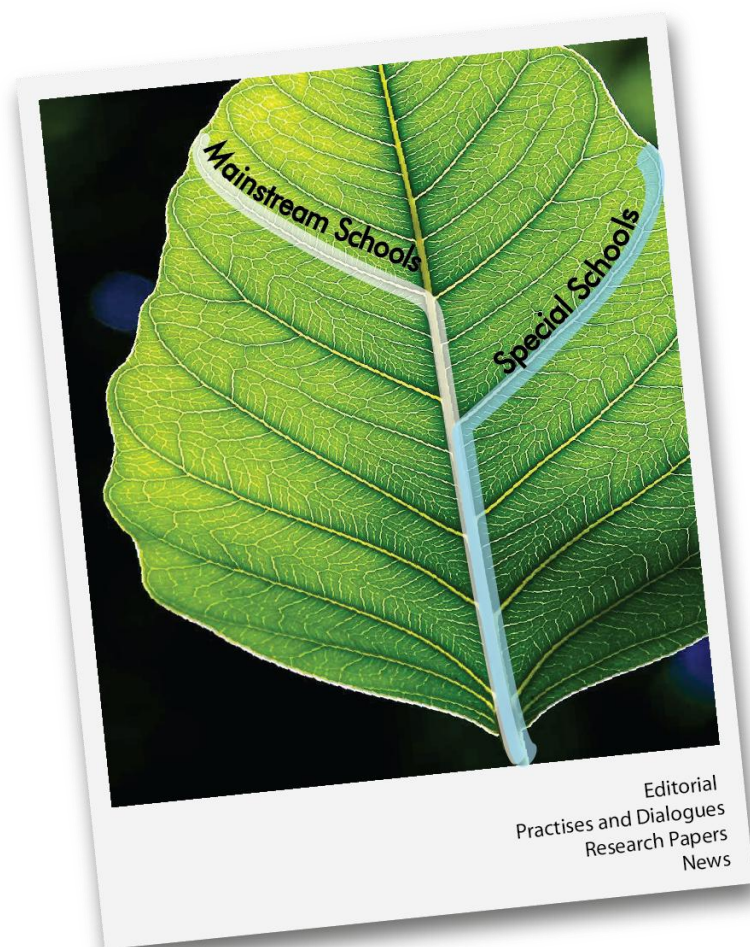


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Nurturing gifted learners in Mainland China: A Bio-socio-intellectual perspective

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Abstract

In this article, based on previous research on development of gifted learners, the authors summarize problems in nurturing gifted learners due to lacking of appropriate educational philosophy and educational methodology in Mainland China. The authors propose that the 'bio-socio-intellectual model', best illustrates the nature of human beings and the nature of gifted learners. From the perspective of the BSI model, the authors suggest three aspects that are critical in curriculum design to meet the needs of gifted education. The three aspects are: physical maturation or physical development, social maturation or social and interpersonal development, and mental maturation or intellectual development. It is argued that the BSI model has theoretical rationality and practical validity in mainland China.

Key Words

bio-socio-intellectual model, gifted education, Mainland China, nurturing gifted learners

Introduction

Galton's book, *Heredity Genius* (Galton, 1869), stimulated worldwide interest in giftedness and talent, especially in the debate on issues of nature vs. nurture. In order to test Galton's hereditary theory of genius or giftedness, Terman and his colleagues launched a famous longitudinal study on giftedness. The study involved 1528 participants with IQs of 135 or higher, selected in the area of Chicago in the 1920s (Terman, 1925; Terman & Oden, 1947, 1959). The remarkable follow-up investigation is still ongoing. According to this investigation it seemed that highly intelligent individuals had better lives and achieved at a higher level than a randomly selected population from the same area. To test the hypothesis that the more intelligent an individual is the higher the level he or she could achieve, Cox conducted a retrospective study and estimated the IQs of 301 eminent people in history (Cox, 1926). In a similar study, Lin (1939), a scholar from Capital Normal University, estimated the intelligence of 34 famous ancient scholars in Tang and Song Dynasties. Lin published his work in 1939, without knowing of the study by Cox. According to the studies by Cox and Lin, eminent people in history had higher intelligence than the average population.

Galton's *Heredity Genius* and Terman's life-long follow-up study, together with other studies on the highly gifted group, served to stimulate worldwide interest in the development of gifted and talented individuals. Key findings from Terman's study indicated that although gifted individuals tended to reach higher achievement levels than the general population, not every gifted child identified as highly intelligent actually displayed high achievement when he or she was grown up (Holahan & Sears, 1995; Oden, 1968; Terman & Oden, 1947, 1959; Zuo & Cramond, 2001). It was found that a number of factors play a role in determining the development of highly intelligent individuals, including the *personality* of the gifted individual (Olszewski-Kubilius, Kulieke & Krasney, 1988; Zuo & Cramond, 2001), *family and environment* (Getzels & Jackson, 1961; Holahan & Sears, 1995; May, 2000; Rothenberg & Wyshak, 2004), and *education or intervention* (Borland, 2003; Heller, Mönks, Sternberg, & Subotnik, 2000; Shi & Xu, 2004; Subotnik & Arnold, 1994; Xin, Si, & Zhu, 1991; Zha, 2006).

Theoretical and scientific studies of giftedness and the education of gifted learners have made huge advances in recent years (Zhang, Chen, & Shi, 2012). More and more models and theories have been proposed to guide gifted education. These advances include the

Differentiated Model of Giftedness and Talent (DMGT) (Gagné, 2004), the *Actiotope Model of Giftedness* (Ziegler, Sternberg, & Davidson, 2005), the systemic theory of gifted education (Ziegler & Phillipson, 2012), and *Talent Development Megamodel* (Subotnik, Olszewski-Kubilius, & Worrell, 2011). All the models and theories emphasize individual abilities and psychosocial factors in developing talents, as well as the interaction between individuals and their environment.

We could say that Galton's *Heredity Genius* aroused public curiosity about gifted and talented individuals, and Terman's longitudinal study made people realize the importance of providing appropriate special education for the gifted group. It appears that the United States of America was the first country which intentionally implemented gifted education, and it provides a good example of gifted education in practice. Compared to the United States, China was at least fifty years behind in the field. This paper discusses the evolution of practices, perspectives and issues related to nurturing gifted learners in Mainland China.

Problems in previous years

Gifted education practice in Mainland China commenced in 1978. There are two milestones in its development: first in March, 1978 with the establishment of a special class for gifted adolescents aged 11 to 16 years in the University of Science and Technology of China (USTC) (Xin, Si & Zhu, 1991; Shi & Xu, 2004; Zha, 2006). The second milestone occurred later in 1978, when a research team on gifted and talented children was established, led by Professor Zha from the Institute of Psychology of Chinese Academy of Sciences (Shi & Xu, 2004). At the time, gifted students were described as '*supernormal children*'—a term created by Chinese psychologists (Shi & Xu, 2004).

China had resumed its national university enrollment examination system in 1977, with the *Zeitgeist* of "cultivating people with high abilities more, earlier, and better". The first gifted class was called *ShaoNianBan* (少年班) in Chinese, and its creation was accompanied by many news reports describing its scope and purpose. Some highly gifted individuals from the class appeared in national and provincial newspapers and on radio programmes, thus attracting enormous attention all over the country. Thousands of adolescents in China admired these gifted students and were motivated to study in this special class. Actually, Chinese *parents* were much more driven, and in following years they developed a strong

desire to push their sons and daughters to join the special class at USTC. As a result, every year more than four-thousand applicants competed for about 40 places in the gifted class.

Interestingly, in the 34-year-history of *ShaoNianBan* at the USTC, and despite the competition for places, there are more than ten families who have had two children enrolled. Among them is a family with 6 children, who became well-known because the father wrote a series of books about how he made his children gifted. He became a best-selling author because his books were bought by thousands of parents who wanted to get their children enrolled in USTC (Cai, 2007).

In order to meet the growing need in society during the 1980s, other universities set up *ShaoNianBan*, but without adequate theoretical and practical preparation. By the year 1990, at least 13 key universities—such as Peking University, Tsinghua University, Xi’an Jiaotong University—had set up special classes for highly gifted adolescents. As a result, some of the gifted students enrolled in special classes in universities were not treated appropriately, because the tutors actually did not have enough knowledge and experience in how best to educate gifted intellectuals. Behavioral or psychological problems frequently developed in gifted students in *ShaoNianBan*. Some even thought that the years spent in their *ShaoNianBan* were the darkest period of their life.

Gradually more and more people came to realize that setting up special gifted classes in universities without theoretical knowledge, practical skills and training for teachers in gifted education is counterproductive. As a result, many of the universities gradually closed down their special classes by mid 1990s. There are only two universities that still have special classes for gifted adolescents—the USTC and Xi’an Jiaotong University.

Educators in universities now realize the importance of an appropriate curriculum for gifted youth, and they have begun to adopt useful teaching methods developed overseas to motivate their students. For example, there are some innovative features in the Chemistry course for the *ShaoNianBan* at USTC, including the utilization of American textbooks, multimedia teaching, thought-provoking and discussion-type assignments, interactive communication between teachers and students, and encouragement of thematic presentations by students (Luo, 2010).

In parallel to the universities setting up *ShaoNianBan*, thousands of Chinese parents tried to implement their own gifted education at home, based on their own philosophy that genius could be made by intensive early childhood education. This led ultimately to a serious problem in the field of gifted education in Mainland China. Many parents were influenced by some Jacobinical ideas of early childhood education, believing that early intensive education can make an average (or even an intellectually disabled) child into a genius. The problem is reflected, for example, by the fact that a book titled *The Education of Karl Witte* (Witte, 1914, see Bruce, 1914) became one of the best sellers in China, with more than 5 million copies sold in the Mainland. Millions of parents attempted to ‘create’ a genius or *Shen Tong* (神童) in China. Some gifted children were taught by their fathers or mothers at home, but only academic subjects such as mathematics, Chinese, English, physics, chemistry or sciences were the focus. Personality, mental health, socialization and inter-personal skills were totally neglected. Unfortunately, rather than millions of *Shen Tong* being created, this inappropriate educational philosophy and methodology resulted in the motivation and confidence of some naturally gifted children being destroyed.

As an example, a gifted child YW was very well-known in the 1980s in Mainland China. He could recognize 2000 Chinese characters when he was 2 years old and finished primary school at age 4. He was taught by his mother at home for several years and then, at age 13, he was enrolled as an undergraduate student at a key university in Hunan Province. His mother accompanied him and took care of him all the time until he graduated from the university at age 17. He was not asked to do anything except read books, learn his academic subjects, and do his homework. So he was not able to do anything related to daily life. In the same year he was enrolled in a postgraduate program by one of the top Graduate Schools in China. But rather than getting his PhD degree five years later he had to drop out of the postgraduate program after two years, because he had too many serious behavioral problems. He also lacked the essential survival skills for independent living. YW is a typical example of a highly gifted child who was not educated and socialized appropriately.

As exemplified in the previous paragraphs, knowing the importance of gifted education is one thing, but knowing how to appropriately educate gifted and talented learners effectively is another thing. In order to practice good education for gifted individuals, educators must know what these students need, and what is necessary for them to develop into mature members of society. It is essential to know what traits and characteristics gifted

learners have, in order to take these into account when designing curricula and adopting teaching methods.

Before discussing gifted education as implemented in Mainland China it is necessary to discuss the nature of giftedness within the context of ‘being human’. How does the gifted individual develop and function? What factors influence development?

Being human (and gifted): the bio-socio-intellectual (BSI) perspective

Physical Factors: Firstly, the biological and hereditary aspects are important features of being human. Development of all human beings has to follow the laws of natural biological heredity. According to heredity, we can easily understand, for example, the fact that daughters are very like their mothers, and that black-haired parents have children with black hair. Obviously, genes also play a role in the inheritance of body structure. In this context, the neural system is an intricate part of body structure. Genetic influences affect the structure and functioning of this system, including the brain. It is commonly accepted that mental abilities and psychological processes are all functions controlled by the human brain, and are involved in learning. Biological genetic factors therefore directly and indirectly influence the development of mental abilities in human beings. It is essential for an individual to have a brain that enables him or her to be intelligent and skillful enough to survive in the world. Individuals obviously differ in the quality and functioning of their neural system, and this can result in different rates and capacities for learning. Gifted students require an intact nervous system and a high functioning brain.

Social Factors: The second aspect of human nature is social-behavioral. Human beings are essentially ‘social animals’, and an individual's behavior in society is very important for acceptance, and for normal emotional development. For many forms of learning, social interactions and communications with others are essential avenues for intellectual development. In the case of gifted learners, as in others, there exists a wide range of social skills, maturities, and competencies.

Intellectual Factors: The third aspect of being human is intellectual ability. All psychological processes, such as perception, memory, reasoning, creative thinking, and affective components such as emotion, motivation, willingness are intimately associated with the development of intelligence and with all forms of learning.

Within the bio-socio-intellectual perspective, physical factors, social factors, and intellectual factors are believed to work together in facilitating or impeding learning and development. For example, the extent to which a gifted individual develops (or fails to develop) his or abilities and talents is largely determined by the interaction of these factors. When we talk about giftedness, we are talking about a particular aspect of ‘being human’—an aspect that takes an individual outside the range of normal human performance. To exist as a well-balanced gifted individual there needs to be a balance among biological, social and intellectual influences. Unfortunately, in many individuals there is an imbalance among these influences. For example, one individual may be able (for biological reasons) to excel at sport, but may have serious problems interacting socially with others. This, in a variety of ways, also causes problems with that individual advancing intellectually and academically. Another individual may exist within an extremely supportive social environment, yet for biological reasons have difficulty achieving intellectually at a high level. According to the BSI model, giftedness or talent in different domains depends upon optimum combinations of physical/biological, social and intellectual influences.

BSI model in practice

With the BSI model in mind we can clearly recognize the essential needs of gifted individuals, and we can set up educational opportunities. According to the BSI model, three factors must be considered when designing curriculum to meet the needs of gifted learners. The three aspects are: 1) physical maturation and development; 2) social maturation and social and interpersonal development; and 3) mental maturation and intellectual development. These three integrated factors have now influenced gifted education programmes in Mainland China, as described below. Theoretically, these three essential aspects can be regarded as the essence of ‘being human’. Practically, these aspects should not be separated from each other, but rather should be integrated within the teaching and learning process.

Physical development as a foundation

To ensure a balanced approach to the education of gifted children, firstly attending to their physical development is extremely important. In Mainland China, more hours have been arranged for physical education in gifted programmes at different levels from kindergarten to senior high school. For example, gifted preschool children from Beijing Happy Time Taoran

Kindergarten have half-day physical activities in public parks every week, in addition to their regular outside activities. Other schools also devote much time to promoting physical development and fitness of their students. As a result, the physical condition of gifted learners is often much better than their same age peers. It could be argued that physical education is particularly important for some gifted students who are often inclined to spend many hours pursuing deep interests of an academic (and passive) nature. A sound and healthy body is the foundation for optimum learning and development — *mens sana in corpora sano* (a sound mind in a sound body).

Social development

In order to promote socialization of gifted learners, a series of social activities have been arranged. For example, students are encouraged to interact and communicate with a broad range of people, by engaging in projects to investigate topics such as city pollution and unemployment; and to visit different places such as farms, resthomes, and big companies to interview people (Shi & Zhai, 2004). These activities not only help gifted students develop confidence and social skills but also raise their social awareness of issues and problems within society.

Intellectual development

In order to meet gifted students' special needs for cognitive development, a series of intellectual activities have been designed at different levels of complexity from kindergarten to senior high school. In addition to the compulsory subjects such as mathematics, Chinese, English, and science, intellectual activities specifically designed for gifted students focus on divergent thinking, curiosity, and creativity. For example, primary students might be encouraged to think about the story of “*chi bi zhi zhan*”(赤壁之战 - the war at *chibi*) (about war in ancient China). A picture illustrating this war is presented to the students before the teacher starts the lesson. Students are asked to think about the situation depicted, and to make comments. Who won the war, and why? Who lost the war, why? What we can learn from the story? This type of open-ended discussion can stimulate the students' imagination and critical thinking, as well as strengthening their language skills and vocabulary (Shi & Chen, 2006; Shi & Zhai, 2004).

Integrating physical, social and intellectual components

One example will serve here to illustrate how the three essential aspects (physical, social and intellectual) can all be addressed within learning experiences for gifted students. Intellectual stimulation and socialization are integrated into physical activities referred to as Natural Physical Education (NPE) (Du, 1998). NPE is so called because the physical activity is not taking place on school campus but rather outside school, in natural situations. For example, climbing mountains is one kind of activity included in NPE. There is a typical example that students from a gifted program in Beijing arranged to climb Taishan Mount in Shandong province. The activity took about a week. Students and teachers had been asked to prepare for the trip, with the teachers integrating subjects such as Chinese, English, Culture, and Sciences into the preparation. Students were asked to work together to gather information about Taishan Mount, its history, culture, and geographical location, and then to add to this knowledge during the visit. In consequence, not only was the students' physical strength increased by the climb, but their knowledge was also enriched, and their collaboration and interpersonal skills were developed.

Evidence of benefits from BSI

The BSI perspective represents a comprehensive model based on almost 20 years of empirical study with gifted children. It places a premium on developing students' observational ability, memory, language, reasoning, creative thinking and non-intellectual personality. BSI also recognizes and values the individual differences among gifted learners (Shi & Zha, 2000). The aim is to help every gifted student develop and achieve to the best of his or her potential.

Empirical data are emerging that support the validity of gifted education under the BSI model. Benefits include: *speed of information processing* (Duan, Shi, & Zhou, 2010), *cognitive control* (Liu, Xiao, Shi & Zhao, 2011a), *inhibition* (Liu, Xiao, Shi & Zhao, 2011b), and *sustained attention*. All these indices show higher abilities in the gifted learners placed in BSI gifted programmes than in those remaining in regular educational programmes.

In summary, the BSI model has theoretical rationality and practical validity. The model can be used as a framework for curriculum design in gifted education. Gifted education based on the BSI model in Beijing has advanced significantly over the past two decades—but there

are still some barriers impeding the development of gifted education in Mainland China. One of the most serious problems is the continuing lack of provision and resources for promoting gifted education on a national scale. This is due in part to lack of government investment in gifted education. The second problem is a lack of special teacher training programmes for those who wish to work in gifted education. Hopefully, the coming years will see improvements in both provision of resources and in teacher development.

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中國大陸超常兒童教育 — 基於生物-社會-心理模型

摘要

本文在簡要回顧了有關超常個體發展的已有研究的基礎上，指出中國大陸早期超常教育（大學少年班和家庭式個別教育）由於理論和實踐經驗的缺乏，而導致的問題。從而提出超常教育的生物-社會-心理模型（**Bio-socio-intellectual: BSI**），詳細闡釋了人類的本質和超常個體的本質。最後，詳細介紹了 BSI 模型在超常教育中的重要指導作用：生理發展是基礎，社會發展是前提，心理發展是重任。整篇文章從理論分析到實踐資料表明 BSI 在理論上的合理性和實踐中的有效性。

關鍵詞

教育，超常兒童，生物-社會-心理模型，發展