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Introduction

No matter where you reside in Australia, each state and territory's Department of Education has similar aims for its students, i.e. to reach understandings of themselves, to achieve academically, to be a contributing member of society, be independent and be responsible for their own behaviour. These statements reflect, to a greater or lesser extent, the current expectations of the broader community. However, because we live in an age where we are uncertain of what the future holds, there will always be debate about the best type of preparation for individuals to become productive members of society.

The economic and political face of the world continues to change rapidly. The implications of this for employment and leisure are difficult to predict. However, knowledge is expanding at a phenomenal rate and it appears likely that students now in infants schools will undertake two or three major changes in career direction during their working lifetime. This means we need to be looking beyond the development of specific content area knowledge with schools looking to the processes of learning as well as the content.

It is apparent then that autonomous learners will be better prepared for life in a society that is relatively unknown at this stage. Autonomous learning depends on the development of cognitive processes or thinking skills. There has been a considerable amount of research examining those processes (e.g. Sternberg, 1986; Biggs and Telfer, 1987; Borkowski, Carr, Rellinger & Pressley, 1990, Knight and Paterson, 1994) with many programs developed to enhance students' thinking skills (e.g. Marzano and Arredondo (*Tactics for Thinking*), Feurerstein (*Instrumental Enrichment*), Heiman (*Learning to Think*), The Odyssey Project, Mulcahy, Marfo, Peat and Andrews (*SPELT*) and Ashman and Conway (*Process Based Instruction*).

The application of this research on thinking skills to classrooms in Australia, however, is still at an early stage (Ashman and Conway, 1989; Knight and Paterson, 1996; Knight, 1997). Programs and approaches need to be identified which are not only effective but also able to be integrated easily into the activities of the regular classroom.

Section One

Introduction to Cognitive Education

The view of learning as a process is based on a constructivist view that learning is an active, constructive process which involves the learners in using and managing their own cognitive processes (Vygotsky, 1978; Harris & Pressley, 1991). Central to this view is the notion that rather than a teacher imparting knowledge, the student constructs it (Biggs and Telfer, 1987). Students are thus actively involved in attending to instruction and their own personal learning in a meaningful way.

A feature of the constructivist view of learning is the notion that cognitive functioning can be modified and enhanced by instruction. Cognitive approaches to education provide a framework to connect three main components of learning: a cognitive component- thinking; a metacognitive component- thinking about thinking; and an affective component- motivation.

It has always been a challenge for a classroom teacher to meet the needs of all students in the one class while teaching within the framework of a curriculum which appears to suggest that certain content has to be mastered at specified times in a student's life. How to develop mastery of content in classes while acknowledging the diversity within those classes is a primary dilemma for teachers. They are faced with the problem of attending to the process of learning within each individual in a way that does not sacrifice mastery of content.

Rather than focusing exclusively on content, the SPELT approach attempts to balance content with process and represents, therefore, an opportunity to develop self-directed learners in the context of regular classroom instruction. As this approach incorporates strategic and affective domains in the development of students as independent learners, the instructional process utilised is of major importance.

The dominant model of cognitive and metacognitive instruction approaches has been teacher imposed where the strategies have been designed by others and taught to students as recipes for dealing with a variety of problems (Mulcahy & Wiles, 1996). In contrast to this, the SPELT approach utilises a model of instruction that actively involves students in generalising strategy use for other situations and in generating, monitoring and evaluating their use of strategies in seeking solutions.

Principal Hallmarks of the SPELT Approach

- Raising students' awareness of their own cognitive processes.
- Guiding students towards control of their own cognitive activities.
- Leading of students towards discovery and deduction.
- Constantly challenging students to be critical, systematic, evaluative and strategic in their behaviour and attitude to learning, thinking and problem solving.

Major Goals of SPELT

For students:

- To become active learners, thinkers and problem solvers.
- To become more planful and strategically efficient in their approach to learning.
- To become independent learners.
- To be aware of, and to control, their own thinking processes (metacognition).

For teachers:

- To develop a working knowledge of the theoretical and applied underpinnings of a learning and thinking strategy program.
- To select and implement strategies that are appropriate for your particular class, and/or school.

Cognition and Metacognition

Metacognition is considered to have two critical aspects—knowledge and control of cognition. The SPELT approach is concerned with both knowledge and control of cognitive strategies.

Knowledge of Cognitive Strategies

Mulcahy *et al.* (1984:22) define an effective learning strategy as a 'set of processes or steps which facilitate the acquisition, storage and/or utilisation of information'. An individual needs to build a knowledge base of cognitive and metacognitive strategies in order to become a self directed learner. It is essential that students are taught the following types of information:

1. *Declarative knowledge of the strategy.* This includes the factual information about the strategy and its characteristics. For example, students must know that the strategy LEEP has four parts and know what each part of the strategy means.
2. *Procedural knowledge of the strategy.* It is important that learners know the steps involved in applying the strategy. For example, if using the RAP strategy (discussed later in phase one strategies) to improve comprehension, learners need to be aware that firstly they read, then ask a question and finally put it into their own words
3. *Conditional knowledge of when, where and why to apply a strategy.* This knowledge is most important but often neglected. This knowledge is important for generalising strategies to new situations.