<table>
<thead>
<tr>
<th>Title</th>
<th>Gifted students' evaluation of themselves as critical and independent thinkers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s)</td>
<td>Tan Liang See and Lim Tock Keng</td>
</tr>
<tr>
<td>Source</td>
<td>ERA - AARE Joint Conference, Singapore, 25-29 November 1996</td>
</tr>
</tbody>
</table>

This document may be used for private study or research purpose only. This document or any part of it may not be duplicated and/or distributed without permission of the copyright owner.

The Singapore Copyright Act applies to the use of this document.
GIFTED STUDENTS' EVALUATION OF THEMSELVES AS CRITICAL AND INDEPENDENT THINKERS

Tan Liang See
The Chinese High School
Lim Tock Keng
National Institute of Education

Abstract

The Chinese High School pull-out Gifted Education Programme is now in its fourth year with 25 sec 4 boys, 21 sec 3 boys, 21 sec 2 boys and 31 sec 1 boys. Currently in the programme, the curriculum for Mathematics, Science and Computer Studies have been differentiated to promote thinking skills, self-discovery and independent learning. These learning goals are further enhanced under the Mentor Link programme in an individualized manner to suit personal learning needs and interests. In doing their projects, the boys are solving real life problems that sought to sharpen their learning skills and thinking skills. To determine how much the gifted programme has helped the boys become critical and independent learners, at the end of last year, 52 boys responded a questionnaire on the following variables: creative thinking, critical thinking, self acceptance, independence, social acceptance, commitment and evaluative thinking. This paper will focus on how the boys viewed themselves as critical and independent thinkers. The results will also help to fine tune the programme.

INTRODUCTION

The Chinese High School started its pull-out Gifted Education Programme in 1993 with 26 Secondary One pupils in Mathematics, General Science and Computer Studies. Many objectives were set to direct the programme. Besides differentiating curriculum to suit the learning pace of gifted learners and providing opportunities for them to develop their potential to the fullest, one of the objectives is to nurture gifted pupils as an independent and critical life long learners. Our programme models after the Autonomous Learners (Betts, 1986) and the Secondary Traid Model (Renzulli, 19). Both models encourage and promote critical thinking and independence in work.

The programme can be discussed in threefolds. Firstly, classroom curriculum is differentiated to promote thinking skills, self-discovery and independent learning. While the basic curriculum of G.C.E. "O" Level is covered, each topic is being extended more indepth. This is done in line with the implementation of critical thinking skills based on the curriculum, so that curriculum is more challenging for them. Secondly, individualized interests are facilitated through our Mentor Link programme. Pupils are encouraged to read up scientific magazines extensively and attend lectures or seminars outside school. They are also taught investigative skills such as protein separation or plant tissue culture techniques. Basic research skills such as internet, Authorware Professional or C++ Language are basis of project work. All these skills are learned either in class or through laboratory sessions conducted by tertiary institutions. Thirdly, an annual camp is conducted to develop group identity and topics deal with intrapersonal, interpersonal skills or personal development. During the camp, they are taught time management techniques, interviewing skills, presentation techniques and paper writing. Problem solving activities, role playing and real life situations are some of the activities during the camp. These plans are meant to facilitate the Gifted Education programme.

INSTRUMENTS AND METHODOLOGY

No single instrument can evaluate a programme completely. Since there is multiple criteria in evaluating a programme, many instruments are used in the assessment. To find out how GEP pupils assess their own growth and progress, they are given the Pupil Self Evaluation Checklist to complete. Pupil Self Evaluation Checklist is written to facilitate
the evaluation procedure for The Chinese High School Gifted Education Programme. There are 54 statements to be answered in the questionnaire. Pupils are to give their comparison on a Likert Scaling of one to five. The five scales are (1) for much less, (2) for less, (3) for about the same, (4) for more and (5) for much more. There are altogether 7 subscales in the questionnaire: (1) self acceptance and self understanding, (2) social skills, (3) creative thinking, (4) critical thinking, (5) independent learning, (6) evaluative thinking and (7) task commitment. Space is provided in the questionnaire for further comments in each sections. These are, in fact, some of the programme goals. Pupils are supposed to compare their performance to that of last year and gauge whether they feel that they have improved.

Another questionnaire that pupils complete when they were in Secondary One is Journey to Self (Betts, 1985). In this paper, I would like to refer to the information provided by pupils in the Journey to Self as a baseline. So that any change in individual pupils can be evaluated.

The present study also attempts to validate the findings qualitatively. Analysis will look into the kind of projects the pupils did and information provided by pupils in a free response questionnaire entitled Further Questions on Critical and Independent Thinking which intend to elicit and probe answers from the boys. The questionnaire was completed by those who view themselves high in each of the skills.

FINDINGS & ANALYSIS

Pearson correlation coefficients shown that all seven variables are strongly related at p< 0.01 level (see Table 1). Further test on Student-Newman-Keuls (SNK) tests that the means of all seven variables among the Secondary One, Two and Three samples are significantly different. (Table 2). Moreover, Student-Newman-Keuls (SNK) showed that the means of all the variables for the secondary three pupils are consistently significantly lower than the other levels. As compared to secondary two pupils, the statistical figures imply the following: (a) they are less self-acceptance, (b) they are worse off in terms of social skills, (c) they are less creative in their thinking, (d) they are less critical in their thinking, (e) they are less independent in learning, (f) they are less evaluative in thoughts and (g) they are less committed to work. However, the comparisons between the secondary two and secondary one pupils showed that the secondary two boys are more creative, more independent in learning, more evaluative in thoughts and more committed to work. Why did the secondary three boys feel that they were slacken in many ways a year later?

Some Observations

Pupils from The Chinese High School are top boys from some fifty primary schools island wide. When they are posted to the school, they have very high self-esteem. Nevertheless, exposure and challenges they face made them feel more and more inadequate over the two years of secondary school life.

In the programme, especially after one year of participation in the Mentor Link attachment with tertiary institutions, they realize more has to be done and learn in the secondary schools. The ability to make assumptions and solve problems systematically is the basic requirement of independent learning of individual pupil. He must be able to assess information for validity, sets objectives for a study, break down large goal into many smaller manageable goals, communicate effectively, develop specific criteria for product evaluation and communicate results in a positive manner.

Gifted pupils also get more pressure when they start comparing themselves with others in school in terms of the level of difficulties in schoolwork projects, expectations and demands from the programme. Nevertheless, with the exposures to new horizons in their interested areas in science and technology, they in turn strive harder in their work. They also become more competitive as they go on to secondary three as there is streaming according to their individual performance. They want to get into good classes and do more subjects in "O" Level Examination.

Social skills is an important aspect of pupils learning skills. Some of the social skills include effective communication and active participation in group, listening ears and ability to take other pupils' viewpoints. All these resemble intense involvement in preferred
problems and tasks, and assuming responsibilities which could gain respect from other pupils. Competition become even more acute as social grouping is changed in third year. Doing well in tests or projects means gaining "respect" from fellow classmates and become somebody which is part and parcel of building self-esteem and self-concept. Some of them could also be taking up leadership roles and hold more responsibilities in their respective clubs or societies. As for many of them, it is part of maturation.

Self-understanding and Perfectionism
Self acceptance and understanding are traits pupils develop through interactions with learning environment which includes classroom activities, Mentor Link and people around him, such as teachers, friends and parents. The feedback gathered by pupils themselves will later form self-concept and self-esteem. Many studies have shown that although gifted pupils have high intelligence test scores, they tend to score relatively lower in their self-concept as they always their previous attainment in work. In this continuous self-evaluate process, they discover that there are a lot more to be learned and feel inadequate. Thus, putting in more effort in perfecting the job they are involved in. This explains the means of secondary three pupils in the data.

Probing further
The study goes on to have pupils complete a questionnaire on further questions on critical and independent thinking so as to validate the statistical data. The qualitative data shown that all respondents claimed to be more critical after two years in the programme. Some of the reasons are spending more time reading widely, attending seminars, spending more time to think, part of growing up, being more inquisitive and part of their nature.

In fact, the process of critical thinking is a constant interaction between self and environment. It involves alternating phases of analyses and actions. Thus, the skills should be developed and refined in active inquiry. This is evident in their second responds to the questionnaire. Gifted pupils think that some of the effective strategies to facilitate critical thinking are doing independent work or project, solving challenging problems with multiple solutions, involvement in hands-on experiences and being open-minded in the process of learning. In addition, they thought that the gifted education programme and Mentor Link have contributed to their growth as critical thinkers.

Gifted pupils defined qualities of critical thinkers as the following: (a) people being open mindedness, (b) having more information, (c) clear and calm mind, (d) being logical in reasoning, (e) creative and (f) curious. Some of the social and environmental supports gifted pupils need to be critical are encouragement from teachers, helpful people who give constructive suggestions and do not criticise too much, teachers and friends whom they can argue and debate with, stimulating environment such as interactive lessons and chances to do research work. Pupils with such expectations are likely to behave in those ways. Moreover, pupils who discover their strengths are likely to take more risks in their thinking and actions. They are confident to explore the unconventional ways of expressing ideas and presenting their products since they recognizes and accepts individual differences.

For gifted pupils, being critical and independent is necessary for future task and future life. They see the relationship between critical thinking in threefolds: (a) it is the fundamental of independent learning, (b) the first step towards independent learning and (c) opportunity to work independently would facilitate critical thinking.

CONCLUSIONS
This study though cannot be generalised for its limited size and nature of respondents, the findings of present study is consistent with research in the past that gifted pupils are self critical, so much so that they are feeling inadequate. Nonetheless, the inadequate feeling is transformed as motivation to perfect themselves and the feeling of inadequate is the result of being self critical and evaluative. Further study could be done on comparison between gifted and non gifted pupils with control group. To put it in a nutshell, a pupil from the programme written the following in his Journey into Self:

"My life is full of challenges and difficulties,
though these (would) indeed help me to grow
into a better man, it had made my life busier
and occupied...."

Many researchers have pointed out that evaluation is one of the
important components of Gifted Education (Callaghan, 1993; Lim, 1995).
A multi-dimensional evaluation plan is more relevant to programme which
many goals are to obtain. One of the main objectives of Gifted
Education Programme is to provide opportunities for pupils to realize
their strengths and weaknesses. The process of thinking about thinking
is one of the best way to identify their strengths and weaknesses.
Problem-solving and research activities provide chances for developing
metacognitive strategies (Blakey, 1990). In order to develop such
strategies, pupils need to be very critical about themselves.

REFERENCES
Betts, G (1985) Journey into self, Greely, CO: Autonomous Learning
Publications and Sepecialists.

education: International problems and solutions, In K. A. Keller, F.
J. Monks & A. H. Passow (Eds.) International Handbook of Research and
Development, 605 - 618.

Education Programme. Paper presented at the IV European Congress of
Psychology, Athens, Greece.

practical plan for implementing gifted programmes at the junior and
senior high school levels. Mansfield Center: CT: Creative Learning
Press.

Table 2 Means of and F values for Differences between Levels

Table 1 Correlations of Pupil Self-evaluation Checklist

<table>
<thead>
<tr>
<th>Acceptance</th>
<th>Soc skills</th>
<th>Creat thinking</th>
<th>Crit thinking</th>
<th>Indep learning</th>
<th>Eval thinking</th>
<th>Task commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance 1.00</td>
<td>Soc skills .64</td>
<td>.61</td>
<td>Creat thinking .54</td>
<td>.68</td>
<td>.51</td>
<td>Creat thinking .42</td>
</tr>
<tr>
<td>Critical thinking .67</td>
<td>.71</td>
<td>.77</td>
<td>1.00</td>
<td>Independent learning .52</td>
<td>.67</td>
<td>.71</td>
</tr>
<tr>
<td>Task commitment .49</td>
<td>.50</td>
<td>.54</td>
<td>.58</td>
<td>.57</td>
<td>.75</td>
<td>.63</td>
</tr>
</tbody>
</table>

*p<0.01