Impact of Gifted Program from Math and Science Talent Students’ Perspectives

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Abstract

The purpose of this study was to understand the impact of gifted programs on students talented in math and science. Five subjects were interviewed. Interview questions probed the subjects’ learning experiences, their relationships with peers, and their views on how their participation in gifted programs had impacted their lives. The major findings were as follows: The subjects benefited from the gifted programs they had participated in. They reported that their teachers had engaged them in high-level thinking, and created conducive learning environments, as compared to general education classes. The subjects realized that they had accomplished remarkable growth in many areas such as acquiring new knowledge, learning problem-solving and independent study skills. The researcher addresses the relevance of the findings to policy makers and educators.
Introduction

The main purpose of education is to allow students to show their potential and make contributions to society. To educate effectively, schools have to provide a supportive educational climate, create challenging classroom instruction activities and provide appropriate curriculum to respect individual learner’s characteristics. Learning characteristics of gifted students are different from average ability students. They learn broader, deeper and at a faster pace. To cope with their special needs, schools have to adapt teaching materials and the pace of teaching in order to match their advanced abilities (Tsai & Lin, 2005). Tasi (2005) mentioned that gifted students need more flexible and appropriate curriculum to fulfill their potential; they need instruction at a level and pace as well as conceptual complexity commensurate with their advanced level of ability and achievement. Without flexible curriculum, gifted students who can learn faster, master higher levels of content at an earlier age and handle abstract concepts are forced to waste their time. This mismatch may cause the waste of their potential.

Bloom (1985) concluded that development of exceptional talent requires certain types of environmental support, excellent teaching and appropriate encouragement. Several studies indicated that schools and teachers have to implement research programs, and to initiate project-based learning in their curriculum to help their gifted
students develop their potential. (Baum, Renzulli & Hebert, 1994; Bloom, 1985; Bloom, Zimmerman, 1998; Renzulli & Reis, 1997). Schools should support and give the opportunity to the students who are interested in science and math research projects to have a chance to work under the guidance of mentors to fulfill their special needs. Schools incorporate research programs with universities or research institutions so that their gifted students can enrich their knowledge and develop their potential (Baum, Renzulli & Hebert, 1994; Clark & Zimmerman, 1998; Hertzog, 2003; Moon, 1995; Subotnik & Arnold, 1994; Subotnik & Steniner, 1994. The Special Education Law was promulgated in 1994 and has been revised many times in Taiwan. The Law and its following regulations resulted in a rapid growth of gifted education in Taiwan. The Ministry of Education in Taiwan has been providing math and science gifted programs for gifted students since 1986. The researcher wants to know the impact of gifted programs from math and science talent students’ perspective.

**Method**

The researcher mailed a letter to the schools and encouraged teachers to recommend their gifted students who had outstanding achievements in math and science fields. Five subjects were chosen because of their outstanding achievements in math and science fields. The subjects were interviewed about their prior experiences in gifted programs and their perspectives on the impact of these experiences on their
In this study, the qualitative method by means of semi-structured interviews was used to collect qualitative data and analyzed. Five subjects were interviewed about their prior experience in gifted programs. All interviews were recorded and transcribed. The transcripts were sent to the subjects and were modified by them in order to ensure accuracy. They were analyzed qualitatively with coding schemes related to questions and themes as they emerged from the responses. It is important to note that the interview questions prompted responses that were descriptive in nature. No attempt was made to analyze them quantitatively because they were not posed such that they could be answered in that particular way.

**Results**

The subjects expressed that a major benefit of participating in a gifted program was that it better prepared them for future development. The subjects realized that they had accomplished remarkable growth in many areas. The main findings are as follows..

**Schools provided appropriate environments for gifted students.**

The subjects mentioned that schools arranged better teachers for gifted classes.
They commented that their teachers were more enthusiastic about teaching than general classes’ teachers.

The subjects reported that schools provided more resources for gifted students. They mentioned that schools provided excellent facilities such as professional classrooms, computer labs and laboratory equipment for gifted students. All the subjects mentioned that schools also made special arrangements for gifted students such as providing adequate curriculum to fulfill their special needs, implemented science research programs, and initiated project-based learning in their curriculum. They mentioned that gifted programs provide the opportunities for those who are interested in science and math research projects to work under the guidance of mentors. One subject mentioned that” I think mentorship extended my knowledge in math and science; it taught me to overcome the difficult things, learn how to solve problems and be responsible with things.”

Three subjects mentioned that schools’ incorporated research programs with universities and research institutions had positive influences on them. One subject commented “mentors in these programs provided challenges and stimulation”. Another subject commented “my education was enriched by gifted program. These special experiences led me to dedicate myself to the scientific research.”

All subjects commented that gifted program experiences helped them accomplish
more difficult tasks. One student said “gifted program really taught me to overcome the challenges. They mentioned that gifted programs better prepared them for college, helping them to value hard work and encouraging their interest in career possibilities. It also assisted them to evaluate their potential and set higher goals.

**Teachers modified curriculum to fulfill gifted students**

They said teachers would adjust curriculum such as fewer teacher lectures, more emphasis on high-level thinking, problem-solving, and conducting more open discussions, hands-on exploration and science experiments. They commented that their teachers created conducive learning environments and engaged them in high-level thinking. One subject mentioned “my teacher always let students go at their own pace and work independently.” Another subject said that “my teachers engaged me in high-level thinking and created conducive learning environments, I was motivated to do science research set by my teacher”. They realized that schools and teachers adjusted the rate of instruction, modified curriculum as well as the level of instruction to meet their distinctive learning needs. These experiences gave them more interesting activities and elicited better study skills, which ultimately helped them in college. Gifted program gave them a work ethic by teaching them to work hard to accomplish their goals. One subject commented “in the gifted program I learned the methodology, including how to design and conduct an experiment. He realized that gifted programs
made him aware of his abilities, especially in pursuing science as a career.

**Problems and Difficulties**

Two subjects realized that University Admission Policy had negative effects for gifted students. They mentioned that the admissions of top universities rely mostly on the results of standardized examinations in Taiwan. They commented that standardized examinations made them spend too much time on reviewing what they learned, they spend a lot of time mastering the same amount of materials in order to pass the standardized examinations. They had difficulties coping with the university standardized examinations. This mismatch caused the waste of their potential

**Conclusion and Recommendations**

The study indicates that gifted programs resulted in more positive consequences than negative ones. Students who received gifted program services showed outstanding achievements in math and science fields. They realized that gifted programs assisted them to evaluate their potential and to set higher expectations for themselves.

The perceptions found from this study provide several recommendations to educators and policy makers.

1. Schools and teachers have to modify and provide challenging curriculum to fulfill gifted students’ special needs. The results indicated that teachers
modifying the curriculum can fulfill gifted students’ special needs. Gifted students need more flexible and appropriate curriculum to develop their potential. In order to cope with individual differences, schools and teachers have to understand the individual learner’s characteristics, their special needs, and provide support and guidance to them.

2. Schools are encouraged to implement science and math research programs and to initiate students’ interest in math and science. Schools should work hard to incorporate research programs with universities and research institutions, support students who are interested in science research and provide the opportunities for gifted students to work under the guidance of researchers.

3. In Taiwan the admissions at top universities rely mostly on the results of standardized examinations. Standardized examinations tend to waste gifted students’ time and their potential. The researcher suggests the Ministry of Education in Taiwan offer multiple university admission policies for gifted students.

4. To organize an association for gifted students after they graduate. In order to provide a continuing learning environment for gifted students, schools and policy makers should arrange an association for gifted students to continue to develop their interest in science and math. This association can create an
encouraging motivating environment for gifted students. By joining this association gifted students may have a chance for contact with other peers with same interests and continue to pursue science research in future.

Reference


Delisle, J., & Squires, S. (1989). Career development for gifted and talented youth:


