstermacher (1986) advocated such an examination when he asserted that, whatever approach used to study teaching, researchers should 'undertake their work with informed regard for the philosophical aspects of the concepts and methods they use' (p. 37).

The outcome of an investigation of appropriate methodology for this study was a 'paradigm of choices' Patton (1990).

A paradigm of choices rejects methodological orthodoxy in favor of methodological appropriateness as the primary criterion for judging methodological quality. The issue then becomes not whether one has uniformly adhered to prescribed canons of either logical-positivism or phenomenology but whether one has made sensible methods decisions given the purpose of the enquiry, the questions being investigated, and the resources available. The paradigm of choices recognizes that different methods are appropriate for different situations (p.39).

A range of methods were employed to obtain both quantitative and qualitative data, each appropriate to specific inquiry situations. In

some cases, such as the gathering of data on children's learning, both direct and participant observation methods were used. The latter involved working with the children as they performed their various tasks, talking to them, and collecting examples of their writing and art. Other methods used were document analysis (Atkin's workshop manual and her publications; children's work; teacher journals), a questionnaire (to ascertain levels of implementation), video-taping (Atkin workshops), and unstructured audio-taped interviews (with teachers and Atkin). It was intended that a multi-method approach would provide triangulation for the significant findings of the study.

RESULTS - PHASE 1: THE ATKIN FRAMEWORK

Atkin's framework for effective teaching and learning were investigated in two ways. First, the framework was examined through the means by which it was

disseminated, that is, the Teaching for Effective Learning workshops, and through documents analysis (the workshop manual and published papers). Interviews with Atkin over a three year period (1992-4) clarified details. Second, the literature pertaining to teaching, learning, and the various components cited in Atkin's framework (including the Model of Integral Learning, 1992), was examined to ascertain what others have written on the subjects.

1. Analysis of the framework through the workshops and documentation
Both analysing and documenting the framework proved a complex and difficult task. A major problem arose in describing it in a linear and sequential manner when in fact the process was iterative, and the elements interwoven. Over a six day period, spread throughout a year, teachers were exposed to learning through personal experience, reflection, language and rules, and the application of new learnings. In other words, the process described by Atkin in her framework as 'whole brain' or integrated learning. Atkin's own writings and publications (for example two monographs, *How Students Learn: A Framework for Effective Teaching, Parts 1 & 2*), while expressing her beliefs and theories, also fail to capture the dynamic nature of the construction of knowledge through the iterative processes of the workshops, as the teachers acquired knowledge, shared their use of the model and received feedback from Atkin and the group. As one teacher commented in the implementation survey: 'To benefit from Julia's (Atkin) model you must experience the workshops. Reading about it or hearing about it doesn't work.'

2. Comparison of the framework with the literature on teaching and learning

An analysis of the literature indicated that, in at least two areas of Atkin's framework: the significance of the relationships between students and teachers, and the psychological conditions for learning, she is well supported in her views, though in some cases these aspects are represented in different classifications and using different terminology.

The concept of engaging appropriate mental processes (Atkin, 1992), or the use of strategies particularly appropriate to a task at hand, is not often directly addressed in the literature per se. However when Gagné (1985) claims that 'the selection of an appropriate learning strategy is important because it can determine the effectiveness of an entire study session' (p.341), he is making a similar claim to Atkin, but he is not providing an explanation of how this may be achieved. He is also referring only to secondary students. Cullen (1992), in her study of young childrens' perceptions, refers to the the engaging of appropriate mental process when she talks of the teacher 'teaching not

only content but the learning strategies required by that content to

make learning meaningful, integrated and transferable' (p.112).

While there is little in the literature on the use of appropriate mental processes as such there is a considerable body of literature addressing the issue of cognitive strategies for particular tasks. Many texts for teachers contain such examples (de Mille, 1967; Albrecht, 1980; Williams, 1983; Morris & Stewart-Dore, 1984; Rose, 1985; Bell, 1986; Jensen, 1988; Neville, 1989; Cherry, Godwin & Staples, 1989; Grinder, 1989; Margulies, 1991). The use of visualisation has been shown as useful for retention of learning in special education (Reing, 1978), as a means of improving long-term memory (Andreoff & Yarmey, 1976; Evans, 1982, Grinder, 1989;) and problem solving (Moses, 1982). Concept mapping (Novak & Gowin, 1984; White & Gunstone, 1992) is used as a means of representing relationships between ideas as an aid to meaningful learning.

While Atkin appears to be saying little that is new, she has packaged a range of teaching and learning theories and practices in a model or framework which 'speaks to' many of the teachers who attend her workshops. The early speculation: 'Is it the singer or the song, (or both)?' which engendered such enthusiasm can be answered as 'both.' However Atkin's charismatic style and sound basis for her model did not, predictably, translate into full implemented in all classrooms.

RESULTS - PHASE 2: IMPLEMENTATION

In the second phase of the study, levels of implementation were examined using two processes and three separate groups of teachers. The first group of six teachers were observed before attendance at the Atkin workshops, and throughout the year of their Teaching for Effective Learning workshops. A second group of nine were interviewed one year after the completion of their course, and a third group of thirty were surveyed after the same interval.

Of the first group of six teachers, three (teachers A, B, C) were virtual non-users; two because they had senior teacher roles with a minimal teaching load, and the third (C), while teaching five days per fortnight, employed the model largely as a diagnostic tool to understand the different styles of learning of her students, rather than use the strategies or other concepts. A fourth teacher (D) chose to take from the model those aspects which she felt she could comfortably use in the classroom. The remaining teachers (E and F) who subsequently became part of the third phase of the study used the model as a basis for their planning and employed strategies learned in the workshops.

Teacher D could be described as having transferred knowledge horizontally (Joyce & Showers, 1983). 'When the skill just "slides" from the training place to the workplace, we say that the process is horizontal. When additional learning is required to transfer the skill, we speak of the process as vertical' (p.6). According to Joyce

& Showers implementation may be non-existent (no discomfort), partial (little or no discomfort) or fully actuated. Some of the literature (Joyce & Showers, 1983; Fullan, 1982, 1993) would suggest that for the latter to occur there will be some disruption for the teacher, and some form of support required to ensure implementation. The literature pays little attention however to those teachers who implement an innovation with little or no discomfort. Yet teachers E and F were found to be doing just that. One explanation, of relevance to this study, is that the innovation was in fact making explicit what the teachers knew intuitively. The innovation may have been tapping into the teachers' implicit craft knowledge or 'the practical knowledge which informs

their classroom teaching (Marland, 1993, p.34).

In the past decade much attention has been paid to this craft knowledge (e.g., Shulman, 1987; Leinhardt, 1990; Tom & Valli, 1990; Grimmer & Mackinnon, 1992; Batten, Marland & Khamis, 1993; Fenstermacher, 1994). While the earlier dominant position was that only knowledge considered to be of value to teachers was that produced by researchers (Marland, 1993a), there is now recognition that teachers possess a body of craft knowledge which needs the attention of educational researchers, teacher educators and of teachers themselves.

This knowledge base, according to Shulman (1987) is the least codified.

One of the most important tasks for educational researchers according to Shulman is to 'work with practitioners to develop codified representations of the practical pedagogical wisdom of able teachers' (p.11). Problems arise when that knowledge is contextually specific, and what Shulman describes as 'individual and collective amnesia' (p.11). Shulman (1987) believes that while disciplines such as architecture, law, medicine, engineering have well documented records of practice, teaching does not. Teachers have an extensive body of knowledge which has the potential to be codified and that teachers have not, in the past, articulated that craft knowledge.

The speculation that teachers were able to put Atkin's model into practice without discomfort because she was articulating their craft knowledge is supported by statements from three interviewed teachers.

Teacher B (12 year teaching experience):

Julia's model makes explicit what teachers know intuitively. For years we have been expected to jump on one bandwagon after another but often they have been remote from day to day work in the classroom. Her model builds on what good teachers do anyway and gives a rhyme and reason for what we do. She gives us extra strategies to enhance what we do.

Teacher E (26 year teaching experience)

I think it's helped me clarify things I knew before in the true spirit of constructivism ... what I heard and saw wasn't different from the

way I was operating but it's made it all more detailed and meaningful ... It would be wonderful if everyone took it on board. I haven't found it any effort really.

The more seminars I attend and workshops, the more knowledge there seems to tie in to the model we have studied with Julia ... for example we had a literacy workshop yesterday which looked at capabilities and nothing there was in conflict to the model we learnt, in fact the model seemed to tie all those things together and I could say to myself yes, I can see all these link.

Nothing in the (Atkin) workshop conflicted with things I have thought about or try (sic) to develop.

Teacher F (6 year teaching experience)

I know I have been doing things like engaging the children in each of the four ways but I wasn't conscious of me doing it. And if I am not doing enough? I will be really conscious and make sure I am now ... it's like putting on a pair of shoes now. Walking in space shoes because you can access into everything, but it was already there before ... it's like science you know, lifted the veil off, it was there all the time but you just couldn't quite see through the blurry bits.

Both of the other groups, one interviewed and one surveyed, provided self report data. The responses from the surveyed group indicated partial to full use of the model. Since only 50 percent responded to the questionnaire it is possible that non-users chose not to respond. Data from both groups indicated that particular strategies and concepts learned in the workshops were of value in the classroom. The most

commonly cited examples of strategies used were visualisation (for spelling, reading problem solving, memory and art); association and concept mapping. Many teachers reported that they found the concept of differing cognitive styles as a useful diagnostic tool for a better understanding of children with learning problems. The model they found also provided them with strategies to help these children. One teacher said that this concept helped her understand herself as a teacher.

RESULTS - PHASE 3 - TEACHER PRACTICE AND STUDENT LEARNING

The third phase of the study looked at teacher practice and student learning in two classrooms (grade 1 and grade 4) of those teachers (E and F) who used both the concept of Atkin's model and aspects of its practice. Two teachers, matched on grade levels taught and the socio-economic status of the students, but who had not attended the workshops, and who were recommended as 'best practice' teachers were also observed, and their students' work examined. This was to ascertain whether or not the two groups of teachers were exhibiting similar behaviours.

Each of the four classrooms were visited for two weeks, the teacher and student behaviour were noted and where appropriate students were interviewed as they worked. This proved quite difficult with the two grade 1 children, but relatively easy with the grade 4s who were better able to articulate their processes.

Similarities were observed in areas described by Atkin as the relationships between students and teachers and in the psychological conditions for learning. For example all four teachers had excellent rapport with their pupils and therefore had few management problems. Motivation, readiness to learn, a sense of achievement, a degree of freedom to foster ownership were all strong characteristics of all four teachers. Other characteristics common to all teachers were their flexibility, and their balance between an emphasis on good relations, and the holding of expectations that the children would achieve to their best standard. All used a combination of directed and self directed learning. The degree of freedom that the self directed learning allowed, resulted in high levels of motivation in the students of all classes.

An observed difference in the classes of teachers who had attended the Atkin workshops was the deliberate use of a range of strategies to cater for a range of learning styles. Teacher F structured all learning so that children underwent personal experiences, reflection on those experiences, rules and related theory, and application of new knowledge. Also noted was the use of strategies such as visualisation for spelling, memory, art, maths and the giving of instructions ("Shut your eyes and imagine yourself playing safely in the playground at recess" - teacher E). The level of accurate spelling in the grade 1 classroom where visualisation was used was noted. Using the same strategy for art (a before and after visualisation activity) resulted in a marked difference in the children's drawings. The teachers from the Atkin workshops were able to articulate their planning in terms of the learning needs of the children.

Both Atkin teachers based a large part of their planning on the theory of whole brain learning. One non-Atkin teacher based her planning on a Pathways of Language Development, a document developed by the Curriculum Branch of the Tasmanian Education Department, which drew on the work of Smith (1971, 1975), Moffett (1968), Holdaway (1979) and Cambourne (1986).

CONCLUSION

It would not be possible to claim, after only two weeks of observation in each class, that the children of the Atkin teachers showed a superior capacity to learn, or that their learning was more meaningful.

A far more extensive period of observation would be necessary for such a claim to have any foundation. Atkin teachers who used the model

indicated that they liked it because it not only provided them with specific strategies to target specific situations, it also gave them a strategic view of teaching, and their understanding and planning was predicated on that. In practice there was little difference between the Atkin and non-Atkin teachers. One important outcome related to the 'language' that teachers can use to describe classroom processes and practices. The Atkin model provided a common language for describing practice, though one of the non-Atkin teachers could talk about incidents beyond the immediate through her own framework for understanding teaching and learning.

The next phase of a study such as this could be to work with teachers to provide them with a 'language' which is both pedagogical and content in nature, to see if this results in different student outcomes, or more active and meaningful learning.

REFERENCES

Andreoff, G.R. & Yarmey, A.D., 1976, Bizarre Imagery and Associative Learning: A Confirmation, *Perceptual and Motor Skills*, vol. 43, pp.143-148.

Atkin, J., 1994, How Students Learn: A Framework for Effective Teaching, Part 2, Conditions which Enhance Learning, in Redman (ed.), Seminar Series, Incorporated Association of Registered Teachers of Victoria, No. 22.

Atkin, J., 1993, How Students Learn: A Framework for Effective Teaching, Part 1, Thinking - Critical for Learning, in Redman (ed.), Seminar Series, Incorporated Association of Registered Teachers of Victoria, No. 34.

Atkin, J., 1992a, Thinking: Critical for Learning, Paper presented at the 5th International Conference on Thinking, Exploring Human Potential, Townsville, Australia, July 6-10.

Atkin, J., 1992b, Workshop Manual, Teaching For Effective Learning.

Atkin, J., 1990, New ways of knowing: The missing link in curriculum reform, Paper presented at the Queensland Curriculum Conference, Griffiths University.

Atkin, J., 1984, Science curricula for adaptive schools, *Research in Science Education*, 14, 223-229.

Atkin, J., 1978, An Information Processing Model of Learning and Problem Solving, Unpublished PhD Thesis, Cornell University.

Batten, M., Marland, P. & Khamis, M., 1993, *Knowing How to Teach Well*,

ACER Research Monograph No. 44.

Coulter, F. & Ingvarson, L., 1985, Professional Development and the Improvement of Schooling: Roles and Responsibilities, A Report to the Commonwealth Schools Commission.

Cullen, J., 1992, Young Children's Perceptions of their Learning: A Metacognitive Perspective, in Cullen, J. & Williamson, J. (eds.), The Early Years: Policy, Research and Practice, Meerilinga Young Childrens' Foundation, Inc., Perth.

Department of Education and the Arts, 1989, Pathways of Language Development, Tasmania Australia.

Eraut, M., 1987, Inservice Teacher Education, in Dunkin, M.J., The International Encyclopedia of Teaching and Teacher Education, Pergamon Press, Sydney.

Evans, J. St. B.T., 1982, The Psychology of Deductive Reasoning, Routledge & Kegan Paul, London.

Fenstermacher, G., 1994, The Knower and the Known: The Nature of Knowledge in Research on Teaching, in Darling-Hammond (ed.), Review of Research in Education, AERA, Washington.

Fenstermacher, G., Philosophy of Research on Teaching: Three Aspects, in Wittrock, M.C. (ed.), 1986, Handbook of Research on Teaching (third edition), Macmillan Publishing Company, New York.

Fullan, M., 1993, Change Forces, The Falmer Press, London.

Fullan, M. & Stiegelbauer, S., 1991, The New Meaning of Educational Change, Cassell, London.

Gagné, E.D., 1985, The Cognitive Psychology of School Learning, Little, Brown & Co., Boston.

Grimmett, P.P. & Mackinnon, A.M., 1992, Craft Knowledge and the Education of Teachers, in Grant (ed.), Review of Research in Education, 18.

Grinder, M., 1989, Righting the Education Conveyor Belt, Metamorphous Press, Portland.

Hall, G. & Hord, S., 1987, Change in Schools, State University of New York Press, Albany.

Herrmann, N., 1989, The Creative Brain, Brain Books, North Carolina.

Joyce, B. & Showers, B., 1983, Power in Staff Development Through Research on Training, Association for Supervision and Curriculum Development, Washington D.C.

Leinhardt, G., 1990, Capturing Craft Knowledge in Teaching, Educational Researcher, vol. 19, no. 2, pp.18-25.

Marland, P.W., 1993a, A Review of the Literature on Implications of Teacher Thinking Research for Preservice Teacher Education, South Pacific Journal of Teacher Education, vol. 21, no. 1, pp 51-63.

Marland P., 1993b, Exploring Teachers' Professional Craft Knowledge: The Queensland Study, in Batten, M., Marland, P., Khamis, M., Knowing How to Teach Well, ACER Research, Monograph No. 44, Melbourne.

Moses, B., 1982, Visualization: A different approach to problem solving, School Science and Mathematics, 82, 144-7.

Novak, J.D. & Gowin, D.B., 1984, Learning How to Learn, Cambridge University Press, Cambridge.

Patton, M.Q., 1990, Qualitative Evaluative and Research Methods, Sage Publications.

Reing, A.B., 1978, Imaginal Behavioral Analysis: A Multisensory Imagery Scale for Evaluating a Specific Teacher Competency, The Journal of Special Education, vol. 12, no. 2, pp.153-170.

Shulman, L.S., 1987, Knowledge and Teaching: Foundations of the New Reform, Harvard Educational Review, vol. 57, no. 1, pp.1-22.

Tom, A.R. & Valli, 1990, Professional Knowledge for Teachers. In

Houston, W.R., Handbook of Research in Teacher Education, Macmillan Publishing Company, New York.

White, R. & Gunstone, R., Probing Understanding, The Falmer Press, London.