



Identifying young gifted children and cultivating problem solving abilities and multiple intelligences

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ABSTRACT

The “Enrichment Program for Cultivating Problem Solving Abilities and Multiple Intelligences for Gifted Preschoolers” (PSMIGP program) was the first enrichment program for young gifted children in Taiwan. It was an extra-curricular program that was implemented over a 3-year period. The assessment and curriculum were designed by adapting the main part of the DISCOVER curriculum.

The purpose of this paper was to introduce the identification model and to analyze the participants' performance in problem solving activities and in demonstrating their special talents. To offer enrichment services for gifted young children, the researchers developed an identification model to discover more young gifted children and serve their needs in learning, regardless of the nature of their talents, disabilities, or cultural or socio-economical status. All participating young children were screened in a three-stage process that included both objective and subjective assessments, including checklists, interviews, portfolio assessment, group intelligence tests, observation in the play corner, individual intelligence tests, and structured observation activities. It was also necessary to adjust the standardized test procedure to fit the needs of twice exceptional young children.

In total there were sixty-one preschoolers participated in this three-year program, including eleven twice exceptional children and one child from a new immigrant home. Among these sixty-one preschoolers, eight of them participated in two years of the program; the others only participated in one year of the program. The results of this enrichment program found significant correlations among the measurement scores; the scores of teacher assessment of problem solving abilities also showed that most students performed well on all five kinds of problem solving types. From children's archives, participating children presented scientific thinking characteristics, such as rich knowledge with fascinating imagination and the ability to seek many approaches to solving problems. They were delighted to challenge others and pleased to be challenged. The twice exceptional children also performed well in the program, especially those children with autism whose progress in social skills and group adaptability were remarkable. In sum, the researchers in this program had a belief that children, whether gifted or not, did not get the satisfaction of making progress until they had opportunities to find and develop their potentials.

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1. Introduction

From the perspective of developmental psychology, the most crucial stage of brain growth is the first five years of life. Clark (1992) inferred that children's “mental powers” show rapid growth during the two through five year period. “Speech, mobility, and increasing social involvement all add to the fast-paced intellectual development” (Clark, 2008, p. 102). As Restak indicated, “the more complex the experience, the richer the environment, the more complex the brain” (Restak, 1986, p. 91).

The earlier gifted children are identified and provided with appropriate programs, the better their chances of fully actualizing their potential. On the contrary, when young gifted children fail to be challenged during their early years in school and in family situations, they tend to develop negative feelings toward school and develop poor work habits, and then become underachievers (Karnes & Johnson, 1991, p. 268).

In Taiwan, although the “child welfare act” strongly emphasizes provision of early intervention for children with developmental delays, most services are designed to assist in developing children's disability only. So far there is very little evidence of similar programs being developed for the gifted or twice exceptional preschoolers in Taiwan; that is, before our program began, these participating preschoolers had no opportunity to be identified as gifted or not.

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Many parents responded to the hotline of the Special Education Center, National Taiwan Normal University (NTNU) that their children felt bored and did not want to participate in classroom activities. In view of these factors, the “Enrichment Program for Cultivating Problem Solving Abilities and Multiple Intelligences for Gifted Preschoolers” (PSMIGP program) was proposed as the first experimental program in Taiwan to provide opportunities for gifted preschoolers with and without disabilities to cultivate and nurture their problem solving abilities and multiple intelligences.

Burns, Mathews and Mason (1990) mentioned that due to the public school system's inability to identify and serve intellectually superior preschool children, the academic/intellectual development were stifled. To offer enrichment services for young gifted children, we developed an identification model to discover young gifted preschoolers. Although the main concept of this enrichment program originated from the DISCOVER project, all the assessment tools, curriculum design and teaching materials were constructed by local teachers in Taiwan. The purpose of this enrichment program was to develop children's intelligences and improve their problem solving ability.

The purpose of this paper was to introduce the identification model and to analyze the participants' performance in problem solving and in demonstrating their special talents.

2. Literature review

2.1. Characteristics and needs of learning in young gifted children

Generally speaking, exceptionally gifted children are children who exhibit a higher level of personal maturity in one or more areas than others of the same age or others at similar stages of intellectual and emotional development (Hoeksema, 1982; Gross, 1993). The advanced cognitive abilities of gifted children at four or five may include (a) high verbal ability, such as using words they create and familiar words to create long and complicated sentences, ability to explain more than ten simple terms, and faster responses to questions asked by teachers; (b) high reading ability, such as ability to read before the age of five without direct vocabulary teaching by adults, or having a wide range of reading materials, especially those reading materials for primary school students or adults; (c) high mathematical ability, such as counting by fives and tens and adding and subtracting double-digit numbers; (d) good time perception, such as ability to read the clock and tell the time to the hour and minutes, and to read months, days of the week, and dates from a calendar; (e) good memory, to be able to memorize or recite exactly five or six numbers or terms or more, to memorize by repeating the words or painting, and to have a more complex memory span than peers; and (f) sustained attention, to be able to direct and focus on a specific object or activity for a period of time, and hate being interrupted.

The instruction of young gifted children should be based on an understanding of their characteristics and appropriate assessments. The uneven intellectual, socio-emotional, and motor development of gifted preschoolers should be understood and considered. The assessment should be chosen to benefit the children and facilitate curriculum development to meet their needs (Bredenkamp & Copple, 1997; Cukierkorn, Karnes, Manning, Houston, & Besnoy, 2007). Thus the structure of programs for bright preschool children should be based on an understanding of learning (Cukierkorn et al., 2007; Edwards, 2005; Karnes, Shwedel, & Kemp, 1985). Curricular modifications for bright preschool children also need to provide depth and breadth to learning; specific instruction in research skills to facilitate scientific experimentation, and teaching strategies to facilitate learning (Cline, 1998).

2.2. Assessment tools for young gifted children

Identification is the first step to serve gifted preschoolers. Standardized tests such as intelligence tests or achievement tests

are most commonly used but are not well suited to identify bright preschoolers. Assessments tools for young gifted children include objective and subjective assessments such as intelligence tests, achievement tests, parent observation, teacher observation/recommendation, and portfolio assessment. Objective assessment is a form of questioning that has a single correct answer. Common objective assessments suited to identify young gifted children are standardized tests like intelligence and achievement tests.

Intelligence tests are most frequently used to assess general intelligence. The common types of intelligence tests are group intelligence tests and individual intelligence tests. Group intelligence tests are often used as a tool for screening, because they are more economical for administering than individual intelligence tests (Assouline, 1997). In general, group intelligence tests are not recommended for the purpose of identifying a child with high ability, because the individual tests provide better information at the higher levels of ability than group tests (Gray, 1980; Sattler, 1992). Essentially, the test ceilings of individual tests are higher. Therefore, group intelligence tests are often used in the first stage of identification while individual tests, which provide valuable separate subtest scores are used as the final identifiers.

An achievement test is a test to measure developed skill or knowledge. Some researchers have found that some young children have higher reading and mathematical abilities even though they have average IQ scores. Thus they argue that educators should use achievement tests as additional measures of young children's ability in reading and mathematics (Sattler, 1992). However, some researchers disagree, stating that achievement tests are not well suited for identifying young gifted children, because (a) the paper-and-pencil tests assess fine neuromuscular development, fine motor skills, and task-appropriate behavior, which is still developing in early childhood; (b) young children are easily affected by temporary changes of moods that may disturb their performance; and (c) the test cannot tap a gifted child's vast accumulated knowledge and skills (Hoeksema, 1982; Shaklee & Handsford, 1992).

Shaklee (1992) suggested that if tests are not the most appropriate methods of evaluating potential or performance in early childhood, then systematic observation and documentation are other choices. Alternative assessments such as parent observation, teacher observation/recommendation, and portfolio assessment have been used for screening for giftedness in many educational programs.

Parent observation also plays an important role in identification of young gifted children, because parents, as the key child care providers, are usually the first persons who see their children's special talents in daily life. Through structured scales, questionnaires, or interviews, parents provide valuable information about “their children in free behavior situations and less restrictive environments than the classroom” (Feldhusen & Baska, 1989, p. 87). Examples are when the child first utters a word, when he or she learned to read by himself/herself, “the child's special interests and hobbies, recent books he or she enjoyed or read, special talents, preferred activities when alone, relationships with others, special problems and/or needs” (Davis & Rimm, 1998, p. 77; Feldhusen & Baska, 1989, p. 87). Parent observation, with valuable information, has become the first stage of identification in most programs for gifted preschoolers in the United States (Burns et al., 1990; Karnes & Johnson, 1991). Most studies showed as well that when parents provide exact information about their young child's development, parent observation will provide more valuable information to identify gifted young children (Fan, 2003; Gray, 1980; Jacobs, 1971; Louis & Lewis, 1992; Pletan, Robinson, Berninger, & Abbott, 1995).

Teacher recommendation is commonly used in identifying gifted and talented students, but most studies have indicated that teacher observation tells less than parent observation (Gray, 1980; Gear, 1978; Hadaway & Marek-Schroer, 1992; Jacobs, 1971). Important reasons are (a) teachers who lack special training are unfamiliar with

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