

# REACT

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**REACT** (Review of Educational Research & Advances for Classroom Teachers) is a publication of the National Institute of Education, Nanyang Technological University, and aims to keep student and experienced teachers, senior school personnel, principals and educational administrators abreast of recent advances in research in education. It effectively presents reviews of two or more research studies related to a particular area of interest, and discusses significant implications for school and classroom practice. In the interest of communicating with a wide readership of practitioners in education, technical details of research and subject jargon are reduced to a minimum consistent with the integrity of the data. Further details of original research reports and studies are cited under *Sources* in each review.

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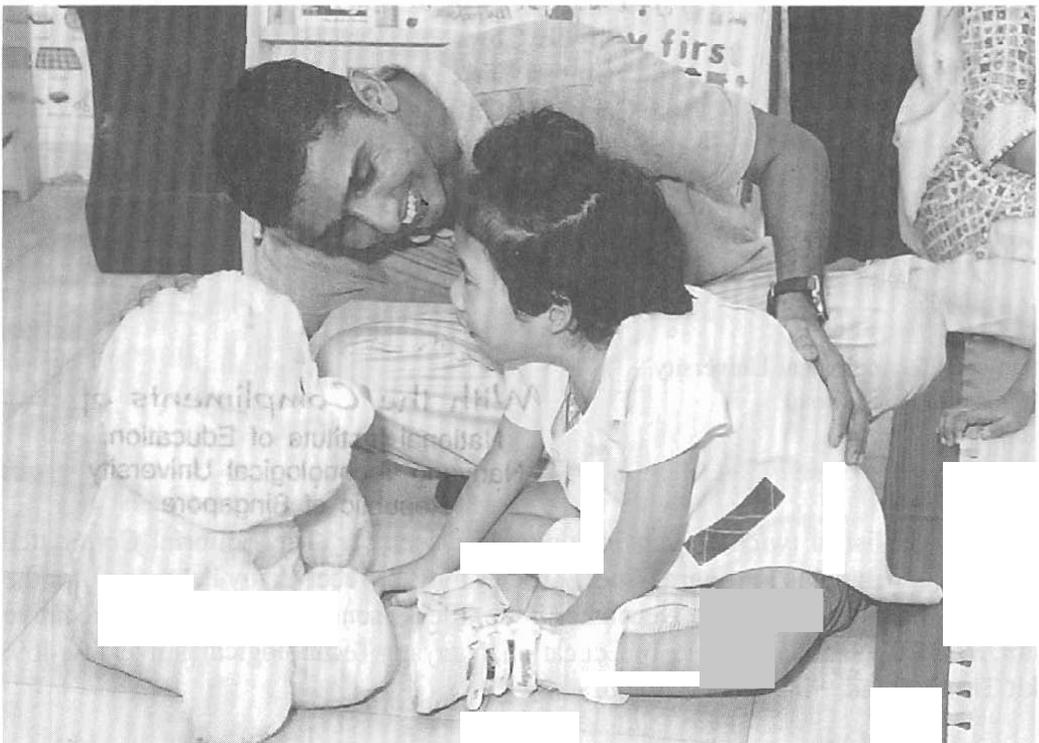
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## FOREWORD

This first issue of REACT for 1998 highlights the challenges facing adults who are responsible for teaching children and adolescents with special needs, at both ends of the learning continuum – those with disabilities and those who have immense talent and academic potential.

Educators worldwide have consistently sought to make adequate provision for all children and adolescents with appropriate educational experiences. Attempts to identify and assess those at-risk however, are relatively recent efforts, perhaps due to the increased numbers of at-risk learners or to educators accepting greater responsibility for pupils who need specialized services. Three of the nine articles included in this issue draw attention to the ways in which teachers can effectively cope with both younger and older pupils who are experiencing either cognitive or social-emotional problems in mainstream or segregated, specialised learning environments.

Society has come to recognise how crucial the early childhood years are for all preschool children, particularly for those who are at risk and are learning disabled. The first article reviews successful early intervention programmes for young children with disabilities, and discusses implications for teaching and learning.



*Photo courtesy of Rainbow Centre, Margaret Drive Special School*

The second article focuses on older pupils with disabilities from disadvantaged backgrounds or troubled homes who may be more at-risk in being alienated from school and society in general and fail to realise their potential as contributing members of society. It discusses the ways teachers, peers and family members can constructively prepare pupils for a more desirable future through the use of Person Centred Lifestyle Planning.

The third article concentrates on the social and emotional problems adolescents face in Singapore and how they, and their peers in other countries, learn to effectively cope with them. Programmes which have been developed to nurture psychosocial competence are discussed in the context of the demands made by the local education system.

The fourth article shifts the focus back to cognition and pupils at the other end of the learning continuum, and discusses the intellectual challenges being posed to children in the Gifted Education Programme in local schools and the ways in which this programme can be adapted for more advanced learners in mainstream education. This cognitive focus is still much in evidence in the fifth article which explores recent innovative research into how young children develop the ability to recognise themselves and others as thinking beings, and how this affects their social interactions in everyday activities.

Two further articles discuss higher order thinking skills development and the implications of research studies investigating how such skills can be nurtured in reading and science. The final two articles concentrate on the increasing attention being paid to cooperative learning in Singapore schools as a viable alternative to the more individualistic styles of teaching and learning, and to the increasing concern for safety in Physical Education lessons and the precautions which should be taken.

Linda Gan  
Executive Editor  
REACT

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# EARLY INTERVENTION PROGRAMMES FOR YOUNG CHILDREN WITH DISABILITIES

Review by Quah May Ling

## INTRODUCTION

In Singapore, special education programmes are generally provided outside the mainstream in special schools managed by Voluntary Welfare Organisations (VWOs). From 1990, these special schools were funded on a 50-50 basis by the Ministry of Education and the Community Chest of Singapore. The present feeling is that whenever appropriate and feasible, special education should be provided within the regular educational system. No child should be placed in a special school if he/she can be well educated in a regular school or preschool centre. Special education should be organised as a continuum ranging from total segregation to partial integration to total integration. Placement of a child with a disability at any point on this continuum should be dependent on his/her abilities and needs (Quah, 1993).

At present, there are 16 special schools in Singapore which cater to a wide range of learning difficulties. The special schools generally provide educational programmes for children with disabilities from age six to sixteen. However, a number of these schools also provide preschool programmes for younger children. In the case of the two special schools run by the Rainbow Centre (Margaret Drive Special School and Balestier Special School) and Asian Women's Welfare Association Special School, children for the early intervention programme (EIPIC) can be admitted soon after birth when the disability is diagnosed.

In a macrosurvey conducted by the Ministry of Community Development to ascertain the needs and problems faced by people with disabilities, 3,643 of the respondents (75%) reported that their disability was present by the age of five (1988).



William Oh

*Mother and child in the EIPIC Programme.*

## WHAT IS EARLY INTERVENTION?

According to Smith and Strain (1988), early intervention is discovering that a child between birth and school age has, or is at risk of having a handicapping condition or other special need that may affect his or her development and then providing services to the child and the family to lessen the effects on the children. Early intervention, can be remedial or preventive in nature – remediating existing developmental problems or preventing their occurrence. It may focus on the child alone or on the child with the family's involvement. These programmes can be centre-based, home-based, hospital-based, or in combination. Early intervention can benefit children with mild disabilities presently attending segregated special schools by allowing them to be integrated into mainstream schools as soon as possible.

## EFFICACY OF EARLY INTERVENTION PROGRAMMES

Research findings from two types of early intervention programmes were summarised by Bronfenbrenner (1974). These included (i) those conducted in group preschool settings outside the home, and (ii) those conducted in the home with regularly scheduled visits by a trained person who worked with the child or parents, or both. He concluded that all preschool programmes resulted in substantial gains in the children's IQ scores and other cognitive measures and these gains were maintained as long as the programme lasted but gains tended to 'wash out' when the programmes were terminated and there was no 'follow-

through' of services. The home-based programmes showed outcomes similar to preschool interventions. However, children in parent-child interventions (in contrast to group-centre-based programmes) showed gains that maintained longer some three-four years after the termination of the programme.

Research on the efficacy of early stimulation with 'at-risk' children (Gargiulo & Piao, 1995; Katims and Pierce, 1995; McWilliam, Young and Harville, 1996) showed that early intervention was successful in generating and maintaining high rates of developmental progress in these children. Bruder (1993) also reported that an intervention study involving 30 toddlers and preschoolers with disabilities showed significant gains for all the children.

This paper reviews two early intervention programmes. The first one is '**Stepping Stones**' a home-based early intervention from Australia and the second one, '**Project ASSIST**', which was set up to determine the feasibility of integrating children with mild disabilities into preschool centres in Singapore.

## STEPPING STONES

Campbell (1997) reported on an innovative project called 'Stepping Stones' which was established to support the transition of young children from their home-based early intervention programme to a neighbourhood preschool. The project began in early 1995 with five children

attending for two days a week from 9.30 am to 1.00pm. Staff consisted of an early childhood special education teacher who was well-known to the children and parents through her work in the early intervention programme, and two assistants. The programme was located on the same site as a mainstream preschool and the preschool staff were involved with the aim of gradually including the "Stepping Stones" children in the different aspects of the preschool programme.

### **Sample**

The first group of children in the programme were aged three to five. They had little or no speech or sign, one was not walking, and none were independent with toileting. These were children who made great progress through their early intervention programmes, but families and early intervention staff considered that they would gain from the small group, close adult attention and carefully paced introduction to the on-site preschool, which are the unique features of "Stepping Stones".

### **Programme**

The day's programme was designed to meet the children's individual needs within a play-based, developmentally appropriate curriculum. It was important for the families and children that the materials and equipment were typical of those in many preschool settings as this in itself drew attention to continuities within transition processes. The staff-child ratio of three to five ensured individual attention. However, teaching strategies were directed towards fostering the children's ability to explore

and utilise materials independently where possible and to participate in activities that promoted social interaction. All the children spent some part of the morning participating in the on-site preschool programme. Depending on individual needs, this might be in the free activity time, a small group time, or a routine such as morning snack. A member of the Stepping Stones staff accompanied the child at this time, but allowed maximum independence. Weekly meetings between the preschool director and the Stepping Stones teacher ensured consistent expectations and shared goals for the children.

### **Evaluation**

An evaluation of the project was conducted through two interviews with the children's mothers. The first interview was carried out in the second week and the second one was conducted six weeks later. At both interviews, parents considered that they had been well-informed and had easy access to staff for any information. Although at the first interview there was some concern about teaching roles, these were no longer dominant during the second interview. Staff concerns were initially to do with organisations, in-service for new staff and extra demands placed on staff. Six weeks later, when staff became more familiar with the children and routines, these were no longer problems. All parents commented on how much the children enjoyed the programme and had gained from it. Examples of the children's progress that they cited included increased use of speech and sign in all contexts, being able to participate in a group, and being able to interact with other children in the preschool programme as well as within the small Stepping Stones group.

## PROJECT ASSIST

Project ASSIST was set up primarily to look into the feasibility of integrating children with mild disabilities into mainstream preschool centres (Quah, 1997). Although a small number of special schools offer preschool programmes, mainstream preschool centres provide a more stimulating environment and quality preschool education programmes which can further the social, intellectual, and emotional development of children with disabilities.

### Sample

Project ASSIST involved 40 infants with disabilities aged between two and five years (Quah, 1997). These children were identified using the criteria of age (from 2 to 5 years) and 'disability (mild disabilities and close to average intelligence). The majority of these children were diagnosed with cerebral palsy and two children had Down Syndrome. As the project was centre-based and family-centred, the sample included the parents, principals and teachers of these children. It was important that the children selected could benefit from an early intervention programme as the main objective was to later integrate them into the mainstream primary schools from age six. The selected children were enrolled in the mainstream preschool centres at various locations as close to their homes as possible. These included private kindergartens or child care centres (39.6%), preschool centres operated by the VWOs (35.4%), preschool centres run by the PAP Community Foundation (PCF) (14.6%), and the National Trades Union Congress (NTUC) (10.4%).

## Instrumentation

The cognitive, social and motor skills attained by the children were assessed through ratings on their Individual Education Plans (IEPs). Progress of these skills was monitored periodically by the programme director on a 3-point scale (1=no change, 2=progress, 3=skill achieved). Parents and school teachers were involved in the setting of goals, short-term objectives, and ratings of the specified skills in their IEPs. The children were rated on their achievement of the skills specified in their IEPs which were developed for each child to meet his/her individual needs.

The British Ability Scales (BAS) (Elliot, Murray and Pearson, 1983) was used to assess the cognitive development of the children. Two questionnaires were developed. One questionnaire was used to assess the children's social interactions based on parents' ratings on the extent of communication between them and their peers. The second one on peer acceptance was measured by feedback from parents and teachers.

### Objectives

It was expected that after nine months in the project,

- (1) all the children would achieve 50% of the skills specified in the IEPs,
- (2) 80% of the children would achieve higher scores in the psychometric tests, and
- (3) all the children would reach a successful interaction level as demonstrated by their ability to interact with their able-bodied peers in the preschool centres.

## **Programme**

The children followed the regular preschool programmes conducted by the respective centres accompanied by a parent or caregiver five days a week. A special educator and occupational therapist visited the centres to provide consultation and teaching sessions to the teachers involved in teaching the children. They provided suggestions on specific intervention activities based on the children's IEPs and acted as advocates for the children. Support to parents was provided through home visits to assess social history, financial situation, fine and gross motor functioning, language and social abilities. The special educator and occupational therapist held conferencing sessions with teachers on social adjustment, task modification and physical needs. In addition, they also accompanied parents to hospitals for clinical appointments with other therapists and rehabilitative personnel to explain diagnosis and obtain appropriate documentation for subsidies, assessed and provided adaptive equipment for children's needs, and developed IEPs in consultation with parents, other professionals and teachers.

## **Evaluation**

An evaluation was conducted nine months after the implementation of the project. The same instruments were used for both the pre- and posttests. The first objective was only partially achieved as only 77.2% of the children managed to achieve 50% of the skills specified in their IEPs. One reason for the apparent "underachievement" could be attributed to the fact that the focus of the project during the previous months was

on placement of the children, and their immediate needs were addressed, as required without formal recording. Another reason was that although a high proportion of the children (36.4%) was in need of therapy as part of the intervention, they were not attending it for various reasons.

With regard to the second objective, the children's pre- and post IQ scores based on their performance in the BAS were examined using a paired t-test. The t-test revealed that there were no significant differences between the means in the pre- and posttest scores ( $t=0.77$ ,  $p=0.1$ ). The inconclusive results were due to a number of factors. The parents reported that the change of tester during the posttest was the main contributing factor. However, the researchers pointed out that the lack of intellectual and achievement results are real effects as the trajectory of cognitive development might be more difficult to accelerate even though social skills, self-esteem and parental satisfaction may be increased significantly.

Based on parents' feedback regarding the third objective, the children seemed to have achieved satisfactory communication skills to interact with their non-disabled peers. Peer acceptance was monitored through feedback from parents and teachers who reported very positive peer acceptance scores, even better than those projected in the objective.

## **CONCLUSION**

In the studies reviewed, the researchers found that early intervention was critical

in enhancing the development of children with disabilities both socially and academically. The children's increased developmental and educational gains and decreased dependence upon social institutions, as well as the family's increased ability to cope with the children's presence and perhaps their increased ability for employment,

provided economic as well as social benefits. Early education and training could also minimise possibilities that a child would develop secondary disabilities and could increase the chances that developmental skills would be acquired when they otherwise might be delayed or simply not learned.

## IMPLICATIONS

***1. Young children with mild disabilities benefit from early intervention programmes conducted in mainstream preschool centres.***

Most children with mild disabilities requiring early intervention in the early years should be taught in mainstream or inclusive preschool centres as these centres provide better quality early childhood education programmes. The early childhood model is more appropriate for young children with disabilities as it provides more opportunities for play and a teaching style that is more responsive and child-oriented and minimally directive and **instructionally oriented**.

***2. Children with disabilities make good progress from attendance at mainstream early childhood education programmes if these are supplemented by recommended therapy.***

Even though children with disabilities appear to make good progress in the preschool education programme, they would need to continue to receive therapy specified in the objectives of the IEPs. The therapy is an essential component of the intervention and plays an important part in the overall progress of the children.

***3. Both children with disabilities and their non-disabled peers benefit from being taught in the same environment.***

Children with disabilities learn to interact with non-disabled peers by being in the same environment. Being accepted by the rest of the class and the teacher helps to boost their self-esteem and sense of self-worth. Non-disabled peers learn that children with disabilities are not very different from themselves and have many similar needs. This understanding and acceptance will help towards the integration of the disabled into society later.

**4. Schoolpersonnel in mainstream preschool centres can provide a positive model in accepting children with disabilities into the mainstream.**

Principals and teachers should set a good example by accepting children with disabilities into their preschool centres and demonstrate their acceptance of these children in their every day routines. In this way, they can provide a positive role for changing the attitudes of the peer group – hence the importance of teacher education.

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# PERSON-CENTRED PLANNING FOR PUPILS AT-RISK

Review by Levan Lim

## INTRODUCTION

Certain pupils may experience great difficulties in adjusting to school experiences, such as coping with the pressure to perform better, being able to make friends or integrating with peers. Pupils with disabilities, from disadvantaged backgrounds or troubled homes, may be more at risk to these difficulties. If neglected, these pupils might eventually "fall by the wayside", feel alienated and not realise their potential in contributing to society. Short-term classroom-based interventions without the support of parents and other significant others may not be sufficient for these pupils. Rather, a holistic and individualised approach to viewing the pupil's concerns within the context of the pupil's overall quality of life and involving necessary supports through constructive action planning might be necessary to enhance the pupil's chances for success, happiness and a desirable future in life.



Sam Cheah

A holistic and individualised approach that teachers can use to plan a more desirable life for identified pupils is **Person-Centred Lifestyle Planning**. This approach essentially asks:

*"How can we identify constructive actions that will improve the quality of life experiences for a particular individual?"*

(O'Brien, 1987, p. 178).

To answer this question, planning needs to occur through three activities:

- (a) describe a desirable future for the individual,
- (b) specify a schedule of activities and supports necessary to move toward that desired outcome, and
- (c) use available resources to implement the schedule of activities and supports delineated (Vandercook, York, & Forest, 1989). The basic premise of this approach is that in order to achieve quality lifestyles and desirable futures for an individual: family: friends, community members, teachers and other service providers need to collaborate to build a community of people or a circle of support who will care for this individual in constructive ways. This paper reviews the research on person-centred lifestyle planning and discusses implications for teachers.

## PERSON-CENTRED LIFESTYLE PLANNING MODELS

Person-centred lifestyle planning models originate from the field of special education

where such models are used for planning and implementing the inclusion of persons with disabilities within communities and improving their quality of life. This type of planning model is relatively new and is in contrast to more traditional models of planning which are system-centred and contain standardised "blueprint" responses to addressing concerns. Discontent with these traditional models fueled the support for planning models which emphasise a *person-centred* approach (Condeluci, 1991; Schwartz, 1992). Person-centred planning models that have been used in facilitating quality lifestyles and desirable futures for persons with disabilities include Lifestyle Planning (O'Brien and Lyle, 1987), Personal Futures Planning (Mount, 1987), McGill Action Planning System (Vandercook, York, and Forest, 1989), and Lifestyle Development Process (Malette, Miranda, Jones, Bunz, and Rogow, 1992). These models emphasise the importance of five areas which are indices of a desirable life.

Community presence

- Choice
- Competence
- Community respect
- Community participation

These areas translated in a school context could mean that the pupil is:

- (a) physically present in different spheres of the school community's life (e.g., involvement in a few clubs);
- (b) provided choices in daily school activities (e.g., being able to choose which peers to sit or play with);
- (c) learning the skills to participate competently in school activities;
- (d) taking on valued roles within the school community;

Meanwhile the school community supports the involvement of the individual in activities. In the planning process, the present quality of life is described by people who know the individual well in these areas.

## REVIEW OF THE RESEARCH

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The research literature on the effectiveness of person-centred planning models has so far been limited to individuals with disabilities, though their applicability can extend to individuals with other needs. The empirical research though has been scarce. Only a few studies have examined the efficacy of these planning models.

Mount (1987) compared the outcomes achieved for individuals with disabilities, transitioning from high school to adult life through the Personal Futures Planning Model with those achieved for control individuals through a traditional planning process. These planning processes were compared using the following: independent ratings of the format and content of documents used, the way people and problems were described, changes that occurred since the planning events and interviews with participants. The results showed that there were clear differences in the content of the two types of plans. The results also showed that the one-year follow-up surveys revealed that the individuals' lives did not change as a result of the **traditional** planning process while the Personal Futures Planning process produced many positive changes for both the individuals concerned and the staff involved. These changes included obtaining more desirable job placements in the community and receiving more

support to do preferred activities. Personal Futures Planning facilitated rich visions for the staff as opposed to the traditional model

In another study, Malette et al. (1992) examined the efficacy of the **Lifestyle Development Process** for individuals with disabilities. Empirically validated instruments were used to evaluate lifestyle changes. One instrument was designed to measure the quantity of leisure and personal management activities performed monthly, e.g., the number of times the individuals went out to do "fun" activities such as howling, swimming and shopping. Another instrument collected information about the persons who are socially important in the life of the focal person and the types and frequencies of activities in which persons in the social network typically engaged with the individual. The results showed that all the individuals were found to engage in a greater number of preferred, integrated activities during the mid- and posttests than at baseline. A third study, Miner and Bates (1997), evaluated the impact of person centred planning activities (examples of activities are listed in the next section) on special education pupils and their families. These activities had a significant effect on parent participation in meeting with service providers. In addition, families who experienced the lifestyle planning reported high levels of satisfaction with the process. For example, one parent commented that the person-centred planning experience helped her realise just how important it was to plan long range goals. Other than these studies, there has been some anecdotal documentation of changes as a result of using such planning (e.g., Vandercook et al., 1989).

## CONCLUSION

Schools are responsible for teaching and enabling individuals to become contributing members of society. Through school experiences, individuals not only receive a formal education but also learn to relate with others, develop friendships and form an identity of self. Schools can be seen as "communities of practice" where individuals participate in and are socialised through activities to learn to live with others in society. This perspective of schooling means that besides teaching subject content, teachers also have the responsibility of encouraging social interaction and facilitating a sense of belonging and community on the part of their pupils. This responsibility can be more challenging when there are pupils who have learning or behavioural concerns in adapting to school life.

Person-centred lifestyle planning is an alternative way of informing and developing individualised school and post-school curriculum. It has so far been used successfully for crafting more desirable lifestyles and futures for individuals with special needs. Many of its principles and strategies can be applied to pupils in mainstream schools whose needs demand greater home, school and community involvement. Person-centred planning provides the context and mechanism for such involvement to occur. By involving significant and familiar people in the person's life, this model of lifestyle planning promotes an interactive and individualised process rather than a blueprint response to addressing pupils' needs. With adequate support, care and constructive action from teachers, peers and parents, engaged through the person-centred planning process, pupils' preparation for life can be enhanced.

## IMPLICATIONS FOR PRACTICE

Teachers can gain an understanding of the person-centred lifestyle planning process through the following activities suggested by Falvey, Forest, Pearpoint, and Rosenberg (1994) and Vandercook et al. (1989). These activities are posed as questions that can be used by a facilitator to guide the process of the person-centred group meetings where the individual concerned, family members, friends and significant others are present.

### **1. *What is the individual's history?***

Since family members and significant others are the most important members of the circle of support, involve them to tell their stories related to the history of the individual. Ask them to talk about some of the milestones in the person's life. The facilitator can check the emerging picture of the individual with the individual himself or herself and with other members of the group.

### **2. *What are your dreams?***

This question is for the person and his or her circle of support to think about a desired vision for the person's future. The vision should not be solely based on present realities. The point is that if people share in a vision, dreams can become reality. This question forces the group to think about the direction in which the individual is heading and to come up with some goals to strive toward.

### **3. *What are your nightmares?***

Nightmares represent the situations that the individual and his or her circle of support must keep away from. To strive towards a better future for the individual, nightmares are as important as dreams to consider. By describing nightmares with others who care, people are allowed the dignity of voicing their fears in a supportive atmosphere.

### **4. *Who is the individual?***

Everyone in the group gets the opportunity to describe the individual. There are no right or wrong words. After a list of words have been collected from the participants, the facilitator asks the individual to choose three favourite words that he or she thinks describe her well.

### **5. *What are the individual's strengths, gifts, abilities and talents?***

The list developed by the participants describing the individual is then reviewed by the facilitator for the purpose of identifying the individual's strengths and unique gifts. In addition, the participants are requested to think about what the person can do, what he or she likes to do and what he or she does well.

**6. What are the individual's needs?**

This question is meant for the participants to think about the individual's needs from different perspectives and what it would take to make the dream(s) come true.

**7. What would the individual's ideal day look like and what must be done to make it happen?**

To achieve the dream in terms of an ideal day for the individual, the group starts to come up with ways for meeting the needs identified in the previous question. Plans of actions are drawn up at this stage for implementation.

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# HOW ADOLESCENTS COPE WITH THEIR CONCERNS: A REVIEW AND STUDY OF SINGAPOREAN STUDENTS

Review by Vilma D'Rozario and Michael Goh

## INTRODUCTION

The Prime Minister of Singapore, Mr Goh Chok Tong, recently outlined in his vision of "desired outcomes of education" (Sunday Times, 18 January 1998), characteristics of a more all-rounded and balanced student, and hence, citizen. The Ministry of Education's Pastoral Care and Career Guidance (PCCG) branch also recently launched an integrated model for whole-school care called: Affective and Career Education – the "ACE Model" (1997). The mission of this approach is to "equip schools to develop well-balanced individuals who are able to face challenges, manage changes, work productively, live compassionately and contribute usefully to society".

While ACE focuses on the overall environment of the school and the comprehensive development of students within that caring and orderly school environment, little is known about how students cope with their concerns and worries. To understand how adolescents think, feel and behave; we need to obtain information regarding their concerns and worries, and to learn the ways in which they cope with their problems. This information can form the basis for understanding both individual and group behaviour.

PCCG, as it is currently practised in schools, and ACE are excellent proactive and preventive resources that allow our students to pre-empt difficulties usually

faced in the adolescent years. Notwithstanding our gallant efforts, students will still encounter many difficulties peculiar to 'growing up'. The authors of this article therefore believe that understanding how adolescents cope, both effectively and ineffectively, will place us in good stead to better develop and deliver programmes aimed at facilitating psychosocial competence in our young people.

This article presents a brief review of adolescent coping, a short study to demonstrate the context of adolescent coping in Singapore, and suggests implications for teachers and school practice.

## REVIEW OF RESEARCH

According to Lazarus and Launier (1978) coping consists of efforts to master, tolerate, reduce and minimize internal demands and environmental demands and conflicts.

In a study with 673 Australian adolescents, using the **Adolescent Coping Scale** they developed, Frydenberg and Lewis (1993) found that the coping strategies used most frequently by students were: *seeking relaxing diversions*, *working hard and achieving*, *focusing on solving the problem* and *using physical recreation*. The least used strategies were *not coping* and *seeking professional help*. Gender differences were noted: males reported using more physical

recreation to cope than did females, and females used more strategies involving social support. wishful thinking and tension-reduction strategies. The authors also found interesting ethnic differences in coping. Anglo-Australians tended to use more tension-reduction strategies (like drinking) to cope with stress and were less likely to respond to their concerns with diligent hard work. In contrast, the Southeast Asian-Australians were more likely to cope by working hard to achieve, organising social action to meet their needs, and by seeking professional help. The authors suggest that this latter response may be related to the refugee status of Southeast Asian-Australians and thus heightened ethnic group identity and political awareness.

Tan and Kikuchi (1998) used **The Ways of Coping Checklist** developed by Lazarus and Folkman (1984) to study the perceived coping styles of Japanese college students to potential stressful situations. The study showed that:

1. Japanese students tended to select constructive strategies of coping;
2. male and female students tended to cope in different ways:

3. male students tended to prefer searching their past experiences to discover paths to successful problem-solving, seeking compromise to solve problems, and keeping problems to themselves;
4. female students tended to adopt a more 'interdependent approach' to coping, using strategies to harness social support from friends and relatives. They also tended to prefer seeking substitute activities to relieve distressful situations, like going for a vacation, engaging in physical exercise. and praying, as well as leaving the situation open, to see what may subsequently unfold.

In an earlier study using a modified version of this checklist and spontaneous responses

of how they coped with their main concerns, Frydenberg and Lewis (1991) found clear differences between the ways in which Australian adolescent boys and girls coped. Like the Japanese female students in the study by Tan and Kikuchi (1998), Australian adolescent girls in this study were more prone to seek social support, focus on relationships, and employ more strategies related to wishful thinking and hoping for the best.



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In a cross-cultural study on adolescent coping behaviour in Germany and Israel, Seiffge-Krenke and Shulman (1990) found that three major coping styles were used: two functional coping styles, namely, *active coping* and *internal coping*, and one dysfunctional coping style, *withdrawal*. The authors found that both German and Israeli adolescents tended to employ the two functional modes of coping, usually in combination, whereas withdrawal was applied to a lesser extent. The authors were heartened to conclude that the demands of adolescence in both country groups were met by positive coping styles. In both cross-cultural samples, a difference in the ways boys and girls coped was noted. *Support seeking* was more frequently used by girls than boys in both cultures. The authors noted with interest, though, that German students placed greater importance on active coping, while the Israeli adolescents used more internal coping strategies.

In our study, we set out to determine the extent to which coping strategies were utilized by a sample of Singaporean adolescents to cope with their concerns in general, and in what ways gender and academic stream affect adolescent coping behaviour.

## METHOD

Our sample comprised 467 secondary students from three government schools in Singapore. Approximately similar numbers of students participated from each of the three schools. The gender ratio was also comparable across the three schools: 222 female students and 245 male students. All students were from Secondary Three. Students came from both the Express and

the Normal stream with 221 students from the Express stream and 246 students from the Normal stream. Students from each of the major ethnic groups were represented in the sample: Chinese ( $n = 370$ ), Indians ( $n = 3$ ), Malays ( $n = 81$ ), Eurasians and other ethnic groups ( $n = 8$ ). The ethnic composition of the sample did not approximate the national ethnic composition, as the classes used for the study were low in the numbers of Indian students represented.

Adolescent coping strategies were measured by The Adolescent Coping Scale (ACS: Frydenberg and Lewis, 1993a) which is a self-report inventory that identifies eighteen distinct coping behaviours. The authors of the scale define coping as the adaptive processes that individuals utilize to deal with diverse problems, situations, and contexts.

The students answered the 'General Form' of the ACS which addresses how an individual copes with concerns in general. They were asked to read through a list of 79 statements describing ways in which young people deal with their concerns or worries. The 79 statements were rated using a 5-point scale where 1 = doesn't apply or don't use it; 2 = used very little; 3 = used sometimes; 4 = used often; 5 = used a great deal. The respondents were also given the opportunity to write in their free responses at the end of the list of given coping strategies. The eighteen coping strategies are described in Table 1.

With the help of the principals of each of three schools, Express and Normal students were randomly selected to participate in the study. The researchers administered the ACS (General Form) at the participating schools. Students took about 30 - 40 minutes to complete the survey.



*To work or relax?*

## **FINDINGS AND DISCUSSION**

Like adolescents in the studies conducted by Frydenberg and Lewis (1993b), Seiffge-Krenke and Shulman (1990), and Tan and Kikuchi (1998), adolescents in this study also tended to choose positive coping strategies when faced with problems. They tended to use strategies like:

1. seeking relaxing diversions;
2. working hard and achieving;
3. using problem-focused strategies to tackle problems systematically; focusing on the positive; using physical recreation;
4. seeking ways of coping which did not contradict others' thinking or

relationships; and seeking social support.

Many students also indicated that they worried about their current problems and about the future. Coping strategies which were less used were seeking professional help, releasing tension by crying, screaming, using alcohol, cigarettes, and drugs, as well as getting involved in social action activities in order to solve a collective problem

The findings tended to show that boys may be using more positive coping strategies than girls. Boys chose strategies like investing in close friends, exercise and physical recreation. focusing on solving the

problem, working hard and achieving, seeking professional help, and social action. Girls, on the other hand, expressed that they were 'not coping'. This finding is consistent with findings among girls in other parts of the world, too (Frydenberg and Lewis, 1991, 1993b; Seiffge-Krenke and Shulman, 1990; and Tan and Kikuchi, 1998). A possible reason why girls seemed to be using less of the more positive coping strategies and tend to use more passive coping strategies as opposed to the more active strategies used by the boys may be due to a perceived lack of self-efficacy. There is also the question of whether boys were responding to the items in a more socially desirable 'manner than girls. As in the studies conducted in Australia, Germany, Israel, and Japan mentioned previously, adolescent girls in this study used social support networks more than adolescent boys.

The findings also indicated that students from the Normal stream tended to choose more healthy coping strategies than their counterparts in the Express stream. Normal students tended to invest more in close relationships and would choose to seek professional help more than Express students. On the other hand, Express students tended to prefer keeping their problem to themselves. They also indicated that they tended to blame themselves for having problems. Perhaps this could be explained by the observation that Express students tend to often 'be hard' on themselves.



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## CONCLUSION

Being in close contact with students, teachers play a critical role in identifying adolescents who may not be coping. Early detection allows for follow-up and the necessary guidance. Together with or apart from the ACE curriculum, schools and teachers may also set up other support systems to ensure that our adolescents do not cope alone. Such programmes have taken the form of buddy systems, peer support groups, annual camps by level as well as orientation camps targeted at specific populations for the main purpose of easing the stress of adjustment and transitioning.

More important than a record that such programmes exist, adolescents must recognise these programmes, teachers, and other helping professionals as acceptable, appropriate, and viable options to seek out when in need of help. As with the ideals of PCCG, ACE believes that every teacher is a potential caregiver and is in a vital position to help students. The onus, therefore, is not simply on students to come for help, but for teachers, programmes, parents, etc. to reach out to them, establish a rapport and trust with them, so that together, we can all cope better.

## IMPLICATIONS

Based on the research reviewed and the findings of the local study, the authors suggest that teachers may wish to consider the following to create a positive and supportive environment:

- 1. Provide ample opportunities for physical recreation and relaxing diversions during the school curriculum.***
- 2. Encourage the building of good relationships in the classroom,*** thus ensuring a supportive network of peers to help students cope with their academic and social life.
- 3. Never assume that all academically able students are also equally able to cope with stress.*** Spend time getting to know your students personally so that you are aware of how they may be coping with school and with life in general. Do not underestimate your academically weaker students and their psychosocial competencies.
- 4. Provide for the deliberate, comprehensive, and consistent delivery of Lifeskills For Effective Living (1997),*** a programme for the development of psychosocial competence. This programme, developed by the Pastoral Care and Career Guidance Branch of the MOE, is published as resource packages for primary and secondary schools, junior colleges and centralised institutes. We emphasise *deliberate* because we believe that the goals that Lifeskills activities hope to achieve are skills that all our children should develop, if not through the family, then definitely through schools. We emphasise *comprehensive* because we believe that ***all*** the competencies outlined in this programme – namely for personal and interpersonal effectiveness, for effective and transitional learning, and for fostering a caring community – are necessary and essential. We emphasise *consistent* because we believe that such skills should be developed from as young an age as possible, in this case the primary schools, and encouraged and sharpened throughout the years. Consistency not only primes the effect of prevention but also suggests that such skills are relevant across age groups: scholastic abilities, school cultures, and for life.

Table 1: Description of Coping Strategies as Measured by the ACS (Frydenberg & Lewis, 1993a)

Scale	Description	Example of item
Seek to Belong	Indicates a caring and concern for one's relationships with others in general and more specifically, with what others think	Improve my relationship with others
Focus on the Positive	Positive outlook on current situation	Look on the bright side of things and think of all that is good
Invest in Close Friends	Engage in a particular intimate relationship	Spend more time with boy/girl friend
Ignore the Problem	Consciously block out problem	I ignore the problem
Keep to Self	Withdraw from others and keep others from knowing problem	Keep my feelings to myself
Not Coping	Inability to deal with problem and development of psychosomatic symptoms	I have no way of dealing with the situation
Physical Recreation	Play sport and keep fit	Keep fit and healthy
Seek Professional Help	Use a professional adviser, like teacher or counsellor	Discuss the problem with qualified people
Seek Relaxing Diversions	General relaxation, leisure activities	Find ways to relax, for example, listen to music, read a book, play a musical instrument, watch television
Self-Blame	See themselves as responsible for the concern	Accept that I am responsible for the problem
Social Action	Letting others know what is of concern and enlisting support by writing petitions or organizing an activity like a meeting or rally	Join with people who have the same concern
Seek Social Support	Inclined to share the problem with others and enlist support	Talk to other people to help me sort it out
Focus on Solving the Problem	Problem-focused strategy which tackles the problem systematically	Work at solving the problem to the best of my ability
Seek Spiritual Support	Belief in the assistance of a spiritual leader or God	Pray for help and guidance so that everything will be all right
Tension Reduction	Make oneself feel better by releasing tension	Make myself feel better by taking alcohol, cigarettes, or drugs
Wishful Thinking	Hope and anticipation of a positive outcome	Hope for the best
Work Hard and Achieve	Commitment, ambition and industry	Work hard
Worry	Concern about the future	Worry about what is happening

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# ADAPTING GIFTED EDUCATION FOR ADVANCED LEARNERS IN MAINSTREAM CLASSROOMS

Review by Chua-Tee Teo

## INTRODUCTION

Currently, the Gifted Education Programme (GEP) in Singapore only caters for about 0.7% to 1.0% of the intellectually advanced pupils in each age cohort. In the United States, gifted programmes are designed to enroll 2% to 5% of each age cohort. It is clearly evident that there exist many advanced learners in the mainstream classrooms in Singapore, not forgetting those few pupils who choose not to be in the GEP after being offered a place. Teachers in the mainstream need to look out for these advanced learners and make provisions to challenge their active minds before they become bored and dismptive.

While it may be true that good instructional strategies for the gifted may not be suitable for all learners, there is really no harm in adapting instruction and curriculum for the gifted to suit the needs of the more advanced learners in our classrooms. The aim of education is to realize potential. Collaborative efforts of general educators with gifted educators would serve to enhance the educational process and thus benefit more pupils. This article reviews recent research on curriculum differentiation, mainly in the GEP in Singapore, before examining the implications for adaptation of instruction for advanced learners in classrooms of the mainstream.

## REVIEW OF RESEARCH

In the last three decades, the field of gifted

education has been grounded in teaching and learning principles proposed by cognitive psychologists. These include the provision of opportunities for the gifted learner to function at higher levels of thought; to learn basic skills in context; to experience student-centred learning; to make connections across disciplines; to solve real problems; to function like the professional in a given field; and to deal with ambiguities and fuzzy problems (Tomlinson, 1996). Many gifted educators, including Clark (1997), Montgomery (1996) and Vantassel-Baska (1993), have consistently maintained that these principles govern basic good teaching and learning.

In Singapore, the selection of pupils for the GEP takes place at Primary 3 and Primary 6 through screening and selection tests administered by officers at the Gifted Education Branch of the Ministry of Education. The curriculum for intellectually gifted pupils—designed by curriculum specialists and teachers in the GEP, is differentiated and enriched with respect to content, process, product and environment (Gifted Education Branch, 1998: Quek, 1997a). In addition, formal enrolment of pupils in research projects and mentorship programmes with scientists at tertiary institutions and renowned creative writers has enabled pupils to be challenged intellectually (Goh and Goh, 1996). Affective education in the GEP is comprised of an affective curriculum and counselling (Gifted Education Branch, 1998). Gifted pupils attend classes in moral education, national education, pastoral care

and are involved in community service projects. Moral, ethical, social and emotional issues have also been integrated into the various disciplines in the differentiated curriculum (Quek, 1997b).

Cumculum differentiation begins with the fundamentals in the regular or mainstream cumculum being taught to gifted pupils in depth and breadth (Gifted Education Unit, 1994). By including more abstract and complex concepts at higher levels of Bloom's taxonomy (1956), gifted pupils learn the basics in the syllabus in depth in a shorter time but in a more meaningful manner, commensurate with their mental ability (Rasanayagam and Tan, 1997). Ancillary topics and issues not required by the regular syllabus are then expounded to add breadth to the curriculum (Quek, 1997a). GEP pupils are usually guided to explore, derive or verify central concepts related to a given domain of subject matter rather than to regurgitate isolated and disjointed facts.

The teaching process in the GEP is differentiated with the teacher serving as a facilitator of learning rather than a dispenser of knowledge (Quek, 1997b). High-level critical and creative thinking have been characteristics of the learning process for GEP pupils (Teo, et al., 1997). A variety of instructional approaches as well as appropriateness of strategies have been witnessed in GEP classrooms (Teo, et al., 1997). The asking of thought-provoking and open-ended questions by teachers and peers is a common scenario. In fact, the more experienced teachers have been able to teach their pupils questioning techniques and metacognitive skills. The inquiry approach, a common phenomenon in the

GEP, is meant to encourage pupils to form hypotheses, make informed guesses and hence develop their inductive reasoning ability (Quek, 1997a). Group work and individualisation are often used to develop a spirit of cooperation as well as independent or self-directed learning. Games, field trips, simulations, investigations and experiential learning are used to generate enthusiasm among pupils.

As for product modifications, GEP pupils have been trained in research skills for project work both in school and with tertiary institutions (Gifted Education Branch, 1998). They are capable of identifying problems, addressing the problems with a repertoire of skills and methodologies, producing innovative and creative work, establishing challenging standards of success, and defending their work before knowledgeable and interested audiences. Just as provisions have been made to cater for varying abilities and learning styles in individualised instruction, a gradation of assignments with different difficulty levels, or different media of representation, is acceptable in the GEP.

The GEP learning environment is student-centred, active and responsive to learner interests and needs. The open and non-judgmental atmosphere is tolerant of divergence in opinions and ideas, and is accepting of many questions and proposed solutions. Risk-taking and problem-finding are rewarded while conformity is avoided (Quek, 1997a). Lessons are not confined to classrooms only. They can be conducted outdoors, in the school yard, in the library or, even at an external local or overseas organization—where learning is extended beyond the classroom into problems of the real world outside.

## CONCLUSION

It must be noted, at this juncture, that neither intellectually gifted nor advanced learners are a heterogeneous group. There is no one-size-fits-all formula to satisfy their full range of needs. Teachers, therefore, need to modify and update

instructions for these pupils constantly. While there are essential commonalities between good instruction in general and good instruction for highly able learners, the difference is apparently in the existence of higher-order thought processes, both qualitatively and quantitatively.

## IMPLICATIONS

While effective teaching strategies for intellectually gifted pupils in the GEP may not be identical to those for learners in the mainstream, it is believed that what worked for the gifted pupils may serve as a guide for curriculum differentiation for the more advanced learners in classrooms of the mainstream. An examination of theories on individual differences and multiple intelligences (Hafenstein and Tucker, 1995; Kanevsky, 1995; Hong and Milgram, 1996; Taylor, 1978; Gardner, 1983) reveals that the difference in potential between individual pupils is both in degree and in kind.

This difference in capacity and capability of one pupil from another is clearly evident in the classroom. For example, one pupil may be very good at mathematics and weak in the English language while another may be mediocre in mathematics but excel in English language. It takes a prudent teacher to adapt and modify existing curriculum and known strategies to suit the needs of each pupil. In fact, the key to adapting gifted education for the more advanced learners in classrooms of the mainstream lies in the knowledge of the developmental needs of the learner and the reflective and adaptive capability of a wise teacher.

In view of the research in gifted education cited above, classroom teachers teaching the top 20% of each age cohort in the mainstream may wish to consider the following suggestions when planning their teaching strategies.

***1. Focus on key concepts, principles and skills of the subject matter in depth as far as the pupils can understand.***

With regard to content, teachers of advanced learners, like educators of the gifted, may like to focus on concepts and principles central to a domain rather than on accumulation of isolated and disjointed facts (Tomlinson, 1996). Pupils may be guided to discover key concepts and principles rather

than to receive them as direct dispensation from the teacher. High-level critical and creative thinking strategies need to be incorporated into appropriate strategies of inquiry to stimulate bright young minds. **Advanced learners** need to be given opportunities to be cast as producers rather than as repositories of knowledge. The provision of subject matter which is 'rich' i.e. challenging, interesting, relevant and coherent, generally encourages advanced learners towards deep and abstract thinking (Teo, et al., 1997).

**2. Ask pupils more simple, open-ended and yet thought-provoking questions; and encourage pupils to ask each other questions.**

Conscious attempts by the teacher to provide opportunities for open discussion in the form of higher-order questions between teacher and pupil, and between pupil and pupil help to clarify thoughts, abstract concepts and hence learning. In fact, advanced pupils need to be taught questioning techniques and metacognitive skills so that they will be able to add to a question or a comment, agree, disagree, substantiate with evidence, or ask another question upon reflection (Teo, et al., 1997).

**3. Plan for individualised instruction.**

Although pupils in the mainstream may be classified as 'advanced', they are not homogeneous as a group. Besides, no two pupils are identical in their process of learning, even if they are homozygous twins. Therefore, teachers need to plan for *individualised* interaction time with each pupil to find out his or her needs and progress. It is only then that enrichment or remedial work for the pupil may be prescribed to suit optimal cognitive functioning. Differentiated assignments and independent project work will serve the purpose of fulfilling the needs of pupils with varying abilities, interests and learning styles (Gifted Education Branch, 1998).

**4. Plan for a greater variety of pupil-centred activities.**

As advanced learners are capable of higher level thought processes, teachers must avoid the use of didactic approaches of instruction (Montgomery, 1996). The use of a greater number and variety of pupil-centred activities, like experiential instruction, discovery learning, field trips, cooperative groupings, multimedia and computer interactive modes of learning and research work, will be beneficial to these pupils. The teacher naturally assumes the role of a facilitator of learning with pupil-centred activities (Gifted Education Branch, 1998).

**5. *Encourage multiple modes of expression of ideas and products.***

Pupils can also demonstrate understanding of subject matter through 'products'. Other than written assignments, advanced learners may be asked to give creative expression of their higher level thought processes in various forms and involving different media. Wherever possible and feasible, advanced pupils must be encouraged to identify and address real problems with a range of appropriate methodologies (Tomlinson, 1996). These pupils could present their work using audio-video presentations, computer simulations, musical compositions, raps, songs, displays, dioramas, poems and dramatic presentations (Quek, 1997a).

**6. *Create a non-judgmental, open and warm classroom atmosphere where divergent and creative viewpoints are acceptable.***

The establishment of an open, accepting and non-judgmental classroom environment is essential for divergent and creative ideas to flourish from advanced learners. Both teacher and pupils will be able to evaluate and comment on each other's viewpoints as new ideas are tolerated and risk-taking is encouraged under such circumstances.

For the more advanced learners, the teacher may like to use more of the discovery-inquiry mode of instruction, provide individualisation like allowing for more rapid-pace learning or teaching pupils to research on a topic of interest and thus mentoring them. The teacher may also like to encourage them to problem-find and to extend learning beyond the classroom. The formation of personal relationships with these learners enables the teacher to understand and facilitate their social, emotional and moral development.

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# UNDERSTANDING HOW CHILDREN THINK: A THEORY OF MIND PERSPECTIVE

by Carolyn S.L. Tan-Niam

## INTRODUCTION

Recent research on children's theories of mind (ToM) has transformed our understanding of children's mental life. Current research acknowledges the conceptual shift in ToM status that occurs around 3-4 years of age and offers explanations on the nature and origins of ToM understanding. However, there has been relatively little consideration of the significance of ToM development for children's daily lives. This paper provides a review of recent studies which have focused on bridging the links between ToM development and social interaction.

What is a theory of mind?

In current work, theory of mind refers to an individual's ability to impute mental states to others. Researchers view this ability as a theory because mental states, which are not directly observable, can form a framework of inferences, which in turn can be used to make predictions about others' behaviour. For example, if Joshua goes to the kitchen cabinet and opens a drawer, we reason that he does so because he desires a snack and believes that there are snacks in that drawer. This reasoning draws on an understanding of other minds as a database of possible explanations and interpretations of everyday behaviour. Astington, Harris and Olson (1988) report that some time around their fourth birthday, children acquire such a theory. The transition is so marked that it is conceptualised as a cognitive shift and constitutes a new level of development.

One of the important questions which has been asked about mental development is, how does the individual mind connect with the minds of others? Human beings are social animals, hence the individual thinker's understanding of other minds is an important aspect of mental life. The developmental account has long been dominated by Piaget's claim that children younger than seven years of age are unable to make the distinction between the mental and physical world. Many post-Piagetian investigators have challenged this claim. One such study on children's talk about mental states (Bretherton and Beeghly, 1982) found that not only were young children's thoughts not egocentric, but more importantly they involved understanding other's mental states such as the intentions, beliefs and desires of others i.e. the ability to recognise themselves and others as thinking beings. It is in this sense that children are said to have an implicit and rudimentary theory of mind.

The false belief paradigm

The main procedure for assessing children's ToM understanding was devised by Wimmer and Perner (1983) using the false belief task. In this task, the child subject observes a story enacted with a pair of dolls. One of these is called Maxi, who leaves chocolate in a cupboard (location A), and then departs from the scene. In Maxi's absence, the other doll (his mother) enters and transfers the



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chocolate to another cupboard (location B). Maxi does not witness this transfer, and therefore is ignorant of the fact that the chocolate has been moved. The observing child is then informed by the experimenter that Maxi is returning to the kitchen to get his chocolate, and is invited to judge where Maxi will look. The primary finding has been that children below four years of age are unable to ascribe false belief i.e. that Maxi will look for the chocolate at its new and current location. Replication of this finding in subsequent studies (see Butterworth, Harris, Leslie and Wellman, 1991) suggest that the false belief task is a strong index of children's conceptual understanding. Possible methodological problems with the paradigm have been examined with variations of the task (using film: photographs, puppets, dolls and even real actors), and employing different linguistic formats for the questions (Butterworth et al., 1991). However, even taking these considerations into account, three-year-olds' difficulty with the false belief task still remains significantly distinct. Replication studies have shown that four-year-olds' understanding of false belief is now a highly robust finding, so much so that false belief understanding has been accepted as a hallmark of the acquisition of a ToM.

## REVIEW OF RESEARCH

### ToM and social interaction

The understanding of other minds (ToM) is a powerful social tool. Social interaction is grounded in a theory of mind and affects the way the child responds to the world around him. No one has direct access to the inner thoughts of others. Like adults, children must rely on interaction and communication in order to understand, explain and predict what others think, know and believe. For a child, ToM ability is required in conversations with siblings and peers, participation in shared pretend play, and reasoning about others' behaviour. Having an understanding of other's minds will therefore transform the way children view others' behaviour and, by implication, deeply affect their own as they use this ability to explain and predict others' thoughts and actions.

Dunn, Brown, Slomkowski, Tesla and Youngblade. (1991) have reported that children's ToM development is related to aspects of family interaction and discourse. Their findings showed that the frequency of mother-child dialogues about feeling states and causality

predicted the child's success on ToM tasks. In addition, co-operative interaction with siblings was also a significant predictor of false belief understanding. These results were independent of the child's general verbal ability and amount of family talk. Based on these findings, Dunn et al. (1991) suggest that false belief understanding may have its roots in family interaction. In other words, greater exposure to siblings' conflicting or alternative perspectives are reasoned to have an effect on the development of children's ToM abilities.

In another study, Perner, Ruffman and Leekam (1994) specifically tested the hypothesis that children with siblings would encounter those social interactions that could promote an awareness of others' mental states and therefore fare better on ToM tasks than only children. Working with three to five year-olds, Perner et al. (1994) found that a child's ToM understanding was enhanced by the number of siblings the child has. Moreover, this sibling effect was not dependent on the age of the sibling, as both children with older and younger siblings performed equally well on the ToM measure. This finding is consistent with Dunn et al.'s (1991) results. Based on the known effects of birth order on IQ from previous work (Zajonc and Marjus, 1975, cited in Perner et al., 1994), Perner et al. further argue that the child's general intelligence and cognitive maturity are not confounding factors in the positive correlations between false belief understanding and number of siblings.

Consistent with Perner et al.'s results, Astington and Jenkins (1995) also found that family size remained correlated with false belief understanding.

Lewis, Freeman, Kyriakidou, Maridaki-Kassotaki and Berridge, (1996) subjected the sibling effect to closer scrutiny in an attempt to broaden the domain by relating children's ToM development to their daily interactions with more knowledgeable members of their culture i.e. siblings as well as extended kin. Using Greek subjects, their findings suggest that children's social interactions with family members (close kin and siblings) play a significant role in ToM development in that children who perform better on ToM tasks are also engaged in more social interaction with their siblings and close kin. In other words, it is the social context in which the child is exposed to alternative viewpoints that may be beneficial to the development of an understanding of other minds.

## CONCLUSION

Although exploratory in nature, the converging line of evidence reviewed in this paper represents a first step in exploring the interplay between children's understanding of other minds and social interaction. Taken together with prior research in the field, the indication is that the study of interaction patterns should definitely be added to the research agenda to further our understanding of children's mental life.

## IMPLICATIONS

The findings of the above studies suggest that the social context plays an important role in the cognitive development of children's understanding of other minds. Parents and teachers could use the strategies outlined below to develop children's understanding of other minds:

### **1. *Plan cooperative activities to provide a range of interactions***

Specifically, children can be alerted to a variety of alternative perspectives through a range of social interactions. Whether in the school or home environment, interactive exchanges can aid the achievement of shared understanding between peers and further encourage children towards more collaborative and reciprocal interactions. In the classroom situation, cooperative activities should be emphasised as a technique which warrants more planning and contact time in order to provide a range of interactions.

### **2. *Use pair and group work to reinforce scaffolding***

The above literature suggests an *apprenticeship* effect in the development of ToM ability. In a dyad or group, the expert partner i.e. sibling or peer with more advanced ToM, can provide the scaffold for children's understanding of others' mental states via shared interaction. Thus, from the teacher's perspective, even group formation in the early years classroom requires special regard for the expert-novice difference in terms of ToM ability. Group or pair formation based on seating arrangements is ineffective and should be discouraged.

### **3. *Observe children's interactions with others***

Teachers can learn to assess ToM ability informally by observing children's interactions and noting those aspects of social competence, which require children's understanding of others' mental thoughts such as intentions and desires (see also Tan-Niam, Wood & O'Malley, in press). Such detailed but naturalistic observations of children's ToM ability in everyday activities can better inform the teacher regarding children's developmental needs.

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# CRITICAL READING SKILLS : SOME NOTES FOR TEACHERS

Review by Kamsiah Abdullah

## INTRODUCTION

While the importance of incorporating critical reading and thinking have been acknowledged by educationists and classroom teachers, little research has been conducted to discover the nature and the skills or subskills underlying this ability. Teachers need to know what critical reading is and the skills which constitute critical reading ability before they can teach or enhance those skills in their students. This article describes the subskills which have been identified for critical reading by different researchers and the implications for teaching the more complex skills.

## WHAT IS CRITICAL READING?

Critical reading is normally defined as the ability to obtain a level of interpretation *higher* than that needed for literal interpretation, Smith (1982) for example, placed it at the *highest* level beyond the literal as well as the interpretative level of comprehension in his hierarchy of reading skills. According to him *literal reading*, that is the understanding of the denotation of words, ideas, or sentences in context. was the lowest; then comes *interpretative reading*, which is obtaining deeper meanings not directly stated in the text, and, finally, *critical reading*, the highest level, which includes skills such as evaluating the quality, value, accuracy, and the truthfulness of what is read.

## CRITICAL AND CREATIVE READING

There is confusion about defining what skills are involved in critical reading and creative reading comprehension, although most reading theorists contend that they are at the highest levels in the hierarchy of reading skills if there is any hierarchy at all (Turner 1988). Some explanation to address this confusion is indirectly provided by Cunningham (1987) who advanced a useful distinction between the 'process' of discourse comprehension and the 'product' of comprehension. While both the process and the product of comprehension involve the use of prior knowledge, he asserted that it is the *product of comprehension*, that is, what is retained in semantic memory, that may be described as literal, inferential and creative depending on the mixture of textual and schematic elements which make them up. These distinctions, he added, are not distinct levels of comprehension, but are levels for overlapping areas on a continuum between the purely textual or literal and the purely schematic or creative .

According to Cunningham (1987), literal comprehension products are simply those products that have deep structure equivalents in the text. A literal *product of discourse processing* would be one that, if it could be compared to the text, would be synonymous in meaning to part of it. Cunningham argued that inferential comprehension products are those that contain a mixture of textual and schematic elements. They lack deep structure equivalents or equivalence in the text,

neither deny nor ignore any part of the text and complete or extend the text consistent with the comprehender's expectation, purposes for comprehending, or knowledge. Therefore, inferential comprehension products that consist almost entirely of schematic elements are termed creative response. This term could be a level by itself or a sub-level of inferential comprehension. Critical reading, here is synonymous with creative reading, as to a large extent the process of inferring also involves critical evaluation.

### **CRITICAL READING AS A PROCESS OF READING COMPREHENSION**

Seen as a product of comprehension, critical reading is a state where the reader, bringing his background knowledge and experience, is able to uncover the implicit meaning of the written word and motive of the writer. This state of comprehension has been described by Smith (1982) as a condition where no uncertainty exists, that is when we have no unanswered questions. In other words, a critical reader has achieved the state of critical comprehension when he or she is satisfied that the inferences or meaning obtained from reading is consistent with his or her own interpretation, when all contradictions are resolved.

As a process of achieving comprehension, reading critically means actively working out the meaning of the text as it should be intended by the author or as what seems to be true to him. The reader not only engages actively as a responder to the text but also reflects on and contributes his or her own past experiences and pre-existing world knowledge in the process. Critical reading then can be seen as a process of

communicating with the author and the texts before any judgment on the validity or the veracity of the text is arrived at. Hence the ability to read critically entails the ability to recognize, comprehend, apply, analyse, synthesize and evaluate written texts in an open-minded, logical and rational manner.

### **LOCAL RESEARCH ON CORE CRITICAL READING SKILLS**

Besides understanding what critical reading entails, teachers need to know what **skills** or **subskills** are involved in critical reading. Many researchers such as Worden (1981) who tried to extract critical reading **skills** as separate from general reading ability failed to find a clear distinction between the two constructs. In a more recent study on the critical reading ability of Singaporean Malay pupils (Abdullah 1994), a clearer picture of the skills underlying critical reading and thinking abilities was obtained.

The main objective of the study was to identify the set of **skills**, apart from reading comprehension skills, which can be safely categorized as critical reading skills. Through students' responses on test items pertaining to the skill, information on their strengths and weaknesses on these **skills** were obtained and subsequently utilized for planning appropriate lessons to enhance these critical skills.

The sample utilized for the study comprised of 1444 Secondary 1 to 5 Malay pupils in the Express as well as the Normal stream. A standardized test called the Malay Language Critical Reading Test (MLCRT) was designed and revised before evidence of the core skills underlying critical reading ability in the Malay language, obtained

through statistical analysis, was proposed. The final test consisted of 65 items subsumed under nine critical reading subskills.

The nine core critical reading subskills identified are listed below according to their difficulty levels, sequenced from the easiest to the most difficult. They are the ability to:

- identify similarities and differences,
- evaluate inductive inferences,
- identify facts and opinions,
- evaluate generalisations,
- evaluate strengths of arguments, identify biased statements,
- identify relevant and irrelevant materials.
- identify author's motives, and
- recognise hidden assumptions

## RESULTS

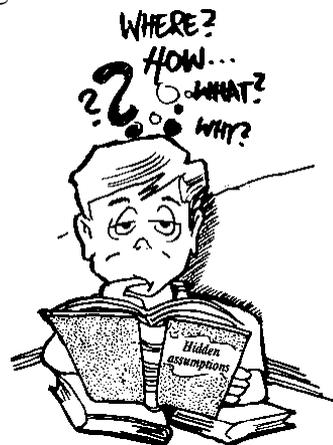
In the study, it was found that the Malay pupils displayed a range of skills in critical reading abilities and among the nine subskills found some more difficult than others. Significantly larger number of pupils in the various grade levels found questions on *recognizing hidden assumptions, identifying the author's motives, identifying biased statements and evaluating the strengths of arguments* difficult to handle. The easier subskills were *identifying similarities and differences, evaluating inductive inferences and identifying facts and opinions.*

Subsequently, in a later study, an English version of the critical reading test was administered to another group of Secondary 1 and Secondary 3 Singaporean pupils, the majority of whom were Chinese. (Abdullah and Lim, 1995). Generally the same pattern

of responses with regard to the difficulty level of the critical reading skills was obtained. Interestingly it was found that the ability to recognize hidden assumptions in statements proved the most difficult skill to acquire in both studies. This shows that whether the language of the test is in English or Malay the same or similar underlying construct is functioning.

## CONCLUSION

The above two local studies show that while some of the critical reading skills may be easy to acquire, certain other skills such as *analysing hidden assumptions* need to be taught in our classrooms, through either language or literature lessons, or in other subject areas where reading is required. The beneficial effect of critical reading instruction as a key element in enhancing critical reading and thinking skills should be recognized. There is no doubt that teachers, specifically their questioning techniques, play a significant part in the training process. They need to create a more accepting and open environment where students are able to share their critical thoughts. Teachers themselves should be good models of critical thinkers; they should accept criticism graciously and objectively, assess situations rationally and above all avoid making any hasty judgements.



Sam Cheah

## IMPLICATIONS FOR TEACHING

With reference to the above studies, these are some suggestions for teachers to use in order to develop the following critical reading subskills:

1. *Recognizing hidden assumptions.*

Train students to list the assumptions or opinions not explicitly stated, for example in the statement: "*Mr. Marzuki, a lawyer of high moral character, would not have committed the burglary*" teachers can pose questions such as "*What is the hidden assumption of the author in writing the statement? Would Mr Marzuki have committed the burglary if he was not a lawyer? Would a lawyer commit such a burglary? What are people's expectations of a lawyer?*"

2. *Identifying author's motive*

Promote awareness and discussion of the author's motive in writing as authors use a variety of styles and expressions to convey meanings. Pose questions such as, "*What is the author's intention in saying it? What is he trying to promote? Why is he saying it in such a way?*"

3. *Identifying **biased** statements*

Expose students to biased statements of different sorts including positive and negative biases. For example, let them identify the party who the bias is directed at in the following sentence: "*as expected, the armed robbery had been committed by three young Malay males who sported long hair*".

4. *Evaluate the strength of arguments*

Give students exercises where they have to sift through information. Give reasons and weigh evidence before they can arrive at a certain conclusion or point of view. Let them be aware of the criteria used in the evaluation.

5. *Identify sources of materials*

Expose student to various types and genres of writing. Show them the unique style of writing and appropriateness of the style for the purpose of the written materials. Give them questions where they have to identify or guess the sources of the materials.

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## 6. *In general teachers should*

- train students to get to the deeper meaning – to *read between the lines* and *beyond the lines* in any piece of writing.
  - ask more higher-order questions in order to promote higher-order thinking.
  - encourage students to ask questions.
  - create a more open and **conducive** environment for stimulating critical thinking.
- 

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# TEACHING CHILDREN SCIENTIFIC THINKING SKILLS

Review by Lucille Lee Kam Wah

## INTRODUCTION

In recent years, the Singapore Ministry of Education has placed a great deal of emphasis on teaching thinking skills in schools. Thinking skills can be viewed as a single, unitary intellectual ability or as a collection of smaller, component skills (e.g. observing). Thinking skills are developmental in nature with higher level skills building on more basic ones. There are thinking skills that students can learn to recognise and apply appropriately. If these skills are recognised and applied, students become more effective thinkers (Halpem, 1992).

Thinking skills that are emphasised in science instruction include such process skills as observing, classifying, describing, formulating questions/hypotheses, controlling variables, interpreting data, planning investigations, experimenting, and drawing conclusions. Science teachers are in an ideal position to promote the development of thinking skills, especially the higher-order ones, in students. The higher-order thinking skills include integrated process skills, such as formulating questions/hypotheses, controlling variables, interpreting data, and planning investigation. The purpose of this paper is to review the literature on some methods for and difficulties in teaching higher-order thinking skills. Some implications for teaching thinking skills will also be discussed.

## SOME METHODS FOR TEACHING SCIENTIFIC THINKING SKILLS

Selection of a problem-solving model of instruction is one of the critical choices a teacher must make. One important teaching strategy or approach that can improve higher-order thinking skills is the problem-solving approach which includes the processes of acquiring information and recalling knowledge learnt previously, solving novel problems, and evaluating the answers. Halpem (1992) believes that the most important rule in thinking skills instruction is to teach for transfer because the ultimate goal of this problem-solving approach is to develop students who can solve a large variety of novel problems, not just those previously presented in assignments. The use of problem-solving instructional models to teach science influences the problem-solving ability of students. A good deal of research evidence shows that the explicit teaching of thinking skills can improve students' problem-solving skills, students' cognitive development and science achievement (Adey and Shayer, 1993; Huffman, 1997; Preece and Brotherton, 1997).

There are many other problem-solving models proposed by researchers, e.g. Bransford and Stein's (1984) Identify, Define, Explore, Act and **Look** (IDEAL) model; and the Search, Solve, Create and Share (**SSCS**) model created by Pizzini and his co-workers (Pizzini, Shepardson and Abell, 1989). The SSCS model identifies 45 underlying specific process skills such

as brainstorming, predicting, questioning, creating, defining, reporting, verifying, evaluating, etc., to the different phases of the problem-solving model. Harlen (1985) proposes five-steps in planning for an investigation. Questions to be posed in planning are as follows:

- (1) problem question;
- (2) what should be changed in the investigation? (changeable variables);
- (3) what should be kept the same? (controlled variables);
- (4) what kind of effect should be observed?;
- (5) how will the result be used to answer the question?

This planning has to be done at a general and a specific level.' The general plan is a useful first stage in planning; the second stage is to translate the general plan into a set of actions to be taken. The teacher functions as a facilitator in a problem-solving model of instruction, assisting students in developing strategies to effectively obtain and process information.

## REVIEW OF RESEARCH

Lawrenz (1990) studied the frequency of use of particular teaching techniques and the underlying structure of, and the interrelationships between these techniques. A stratified random sample of seventh and eighth-grade science teachers in Minnesota was asked to respond to a questionnaire about teaching techniques relating to higher-order thinking skills. One hundred and thirty-nine teachers (86%) responded. The results of the study showed

that the teachers emphasised the objective of learning basic science concepts most, followed by becoming aware of the importance of science in daily life and by developing curiosity about natural phenomena. The least emphasised objectives were learning how to design and carry out experiments. and learning what evidence is necessary to constitute proof. In a typical 50-minute class session, 26% of the time (about 13 minutes) would be spent on lecturing, 18% of the time (9 minutes) on discussion, and 16% of the time (8 minutes) working with hands-on materials. The remaining 40% of the time (20 minutes) was spent on completing worksheets, watching demonstrations, and on other science activities like reading, watching movies, etc. None of the teachers reported spending time working with computers in a typical lesson. About 59% of the teachers reported using co-operative groups once or twice a month or more.

The findings of Lawrenz's study (1990) showed that teachers placed very little emphasis on the use of the problem-solving approach as part of their science instruction. They did not spend much time on conducting co-operative hands-on learning which is an important component of problem-solving activities. The teachers did not seem to consider teaching higher-order thinking skills as one of their top priorities.



Sam Cheah

Chin et al. (1994) conducted a study which investigated the extent to which **pre-service** primary teachers used the **problem-solving** approach in science instruction during their teaching practice in Singapore schools. The study also sought to identify factors which hindered their efforts in teaching science through this approach. One hundred pre-service science teachers were involved in this study. A questionnaire was used to elicit the pre-service teachers' views on the two above-mentioned aspects. They found that the following factors affected the teaching of higher-order thinking skills in schools (extracted from Chin, et al. 1994; pages 44-48).

- ***Factors pertaining to the teachers***  
Some pre-service teachers felt they had limited science content and pedagogical knowledge and thus had difficulty in setting challenging problem-solving tasks for their students.
- ***Factors pertaining to the students***  
Students' unfamiliarity with a problem-solving approach and lack of ability discouraged some teachers from using the approach. The teachers felt that their students had been conditioned to learn in the 'traditional' way by being 'spoon-fed' by their teachers and would need a long time to adapt to a new approach. The pupils' weaknesses in language and their lack of ability to co-operate in groups, identify a problem, design an experiment, hypothesise and interpret results were also cited as problems. The students lack of motivation to learn made it difficult to teach higher-order thinking skills to them.
- ***Factors pertaining to classroom management***  
The extent to which teachers were able to cope with the disruptive behaviour of their classes affected the efficacy of their teaching. The teachers felt that with problem-solving activities in group work, students would tend to become over-excited and rowdy, and feared that things would get out of hand.
- ***Factors pertaining to the school system***  
Time constraints, limited space in which to conduct science activities, difficulties in getting access to the science room and other facilities, lack of appropriate and relevant activities and materials, and the inconvenience of having to search for such material beyond the prescribed textbook and workbook were also cited as obstacles.

With regard to assessment Stiggins, Griswold and Wikelund (1989) investigated the extent to which school teachers measured their students' higher-order thinking skills in mathematics, science, social studies, and language. Thirty six volunteer teachers from three schools in northwestern USA, at three different school levels (grades 2-12, high school, middle school and elementary) were involved in the study. A wide variety of assessment documents were analysed, teachers were observed asking oral questions in their classrooms, and each teacher was interviewed. The results indicated that paper-and-pencil assessment documents were dominated by recall questions across all grade levels. However, inferential thinking was also assessed, especially in mathematics. Oral questions tended to tap

recall too, with analysis and inference reflected to some extent. Across grades, subjects, and forms of assessments, comparison and evaluation questions were rare.

The teachers tended to use a lot of recall questions in **both** written tests and oral questions in the classrooms. The lack of

assessment of higher-level cognitive processes, e.g. analytical skills, made the teaching of higher-order thinking skills difficult. It was recommended that the cognitive process skills of analysis, comparison, inference and evaluation, i.e. the fundamental higher-order thinking skills, be included in any assessment framework.

## IMPLICATIONS

In view of the research findings cited above, the following five suggestions can be made for teachers to consider:

**1. *Teachers need to recognise the importance of teaching higher-order thinking skills (Lawrenz 1990)***

Teachers must try to change their **mindset** from teaching science just as a body of facts. The higher-order thinking skills, which focus on the students' ability to hypothesise, analyse, synthesise and evaluate facts and concepts, are considered important for students to interact effectively with the real world environment of day-to-day problem solving. Teachers are encouraged to employ an inquiry-oriented, investigative approach to teach science.

**2. *Teachers need to teach explicitly how to plan an investigation***

Harlen's (1985) five steps of planning strategy is useful for teaching problem solving. The teaching processes in each step are described with problems related to the dissolution of salt being used as examples:

***Step 1 Problem question to investigate***

Teachers assist students through brainstorming to identify and refine problem, and to provide tentative answers through formulating hypothesis.

***Example:***

***Problem: Does salt dissolve in other liquids as well as it does in water?***

***Hypothesis: Salt does not dissolve in other liquids as well as it does in water:***

**Step 2** *What should be changed in the investigation? (changeable variables)*

Students identify what things or conditions (variables) should be changed for testing the hypothesis.

*Example:*

*At the general level: the kind of liquid*

*At the specific level: What are the liquids to be used? e.g. cooking oil, alcohol, etc.*

**Step 3** *What should be kept the same? (controlled variables)*

Students identify what things or conditions (variables) should be kept the same for a fair test.

*Example:*

*At the general level: the mass and temperature of the liquids*

*At the specific level: How much of each liquid should be used?  
What should be the temperature of the liquids used?*

**Step 4** *What kind of effect should be observed?*

Students identify what to measure and compare in the investigation.

*Example:*

*At the general level: How much salt will dissolve in each liquid?*

*At the specific level: How the amount of salt dissolving will be measured?*

**Step 5** *How will the result be used to answer the question?*

Based upon the result obtained and the process of interpreting it, students make decisions to accept or reject their hypothesis.

*Example:*

*By comparing the amount of salt dissolving in each liquid and water, the results will indicate whether salt can dissolve in other liquids as well as it does in water.*

**3. *Teachers need to play a facilitative role in teaching problem solving (Pizzini et al., 1989)***

Teachers assist students in identifying problems and developing strategies to obtain and process information. They could help students by identifying logical errors in their thinking, (such as inconsistencies or unjustifiable inferences), challenging students to consider other possibilities, and pointing out to students when they have over-generalised on the basis of false assumptions.

**4. *Teachers need to change their mode of assessment (Stiggins et al., 1989)***

In order to encourage higher-order thinking in students, the assessment mode needs to be changed. It is suggested that teachers should ask more higher-order thinking questions involving analysis, comparison, inference and evaluation.

**5. *Schools need to improve science facilities and resources (Chin et al., 1994)***

To encourage teachers to teach higher-order thinking skills in science, an increase in the number of science laboratories/science rooms and additional resources, such as teaching materials for conducting hands-on activities, is necessary. At present, supporting laboratory staff at the primary level is lacking. If a problem-solving approach is to be seriously employed by teachers as part of science instruction, they need assistance and support from laboratory staff to cut down the time required in preparing hands-on activities.

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# COOPERATIVE LEARNING: ESSENTIAL COMPONENTS

Review by Lachlan Crawford and Chua Tee Teo

## INTRODUCTION

Cooperative learning in primary schools in Singapore is attracting increasing attention as an alternative to the more traditional competitive and individualistic approaches to teaching and learning (Crawford, 1995). It is often used for sessions of sixty or perhaps ninety minutes, once or twice a week, as an alternative to the more formal approach where the teacher dominates the proceedings and pupils are expected to sit passively and listen. Typically, cooperative learning sessions are well-structured and well-organised. Decisions about placing pupils in heterogenous, multi-ethnic groups are made before the start of the lesson; materials are readily available; children move into their groups in a well-ordered, disciplined fashion; tasks are made clear to the children and teachers check for understanding.

However, many teachers assume that pupils are equipped with the all-important social skills needed to make cooperative learning a success. Unfortunately, this is not always the case. This article briefly reviews research on cooperative learning and examines *five* essential components that cooperative learning sessions should have to make teaching and learning effective.

## REVIEW OF RESEARCH

Cooperative learning is 'the instructional use of small groups that allows students to work together to maximise their own and each other's learning' (Johnson, Johnson

and Holubec, 1994, p. 3). It is an instructional practice grounded in social interdependence theory, cognitive developmental theory and behavioural learning theory. Cooperation is believed to be a form of 'positive interdependence' which results in promotive interaction as individuals encourage and facilitate each other's efforts.

A large number of research studies have been conducted in the U.S.A. on the effects of cooperative learning procedures on student achievement. Johnson et al. (1981), Johnson and Johnson (1989) and Slavin (1990) working with a wide range of age groups, in many subject areas, and in tasks involving concept attainment verbal problem solving, categorization, spatial problem solving, retention and memory conclude that cooperative learning tends to promote higher academic achievement than the more traditional competitive and individualistic classroom structures. Kagan (1992) suggests that the higher academic achievement may be the result of children having more opportunities to participate in lessons; more opportunities to give and receive help; increased motivation to succeed because others encourage their peers to succeed; and pupils with poor study strategies having opportunities to witness students who have more efficient study strategies.

From a different research perspective. Sharan (1980), Slavin (1983), Morrow et al. (1997) and Mitchell (1997) found that the benefits to students working cooperatively in the classroom include

greater self-actualization and improved mental health, increased trust, acceptance and support of each other; and improved relations among group members with reduced amounts of conflict. They also found that cooperative and group learning are considerably more effective in fostering social and inter-personal skills than competitive and individualistic classroom structures. These research findings are particularly relevant in Singapore where the Government continually stresses the importance of generating a harmonious, multi-racial society by encouraging students to gain greater understanding and respect for other ethnic groups.

## ESSENTIAL COMPONENTS

To achieve the benefits cited above in the review of research, Johnson, Johnson and Holubec (1994) suggest that cooperative learning sessions should have *five* essential components. These are summarised below.

***Positive interdependence*** – the heart of cooperative learning. It is a condition in which group members are able to perceive their inter-relatedness and that the success of the group depends on the success of the individuals in the group.

***Face to face positive interaction*** – the promotion of each member's learning through one-to-one teaching and explaining of concepts being learnt. Group members help each other to integrate new knowledge into previous knowledge, encourage and praise each other's efforts.

***Individual accountability/personal responsibility*** – the process of assessment

and feedback of performance of each member. The purpose of such a mode of evaluation is to enable the group to help weaker members so that each individual will grow stronger intellectually and hence make a greater contribution to the group.

***Interpersonal and small group skills*** – important elements of cooperative learning. Pupils need to be taught leadership, decision-making, trust-building, communication and conflict-management skills in addition to skills to facilitate group discussion, to take notes and to ask good questions if cooperative learning is to work among the diverse members.

***Group processing*** – essentially the evaluation of the progress of the group with regard to the attainment of goals, whether actions by particular members are helpful and whether a particular course of action by the group should be continued.

## CONCLUSION

Cooperative learning is being used more frequently in primary schools in Singapore as an alternative to the traditional teacher-oriented classroom. It is based on the maxim that academic achievement is greater when there is unity of thought and action among students working in groups. To ensure that cooperative learning is, indeed, cooperative and effective in terms of positive educational outcomes, five essential components i.e. *positive interdependence, face to face positive interaction, individual/personal responsibility, interpersonal and small group skills, and group processing* should be an integral part of group work sessions.

## IMPLICATIONS

On the basis of what has been discussed, teachers can do the following to make cooperative learning more effective.

1. *Be knowledgeable about the essential components of cooperative learning* to ensure that children do, in fact, work collaboratively in groups.
2. *Have a clear understanding of what is to be accomplished* and how the groups can meet these *expectations*. Ensure that students know these expectations through stated educational objectives.
3. *Introduce cooperative techniques gradually* so that pupils have opportunities to gain experience with each new technique.
4. *Explicitly teach collaborative and interpersonal skills*, emphasizing to students the notion of *allowing ideas but not personalities to clash* in the process of consultation.
5. *Share resources, assist fellow colleagues to learn cooperative learning techniques* and provide mutual support, especially *in the same subject area*.
6. *Plan for "sponge" or enrichment activities* to fill time for individuals or groups who are more advanced in their work.
7. *Monitor, reflect and adjust* cooperative learning activities and groups according to the needs of the pupils and group dynamics.
8. *Create a caring community* where individual differences are respected irrespective of intellectual acumen, race or culture.

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# SAFETY ASPECTS IN PE AND ECA

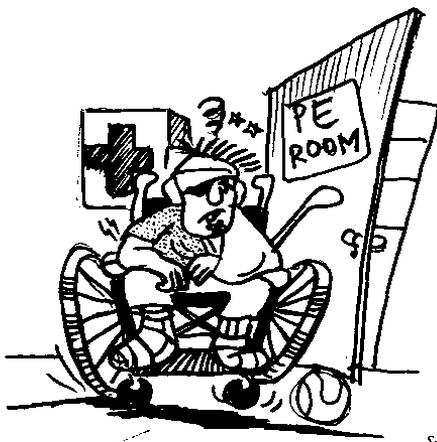
Review by Alan Ch'ng T. H. and Harry Tan E.K.

## INTRODUCTION

Activities during physical education lessons and extra-curricular sessions may expose students to risk of injury and harm if those activities are not properly conducted or supervised. The probability of such incidences occurring can be expected to increase as schools:

- i) implement more quality physical education lessons;
- ii) increase training of sport teams;
- iii) conduct **Trim and Fit** (TAF) programme activities.

It is therefore essential that teachers and administrators of schools be aware of their responsibilities as officers of an educational institution toward minimizing, and where possible, removing the risk of injury and harm to the students under their charge. This responsibility is expected of teachers since they are often told that they are parent substitutes (*in loco parentis*) in schools (Lowe, 1986a).



Sam Cheah

The Ministry of Education in its "*Handbook for Head of Department / Physical Education*" (1997) provided some guidelines and rules (see Chapter 8) for the safe conduct of PE, TAF, and other physical activities conducted by schools. Teachers should refer to these guidelines to help them perform their professional tasks more competently where safety aspects are concerned. This article aims to highlight the legal concept of negligence and suggest further strategies and precautions that schools can undertake to address safety concerns in PE and ECA.

## THE THREE ELEMENTS OF NEGLIGENCE

Negligence was defined in 1856 (Lowe, 1986b, p. 3) as :

*"...the omission to do something which a reasonable man, guided upon those considerations which ordinarily regulate the conduct of human affairs, would do, or doing something which a prudent and reasonable man would not do"*

Negligence is therefore not an act or omission which involves intention but rather it is that *behaviour* which fails to measure up to a certain standard regarded as desirable in a given community (Healey, 1996).

Three elements must be present before negligence can be established (Gillam, 1991, Lowe, 1986):

- i) the existence of a *duty of care*;
- ii) a breach of the *duty of care*;
- iii) damage suffered by the breach of that *duty of care*.

### ***Duty of Care***

The school owes a duty to the parents that care is exercised in the activities conducted by its officers. Since the doctrine of *in loco parentis* applies, a duty of care is cast upon teachers and principals to ensure that all students who are closely and directly affected by their acts or who rely on them for their safety are not placed in a position of risk or injury. In assessing whether a party has breached the duty of care, it is necessary to ascertain the standard of care (Gillam, 1991). The standard expected is that of a *reasonable* man. The concept of foreseeability is relevant to the standard of care in that a reasonable man in the position of the teacher would do or avoid acts which he or she could foresee might cause damage or injury to the students. For example, a *reasonable* man would avoid conducting a games activity on a defective surface with holes and jagged protrusions and would foresee the risk of harm to students in that situation. It is likely that the standard by which the teacher is judged is that of the careful, prudent parent (Lowe, 1986b). Teachers should be aware that generally, different standards of care apply where children

are involved because children are presumed to be less capable than adults of taking care of themselves (Healey, 1995).

### ***Damage***

The damage must be a result of the breach of duty on the part of the teacher (Lowe, 1986b). It would be necessary to determine whether the teacher could have reasonably foreseen that damage would occur from his/her act or omission. In order therefore, to reduce the teacher's legal vulnerability, it is important for teachers and school administrators to identify potential hazards and develop strategies and management practices that could minimize or remove the risk of harm and damage.

### **CONCLUSION**

Schools today are constantly working towards more quality programmes that can motivate teachers and students toward higher performance in academic and ECA endeavours. The challenge for schools in the area of PE and ECA is to maximize the potential of students in sport, games and outdoor pursuits and at the same time minimize those risks of injury and harm associated with the activities. A strategy of maintaining a safe environment and exercising due care of the students should be adopted by teachers and supported by the school administration to meet this challenge.

## IMPLICATIONS

### ***1. Safety Principles***

An effective risk management strategy must be proactive in the sense that it not only concerns proper supervision of activities but also includes regular inspection of the school's facilities and equipment, in-house briefing and if necessary, training of teachers. The adoption of safety principles and practice of good planning and supervision of activities will promote a safer environment for learning. The following safety principles were adapted from Figone (1989) and Opie (1993). They also take into account the harsh tropical environment which is not conducive to prolonged exercise.

### ***2. Exercise careful planning in activities and training programmes.***

Planning considerations must include the class size, playing area, the nature of the activity, available equipment, the teacher's expertise, skill and training, and the time of the day the activity is conducted. Teachers should also avoid unrealistic expectations of their students' performance and endurance for physical work and training.

### ***3. Ensure that all equipment is secured to its supports and in the case of implements, check they are in good working condition.***

For example, rackets and hockey sticks that have cracks and fault lines should not be used and must be replaced. Frayed ropes at outdoor fitness stations should be replaced or removed. It is also necessary to equip sport stores or the ECA team with the necessary protective equipment that is essential to the game concerned. For example, the face mask in hockey. Such a strategy will reduce the overall risk of injury to students playing the game either in training or competition.

### ***4. Implement health screening procedures to identify students who may be medically unsuited for PE lessons or ECA training.***

Such screening should be done at the start of each year or training season and must be repeated after a long vacation or off-season. The Ministry of Education recommends that teachers use the *Pupil Medical Record* form to perform this task. Teachers must excuse students who are medically unfit for the day from participating in PE lessons or training.

**5. *Take precautions to ensure that general conditions of an activity do not involve unnecessary risk.***

These precautions must extend to the condition of the playing/training area which should be clear of hazardous objects. In addition, teachers must ensure that only proper equipment is used and that activities during training are suitable and within the abilities of students. Another strategy in ensuring a safe environment is to set useful rules of conduct during the activity.

**6. *Exercise adequate supervision of pupils' activities.***

Inadequate supervision is a common accusation in relation to injuries suffered by pupils in schools (Opie, 1993). The nature of an activity must be carefully considered (Figone, 1989) and if an activity has a high risk of injury (e.g. tackling in rugby), then closer supervision is necessary. Other considerations for proper supervision are the size of the class/group, the playing area, equipment used (e.g. javelins!), and the influence of individuals within the class or group. It may be necessary to include a briefing by the Head of Department or the administrators of the school on aspects of supervision and areas or activities of the school which require closer supervision, in the induction of new teachers.

**7. *Regularly inspect all equipment to ensure that it is in optimal operating condition.***

Such a practice minimizes the risk of equipment giving way or breaking when it is in use, thus exposing students to possible injuries.

**8. *Locate a first aid kit at various locations so that immediate help can be rendered to students with minor injuries.***

It would be better if ECA teams are equipped with a kit of their own instead of relying on a centralised kit which may be inaccessible at the time of injury. The contents of the first aid kit should be maintained regularly and expired items replaced periodically. Teachers should also be trained in basic first aid so that they can render help and take responsibility and control of the situation when an injury occurs. According to the Ministry of Education, PE teachers should be familiar and knowledgeable in basic first aid and cardio-pulmonary resuscitation (Ministry of Education, 1997).

**9. Be mindful of the physiological stresses imposed upon students by the hot and wet environment when training.**

Adequate opportunities for drinking and cooling off may be necessary if the weather is extreme. Teachers need to be able too to identify symptoms of heat illnesses so that timely emergency action can be taken to minimize damage. Teachers should also monitor the environmental haze conditions so that appropriate decisions can be made to conduct or cancel PE/ECA sessions

**10. Organise and structure outdoor activities to cater to the different levels of pupils' experiences.**

Outdoor activities in the form of camping, trekking, sea and water activities carry with them some inherent risk of injury. Students new to outdoor activities may misinterpret or not recognise possible risk in the activities (Grant et al., 1996). These students are hence more likely to be injured or harmed in outdoor activities. It is the responsibility of the teacher and those in charge to progressively build up the experience of students and educate them on the management of risk in outdoor pursuits.

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