

**The Learning Effects of an Ecology Enrichment Summer Program
on Gifted Students from Mainstream and Diverse Cultural
Backgrounds: A Preliminary Study**

Wen-Ling Wang

Assistant Professor

Department of Special Education

Chung Yuan Christian University

wenling@cycu.edu.tw (E-mail)

Jiun-Wei Wu

Teacher

Taipei County Jinshan High School

G9358616@cycu.edu.tw (E-mail)

Yu-Chin Lin

Senior Student

Chung Yuan Christian University

Abstract

Enrichment is one of the important educational models for gifted students. However, the research on gifted enrichment programs rarely leads to instructional interventions for culturally diverse students. The purposes of this study were: (a) to propose an ecology enrichment summer program for gifted students from mainstream and diverse cultural backgrounds, and (b) to investigate the learning effects of this enrichment program on the multicultural groups. The participants consisted of 31 elementary intellectually gifted students from Jungli city (urban), rural area, and aboriginal tribes in Taoyuan County, Taiwan. The 3-day enrichment program focused on role models, social interaction, brainstorming, multicultural atmosphere, and adding multi-sensory learning of ecology that could expand the regular curriculum in school. Data analysis used in this study included the repeated-measures t-tests and analysis of covariance. The results indicated that overall participants' knowledge on ecology improved significantly after the enrichment activities. Likewise, there were significant knowledge differences between pre- and posttest scores for the three groups. Nevertheless, no significant difference in knowledge performance was found regardless of the status of cultural background. In addition, interview data revealed that mainstream students gained more multicultural experiences while culturally diverse students increased awareness of their culture.

Keywords: Enrichment Programs for the Gifted, Cultural Diversity, Mainstream Culture

INTRODUCTION

Both low-SES (socioeconomic status) and ethnically or racially different students are referred to as culturally diverse students or cultural minorities, since they are reared by values and attitudes different from the majority and the dominant culture (Clark, 2002; Evans, 1993). Low-SES students are those from families with a low income, have poor quality housing, and limited developmental opportunity, such as students from rural areas. Seeley (1993) pointed out that poverty is an important risk factor affecting achievement in school, since poverty often leads to values and attitudes that include lower expectations of success, a less intellectually stimulating environment and poorer general health and nutrition. Clark (2002) stated that the culture of low-SES involves survival and short-term thinking as well as dependency. On the other hand, racially and culturally different students are those from any cultural group that is apparently different from the mainstream culture based on availability of support systems, environmental resources, priority and attitudes toward development and growth. Basically, students of low socioeconomic status and those from the rural areas have similar problems in school to those from racially and culturally different populations with regards to poverty, and very often they are educationally disadvantaged due to cultural deprivation (Wu & Lin, 2003). In the education of gifted students, culturally diverse students continue to be underserved. Test bias, discriminating referrals, deficit based paradigms, and lack of multiple criteria and data sources can result in the low representation of culturally diverse students in gifted programs (Frasier, Garcia, & Passow, 1995). The literature on the identification of gifted students from culturally diverse backgrounds has suggested using (1) culture free tests and assessments, (2) multiple sources and criteria, (3) mother tongue or bilingual in identification, and (4) quota of minority students (Chang & Hsu, 2001; Ford & Grantham, 2003; Garcia, 1994; Kuo, Chang & Wang,

2002; Lu, 1996). In addition, Gallagher (2003) proposed that special programming should be differential for culturally diverse gifted students. That issue still awaits further experimentation and exploration.

Identification of culturally diverse gifted students

The proportion of minority students in gifted education programs is underestimated both in U.S. and Taiwan, with underrepresentation ranging between 50-70% in the U.S. (Ford & Grantham, 2003), and 23% in Taiwan (Liao, 2002). The Jacob K. Javits Gifted and Talented Students Act of 1988 proclaimed that "outstanding talents are present in children and youth from all cultural groups, across all economic strata, and in all areas of human endeavor". The Nebraska Project supported by Javits developed the Nebraska Starry Night Observation (NSNO) protocol to provide K-2 grade teachers with a method of early identification of gifted and creative students, especially traditionally underserved students in small, rural schools and minority students (Griffin, 1993; Griffin & McKenzie, 1993). The NSNO instrument expanded the multiple definitions of being gifted by including nominal descriptions of 17 observable, developmental and process-oriented qualities or behaviors of gifted students. Over a period of two weeks, the sum of at least three remarkable behaviors with at least five total observations across the procedure formed the identification criteria for a potentially gifted student. A five-year follow-up study of the Nebraska Project conducted by Han and Marvin (2000) of 18 students considered potentially gifted in the Nebraska Project found that seven students enrolled in gifted programs, and nine were reportedly performing in the top 10% of their class.

Based on the framework of Gardner's (1983, 1999) theory of multiple

intelligences (MI), DISCOVER (Discovering Intellectual Strengths and Capabilities through Observation while allowing for Varied Ethnic Responses) is a performance-based assessment designed to identify gifted and talented children from culturally diverse groups, and to encourage students to use their dominant intelligences to motivate learning in all subjects, especially the weaker ones (Maker, 2001). The focus of DISCOVER assessment is on solving problems efficiently, effectively and economically in spatial, mathematical and linguistic intelligences (Maker, 2001; Sarouphim, 1999). The DISCOVER problem structure ranges from “Type I” to “Type V”. Type I problems that tend to have only one correct answer are very structured and closed, while Type V problems are open-ended and complicated, where students have to find an appropriate solution from many possibilities (Kuo , 2003; Maker, 2001). In other words, Type I · Type II and Type III problems are clearly defined, whereas Type IV and Type V problems require students to use deductive thinking and creativity to clarify and solve the vague problems (Wu, 2005). Sarouphim (2000) investigated 233 Navajo Indian and Mexican-American students and 24 Anglo students from K-5 to examine the relationship between the DISCOVER assessment and Gardner’s MI theory, and found that students identified as gifted in one intelligence were not necessarily rated highly in the other intelligences. Her following study of 395 middle school students, which included 337 low-SES Mexican Americans and Native Americans and 58 white Americans, also found a good fit between DISCOVER and the MI theory (Sarouphim, 2004). In addition, her results showed no difference between the performance of majority and minority students in the DISCOVER model (Sarouphim, 2000; Sarouphim, 2004).

In Taiwan, Kuo, Chang and Wang (2002) found that Taiwan Native students and oversea Chinese students have an advantageous zone of potential of development (ZPD) in figural reasoning, visual memory, figural integration and logical reasoning but

possess a limited ZPD in verbal relations, verbal memory and mathematical reasoning. The researchers used a dynamic assessment model, a Pretest-Mediation-Posttest model, to assess the learning potentials of culturally diverse students, including 12 Taiwan Native students and 6 oversea Chinese students. During the process, teachers try to elicit various kinds of potentials from students, at the meanwhile students gain more learning opportunities for their intellectual development. In the study, only one student qualified as gifted in the pretest, but after employing dynamic assessment model, eight of the subjects obtained an IQ score of at least 120 in the posttest. As a result the researchers concluded that the dynamic assessment model could help teachers to find and develop the potential of culturally diverse students (Chang & Hsu, 2001; Kuo, Chang & Wang, 2002). Their finding is consistent with the suggestions from a program for American low-SES students called STEP UP (Systematic Training for Educational Programs for Underserved Pupils (Sisk, 2000).

Culturally diverse students and the enrichment program for the gifted student.

Chang and Hsu (2001) proposed that teachers of students that belong to a cultural minority should provide these students various enrichment opportunities concerning their strengths and learning skills. Hébert (2002) also proposed that schools should provide enrichment activities for gifted students from low-SES families, since their families usually cannot afford extracurricular activities. In his case study of three high-ability students from low-socioeconomic backgrounds, Hébert uncovered that through enriched teaching, teachers could meet the special needs of low-SES gifted students based on students' abilities, interests, and learning styles. For cultural minority students, enrichment is more appropriate and effective than other gifted models (Hébert, 2002; Renzulli & Reis, 1997). Involvement in

interest-based extracurricular enrichment activities often allows the low SES-students to pursue real-world problems and develop their own self-identity. Such activities inspire feelings of spontaneous engagement in the students, with a focus on important goals and perceptions of higher level skills and challenges (Hébert, 2002). A three-year study of nine gifted female students from a minority group (Reis & Diaz, 1999) found that gifted high school achievers have enrichment experiences in gifted education programs, extracurricular activities and enrichment summer camps. They matched their peers with the same interests and concerns in those activities, and their successful experiences and resources supported and nurtured their self-confidence and resilience to face the negative parts of their stressful family life and environment (Reis, Colbert & Hébert, 2005; Reis & Diaz, 1999). Following are suggestions of American minority gifted students programs (Alamprese & Erlanger, 1989; Baldwin, 1989; Bowman, 1993; Clark, 2002; Ford, 1994; Frasier, 1989; Maker & Schiever, 1989, p.301) :

1. Recognize students' strengths and develop these potentials.
2. Provide for the development of basic abilities students lack.
3. Consider differences as positive rather than negative traits.
4. Emphasize involvement of the community, parents, and mentors/role models.
5. Create classrooms with a multicultural emphasis.
6. Give opportunities to learn in small groups
7. Provide for opportunities for discussion and use of oral language.
8. Encourage creative expression.
9. Provide multi-sensory learning experiences.
10. Provide individualized education.
12. Provide after-school, weekend, and summer enrichment and accelerated courses or advanced courses at local universities.

13. Encourage goal setting.
14. Provide affective support.
15. Teach from whole to details.

Enrichment, acceleration and ability grouping are three common educational models in gifted education (Clark, 2002; Wu, 2003). In Taiwan, enrichment is the most used (Wang, 1994). Enrichment means adding disciplines or areas of learning not normally found in the regular curriculum, using more difficult or more in-depth material to enhance the core curriculum, expanding the teaching strategies used to present instructions (Clark, 2002), or providing in-depth learning experiences for gifted students (Wang, 2002). Currently, enrichment often includes four types of activities: independent study, learning center, field trip, and weekend and summer/winter study camps (Davis & Rimm, 1988). Chen (1995) reported that in Taiwan enrichment camps can provide in-depth learning opportunities for gifted students, and develop their active learning attitude and social interaction. In addition, the enrichment summer camp not only can foster gifted youngsters academically, but provide them with experience in positive changes in higher-level thinking and creativity (Brewbaker, 1991; Schenkel, 2002). The use of computers and the internet shortens the discrepancy between city school and country school and enables gifted students who live in remote districts to participate in the gifted enrichment programs and interact with peers and teachers in urban areas (Mason & Mason, 1991). For gifted students who hide or mask their giftedness, attending enrichment camps might release the peer pressure and reassure them that there are others like them (Rimm & Rimm-Kaufman, 2001).

Current Study

In Taiwan, research on enrichment programs for the gifted rarely leads to instructional interventions for culturally diverse students. Hence, more research should be conducted regarding what types of enrichment programs and activities could meet the needs of gifted students who are culturally diverse. Equally, from an inclusive viewpoint, we must consider how to meet both the needs of the “minority” and the “majority” gifted students in a program for the gifted that intends to accommodate multicultural groups. Culturally diverse students should not be nurtured separately. Therefore, the purposes of our study are: (a) to propose an ecology enrichment summer program for gifted students from mainstream and diverse cultural backgrounds, and (b) to investigate the learning effects of this enrichment program on each group.

METHODS

Subject Selection

The target population for this study included gifted students from mainstream and diverse cultural backgrounds. First of all, 2 elementary schools in Fuhsing Village, a remote aboriginal village in Taoyuan County, were randomly selected from a list of a total of 12 elementary schools, all of which we visited in April, 2005. During the visits, we conveyed the purpose of our enrichment summer program to the schools. We also asked the third to sixth grade teachers to nominate potential candidates by providing teachers a rating scale of gifted behaviors (a modified Renzulli’s rating scale). After nomination, we received the names of 41 candidates from third to sixth grade. These students were then arranged for testing that emphasized the dynamic assessment model including pretest, mediation, and posttest in order to identify

intellectually gifted students from minority groups. The testing sessions were conducted during May and early June, 2005. All candidates were tested individually at school by the authors using the Test of Non-verbal Intelligence, Taiwanese Version (TONI) (1996). The TONI (1996) is a nationally standardized test for use with children 4-18 years of age. Construct validity and acceptable reliability (the internal consistency coefficient = .856) are reported in the manual.

Twenty five students met the gifted definition criteria: attaining an IQ one and one-half or more standard deviations above the mean on a standardized intelligence test. Finally, 6 aborigines and 1 low-SES student could not attend the summer program. As a result, the participating gifted minority students consisted of 9 aborigines of the Atayal tribe (6 boys and 3 girls) and 9 low-SES students whose parents or caregivers were farmers or workers inside or outside Fuhsing Village (5 boys and 4 girls). For the purpose of this study, the 9 gifted aborigines are defined as intellectually gifted students from an aboriginal tribe while the 9 low-SES students are referred to as intellectually gifted students from a rural area.

As for the mainstream gifted students in our study, we focused on intellectually gifted students in grades 2 to 6 in the neighborhood of our university in Chungli. Chungli is a prosperous industrial city with four well-known universities in addition to many colleges and schools. Most of the gifted students here come from middle to upper-middle socio-economic status families, making it reasonable to refer to these students as gifted students with an urban background from the mainstream of Taiwan society. From April to June, we recruited 13 intellectually gifted students whose parents are supportive and from families who answered our activity announcement on our webpage. From these 13 participants, 12 are early entrants and 1 is a gifted student with learning disabilities (10 boys and 3 girls).

Consequently, the participants in this study are 31 intellectually gifted

elementary students from Chungli city (urban area), rural area, and from aboriginal tribes, all in Taoyuan County. Table 1 provides a summary of the participants by grade.

Table 1

Summary of Subjects by Grade and Background

Area	Aboriginal	Rural	Urban	Total
Grade2	0	0	5	5
Grade 3	2	3	4	9
Grade 4	2	3	1	6
Grade 5	3	2	0	5
Grade 6	2	1	3	6
Total	9	9	13	31

Enrichment Program

The multicultural participants attended our ecological enrichment summer program on July 1, 2, and 3, 2005. This 3-day enrichment program focused on role models (5 gifted high school students served as the team leaders), social interaction, brainstorming, multicultural atmosphere, and adding multi-sensory learning of ecology that could be seen as an extension to the regular curriculum in their school. The following is our schedule.

Table 2

Activity Schedule

Date	Friday July 1, 2005	Saturday July 2, 2005	Sunday July 3, 2005
Time			
08:00-08:30	Registration	Breakfast	Breakfast
08:30-09:00	Opening Ceremony		
09:00-10:10	Orientation/Grouping/P retest	Field Activity I: Inland Wetlands Ecosystems	Hands-on Activity: The Magic of Water Plants
10:10-10:30	Break		
10:30-11:00	Theme Speech I: The Wetlands		Break
11:00-11:30			Conclusion/Posttest
11:30-12:00		Closing Ceremony	
12:00-13:20	Lunch	Lunch	Lunch
13:20-15:00	Theme Speech II: Taiwanese Yellow Water Lily	Field Activity II: Constructed Wetlands Ecosystems	Free Activity/Sharing
15:00-15:20	Break		
15:20-16:20	Small Group Activity		
16:20-18:00	Dinner	Dinner	
18:00-21:00	Multicultural Night	Small Group Activity	

Instruments

The instruments in this study are equivalency tests (one for pretest, and one for posttest). They are developed by the lecturers and experts at our summer program and are based on the most important concepts and contents presented during the summer program. There are 13 multiple-choice items and 1 open ended question concerning water plants and wetlands. Students will receive one point for a correct answer on the multiple-choice items and one point for a good answer on the open ended question.

The following interviews were conducted with 9 students (3 for each group) and designed to gain more information about participants' perceptions of this enrichment program and any change in attitudes after the program. The questions were as follows:

- (1) What are some changes in learning attitudes for you after your participation in the ecology enrichment program?
- (2) How do you feel about the ecology enrichment program?

RESULTS

Our data indicates that the enrichment summer camp affects the knowledge of gifted students from urban area, rural area, and aboriginal tribes. Due to the form of the before-and-after study, repeated-measures t tests were used to determine significant changes between the pretest and the posttest in the knowledge on ecology of the three groups. Also, the tests for normality (Kolmogorov-Smirnov) were conducted for all three groups, and they indicated that all scores satisfied the normality assumption ($p > .05$). The results, as shown in Table 3 show that the improvement in knowledge about ecology for these gifted students was significant, $t = -8.53$, $p < .001$. Likewise, the scores for ecology knowledge for each group of gifted

students from the urban, rural and aboriginal background, enhanced significantly, $t = -4.72$, $p < .001$, $t = -4.08$, $p < .01$, $t = -6.83$, $p < .001$ respectively.

Table 3

Repeated-Measured T Tests of Students' Pretests and Posttests by Background

	N	Mean	SD	t
Rural pretest	9	4.11	1.36	-4.08**
Rural posttest	9	7.44	2.46	
Native pretest	9	4.00	1.80	-6.83***
Native posttest	9	8.22	2.86	
Urban pretest	13	4.23	2.13	-4.72***
Urban posttest	13	8.23	3.03	
Total pretest	31	4.13	1.78	-8.53***
Total posttest	31	8.00	2.76	

** $p < .01$ *** $p < .001$

In addition, we wanted to find out if gifted students from different backgrounds performed differently once they had entered the enrichment program. Because we suspected the pretest to be a confounding variable, a one-way analysis of covariance (ANCOVA) was employed to determine if the final performances of each of the 3 groups, as measured by the posttest, differed significantly (by controlling the confounding variable: pretest). Table 4 shows no significant differences in performances.

Table 4

ANCOVA of Students' Performance by Background

Source	df	F
Background	2	.292

$p > .05$

How do students feel about the ecology enrichment program, and what are some changes in learning attitudes for them after their participation in the ecology enrichment program? The interviews with 9 students indicated that students felt good about the program, using words such as “interesting”, “good”, “variety”, “enriched”, “warm”, “educational” to describe the enrichment program. All 9 students stated that they learned a lot about ecology and multicultural, especially the Atayal culture. Most students stated that they will respect other cultures, and 3 Atayal students stated that they wanted to further explore their own culture. Eight out of nine students mentioned that they liked their new friends and the teachers they met at the program.

DISCUSSION

Banks and Banks (1993) advised that the programs provided for culturally diverse students may merely address the expressive aspect of their culture and overlook the essential issue that the students have to go out into the majority and mainstream world where they have to compete and cooperate with others. Clark (2002) also suggested that culturally diverse gifted students do not need a separate curriculum when the learning activities are individualized and full of positive attitudes toward cultural differences. Thus, the first purpose of this study was to propose an

ecology enrichment summer program for gifted students from mainstream and diverse backgrounds so that they can interact with each other and acquire more advanced knowledge. We hypothesize that the precepts summarized from educational suggestions of minority gifted students can be applied to mainstream gifted students. Therefore, in our inclusive summer program, we try to emphasize that cultural diversity is valuable and that learning activities should model social equality for all students. In addition to multicultural, other suggestions indicated in the literature are also adopted in our summer program, including role models, small group activity and social interaction, brainstorming and discussion, multi-sensory learning of ecology that could expand the regular curriculum in school.

The second purpose of this study was to investigate the learning effects of the ecology enrichment summer program on mainstream and culturally diverse gifted students. Our data collected in this study indicated that overall participants' knowledge on ecology improved significantly after the enrichment activities were conducted. Likewise, there were significant differences in knowledge between pre- and post-test scores for the three groups: gifted students from urban area, from rural area, and from aboriginal tribes. No significant difference in knowledge performance was found regardless of the status of cultural background. Hence, our summer program which is designed according to the suggestions of minority gifted students' education is also applicable to mainstream gifted students. Gifted students from mainstream and diverse cultural backgrounds, especially racially and ethnically diverse gifted learners and economically disadvantaged gifted learners, all exhibit significant knowledge improvement in our study. Interview data also revealed that all three groups of participants feel positive about the program, and feel impressive about the multicultural experiences. According to the interview data, mainstream gifted students gained more multicultural experiences while culturally diverse

students increased the awareness of their culture.

Although the positive outcomes were found in this study, interpretation of the findings should be cautious due to a small sample size. Prospective researchers can recruit more participants to increase the statistical power.

References

- Alamprese, J., & Erlanger, W. (1989). *No gift wasted: Effective strategies for educating highly able, disadvantaged students in mathematics and science (Vol. I: Findings)*. Final report prepared for the U.S. Department of Education, Office of Planning, Budget and Evaluation under Contract No. 300-87-0152. Washington, DC: Cosmos.
- Baldwin, A. (1989). The purpose of education for gifted black students. In J. Maker & S. Schiever (Eds.), *Critical issues in gifted education (Vol. II): Defensible programs for cultural and ethnic minorities* (pp. 237-245). Austin, TX: Pro-Ed.
- Banks, J. A., & Banks, C. M. (1993). *Multicultural Education* (2nd ed.). Boston: Allyn & Bacon.
- Bowman, B. (1993). Early childhood education. In L. Darling-Hammond (Ed.), *Review of research in education (Vol. 19)* (pp. 101-134). Washington, DC: American Educational Research Association.
- Brewbaker, J. M. (1991). *Challenging the Future through Young Adult Literature, Fiction Writing and Local History*. Paper presented at the Annual Meeting of the National Council of Teachers of English, Seattle, WA.
- Clark, B. (2002). *Growing up gifted* (6th ed.). Upper Saddle River, NJ : Pearson Education.
- Davis, G., & Rimm, S. B. (1998). *Education of the gifted and talented* (4th ed.). Needham Heights, MA: Allyn& Bacon.
- Evans, K. (1993). Multicultural counseling. In L. K. Silverman (Ed.), *Counseling the gifted & talented* (pp. 277-289). Denver, CO: Love.
- Ford, D. Y. (1994). *The recruitment and retention of African-American students in gifted education programs: Implications and recommendations*. Storrs, CT: National Research Center on the Gifted and Talented.
- Ford, D. Y., & Grantham, T. C. (2003). Providing Access for Culturally Diverse Gifted Students: From Deficit to Dynamic Thinking. *Theory Into Practice*, 42(3), 217-225.
- Frasier, M. (1989). Identification of gifted black students: Developing new perspectives.

- In J. Maker & S. Schiever (Eds.), *Critical issues in gifted education (Vol. II): Defensible programs for cultural and ethnic minorities* (pp.213-225). Austin, TX: Pro-Ed.
- Frasier, M., Garcia, J. H., & Passow, A. H. (1995). *A review of assessment issues in gifted education and their implications for identifying gifted minority students*. Research Monograph 95204. Storrs, CT : National Research Center on the gifted and Talented.
- Gallagher, J. (2003). Issues and challenges in the education of the gifted. In N. Colangelo, & G. A. Davis (Eds.), *Handbook of gifted education* (3rd ed., pp. 11-23). Boston: Allyn & Bacon.
- Garcia, J. H. (1994). Nonstandardized instruments for the assessment of Mexican-American children for gifted/talented programs. In S. B. Garcia (Ed.), *Addressing cultural and linguistic diversity in special education: Issues and trends* (pp. 46-57). Reston, VA: Division for Culturally and Linguistically Diverse Exceptional Learners, Council for Exceptional Children. (ERIC Document No. ED 379814).
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
- Gardner, H. (1999). *Intelligence reframed: Multiple intelligences in the twenty-first century*. New York: Basic Books.
- Griffin, N. S. (1993). *Nebraska project-Replication guide*. Lincoln, NE: University of Nebraska-Lincoln.
- Griffin, N. S., & McKenzie, J. (1993). *Nebraska Starry Night: A behavior-based observation protocol*, version 8.893. Lincoln, NE: University of Nebraska-Lincoln.
- Han, K., & Marvin, C. (2000). A Five Year Follow-up Study of the Nebraska Project: Still a long way to go. *Roeper Review*, 23 (1), 25-33.
- Hébert, T. P. (2002). Educating gifted children from low socioeconomic backgrounds: Creating visions of a hopeful future. *Exceptionality*, 10(2), 127-138.
- Kuo, C. C., Chang, L. W. & Wang, M. N. (2002). *A Study on Assessing the Learning Potentials of Culturally Diverse Students*. Paper presented at the 7th Asia-Pacific Conference on Giftedness. August 12-16, Bangkok, Thailand.
- Maker, C. J. (2001). DISCOVER: Accessing and developing problem solving. *Gifted education international*, 15, 232-251.
- Maker, C. J., & Schiever, S. W. (Eds.). (1989). *Critical issues in gifted education : Defensible programs for cultural and ethnic minorities*. Austin, TX : Pro-Ed.
- Mason, M. M., & Mason, W. B. (1991). Project S.C.A.M.P. (Science, Computer, and Mathematics Professions): A Young Scholars Program for Academically Talented Rural Youth. In *Reaching Our Potential: Rural Education in the 90's*, Rural Education Symposium, Nashville, TN.
- Reis, S. M., Colbert R. D., & Hébert, T. P. (2005). Understanding resilience in diverse, talented students in an urban high school. *Roeper Review*, 27(2), 110-120.

- Reis, S. M., & Diaz, E. (1999). Economically disadvantaged urban female students who achieve in schools. *The Urban Review*, 31(1), 31-54
- Renzulli, J. S., & Reis, S. M. (1997). *The schoolwide enrichment model: A how-to guide for educational excellence*. Mansfield Center, CT: Creative Learning Press.
- Rimm, S. B., & Rimm-Kaufman, S. (2001). *How jane won: 55 successful women share how they grew from ordinary girls to extraordinary women*. New York: Crown Publishing Group.
- Sarouphim, K. M. (1999). DISCOVER: A promising alternative assessment for the identification of gifted minorities. *Gifted Child Quarterly*, 43(4), 244-251.
- Sarouphim, K. M. (2000). Internal structure of DISCOVER: A performance-based assessment. *Journal for the Education of the Gifted*, 23(3), 314-327.
- Sarouphim, K. M. (2004). DISCOVER in Middle School: Identifying Gifted Minority Students. *Journal of Secondary Gifted Education*, 15(2), 61-69.
- Schenkel, L. A. (2002). Hands On and Feet First : Linking High-Ability Students to Marine Scientists. *Journal of Secondary Gifted Education*, 13(4), 173-91.
- Seeley, K. (1993). Gifted students at risk. In L. K. Silverman (Ed.), *Counseling the gifted & talented* (pp. 277-289). Denver, CO : Love.
- Sisk, D. A. (2000). Maximizing the potential of minority economically disadvantaged students. *Journal 2000*, Illinois Association for Gifted Children, 44-47.

Chinese References

- Chang, L. W. & Hsu, C. L. (2001). *Course Design for Teaching and Learning to Students of Cultural Diversity* (Publication No.: NSC 89-2413-H-142-010). Taipei: National Science Council.
- Chen, M. F. (1995). A Review of Holiday Enrichment Program for Gifted Primary and Secondary Students in Northern Taiwan, *Gifted Education Quarterly*, 54, 4-8, 25.
- Kuo, C. C. (2003). Starting after Thirty Years: Introducing an Enrichment Program for Gifted Preschoolers. *Gifted Education Quarterly*, 88, 7-17.
- Liao, Y. K. (2002). *The Study of the Multi-talent Searching Model for the Aboriginal Students*. Unpublished doctoral dissertation, National Taiwan Normal University, Taipei, Taiwan.
- Lu, T. H. (1996). The Gifted Education of the Minorities. *Gifted Education Quarterly*, 54, 8-17.
- Wang, J. D. (1994). Past and Future of Gifted Education in Taiwan. In Special Education Association of the Republic of China & The Special Education Center of National Taiwan Normal University (Eds.), *Past and Future of Special Education in Taiwan* (pp. 79-100). Taipei: Special Education Association of the Republic of China & The Special Education Center of National Taiwan Normal University
- Wang, W. L. (2002). *The Characteristic and Education of Gifted Preschoolers*. Taipei:

Psychological Publishing.

Wu, C. S. & Lin, T. Y. (2003). *The Dictionary of Education*. Taipei: Wu-Nan.

Wu, S. M. (2005). DISCOVER Curriculum: Integrating Development of Multiple Intelligences and Problem-solving Ability. *Gifted Education Quarterly*, 96, 1-15.

Wu, W. T. (2003). Thirty-Year's Gifted Education in Taiwan. *Gifted Education Quarterly*, 88, 1-5.