HOW TO TEACH SCIENCE FOR ELEMENTARY GIFTED STUDENTS. A CASE STUDY DONE AT CGS CIANJUR IN INDONESIA

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Abstract

Science should be taught in certain ways in order to lead and encourage students to get the optimum results in education. The use of the inquiry method in teaching science, especially for gifted students is more sound than other strategies. Some researchers, on the matter of inquiry showed that only advanced learners shown how to construct new knowledge from the text. Other scholars argued that teachers whose pedagogical approach promoted inquiry were more successful than those who implemented a direct teaching approach. Others issues regarding science and studies related will be discussed.Students' characteristics, variety of teaching methods for teachers, understanding the role of the gifted students' parents, and also the schools support better results for the gifted students are also discussed scholarly and other field observation and interviews with the administrations, teachers, parents, and students done in Cugenang Gifted School, Cianjur, West Java.

Keywords: Science, gifted students, inquiry, elementary school.

1. INTRODUCTION

1.1. Teaching science

Science should be taught in certain ways in order to lead and encourage students to get the optimum results in education. The use of the inquiry method in teaching science, especially for gifted students is more sound than other strategies. Some researchers such as DiGissi and Willet (1995), on the matter of inquiry showed that only advanced learners shown how to construct new knowledge from the text. Moar and Taylor (1995) argued that teachers whose pedagogical approach promoted inquiry were more successful than those who implemented a direct teaching approach. Others issues regarding science and studies related will be discussed.

Research in science education suggests that a curriculum based on in-depth understanding of science concepts and "new science" standards that focus on an investigatory rather than the more traditional approach best develop the talents, interests and motivation to do science in the real world for talented learners. (Robinson, Shore, Enersen,(2007), p. 163).

The common teaching method implemented by most teachers and lecturers and probably science professors are different from this method. However, the inquiry method is the most appropriate teaching method to teach science. In inquiry-based learning, the students' plays a major role in defining the content through curiosity-driven questions and defining the pedagogy needed to actively pursue the answers to these questions. (Robinson, Shore, Enersen, 2007, p.35).

The newly adopted standards for the university personnel preparation alone are not sufficient to reach the goal of quality instruction for gifted learners in our schools, partly because not every college of education offers course work in gifted education.

Currently, teachers who wish to learn more about how to work with advanced learners must attend workshops or convention programs or seek written material in the topic. (Callagher in Kitano, Montgomery, Baska, and Johnsen, (2008, p. viii).

Parents of Gifted children are notoriously accurate in identifying their children abilities, especially if they have some ideas about how children normally develop Louis and Lewis (1992), Jackson (1992),

Robinson and Robinson(1992), and Robinson, Dale, and Landesman (1990) report that parents dependably describe their children in term of characteristics and behaviors that are indicative of advance reasoning and skills.(Robinson, Shore, and Enersen (2007, p.7)

There are many evidence-based practices that work with talented youth. The home environment can stimulate parent involvement, developing specific talents, genders and others. In the classroom environment, many activities can stimulate gifted children such as encouraging creativity, multiple intelligences, higher level thinking, science in the classroom, etc. School can act in carrier education, learning multiple languages, school programs, acceleration, multiple criteria for identification, Professional development for teachers. (Robinson, Shore, Enersen ,2007).

1.2. Over view of Cugenang Gifted School.

The study will focus on teaching science in Indonesian schools including that implemented in Cugenang Gifted School (CGS) , Cianjur, West Java, Indonesia. The school is claimed to be the first gifted elementary school in Indonesia. It started in 2008 to 2010 for facilitating infra-structure, and the implementation of teaching and learning processes have been in progress for three years. This is a private boarding school with free tuition and other expenses that is offered especially for low incomes families. The school was founded by two private people who want to contribute to the development of gifted children in Indonesia. The school expenses were paid mostly by the founder and other individuals donations.

As a gifted school, the students were selected with a high degree of levels of ability. They must have a score of more than 130 in IQ, commitments, and verbal quotients. Therefore, only a few students have been accepted in every academic year. In the last academic year, even though more than 100 students applied to register for this school, none of them were accepted.

Unlike other common elementary schools, the teaching process in this school is that every teacher teaches one or two subject matters. So the teacher is moving from class to other classes. Like other elementary schools in Indonesia, this school also implemented the national curriculum, including science.

As gifted students who have a high level of intelligence, most of them act differently from other common students in their level. For instance, they attend the instruction looked strange. While teacher explains a -certain concepts, they usually do other things, such as crawling, drawing, moving and other activities. When teacher warns them that she or he is teaching and explaining, they answered that they are listening. When the teacher tries to test whether they comprehend what the teacher was explaining, surprisingly most of them are able to answer the question comprehensively, even though they were moving around and did many things while their teacher was explaining something.

Although the five years maximum effort for this school was implemented with personal funding and donations, someone might say that this school actually not a real gifted school in US or Western countries.

1.3. Some findings in the field how the teacher teach science at CGS.

Gifted students' characters are a bit different than those common students. The gifted students who are mostly have high level of Intelligence Quotient (IQ), the way how they think and acts are kind of unusual. This what teacher explained about her gifted student's acts in their day to day at their school.

The first time I teach this school, I was kind of shock. I thought, I was going to teach many students in class, but it did not. I just teach a few strange students. It is difficult for them, to attend the science class by sitting and hearing the teacher explanations. What I knew was, they always do several things at the same time. For example, during science class, one of my students was drawing something. Other student, at the same time, he held math book. He opened the book while listening what the teacher taught. One female student did other thing. She pretended bring a saucer like someone offering something in the market.

Then the teacher reminded the kids. "Hi kids, I am teaching science now". The gifted students responded promptly: "Sure my teacher. I am hearing what you said". Then the teacher wanted to check what students' comprehension regarding the science concept she or he just teach. The teacher surprised that all of her students able to answer all of her questions correctly. And most of them gave their answers in science concepts in more detail than that what the teacher explained.

With this situation, for the first time the teacher was kind of mad. However, the same thing happened again and again in the following days.

After experiencing many things, the teacher eventually understand that her gifted students were able to think and comprehend more than one think at the same time. The teachers becoming understand that her gifted students really extra ordinary excellent in many things.

1.4. Elementary gifted students explained the cardinal directions concepts deeply and comprehensively.

In late May and early June 2013, Dimyati came to Cugenang Gifted School, Cianjur, West Java, Indonesia as part of the multi year's research regarding developing college text books for gifted education in Indonesia. It was a free of charge private elementary boarding school. The administrator claimed was the first gifted school in Indonesia. He observed, interviewed the administrators, teachers, students and parents of the gifted school. During the works, the principal asked Dimyati to share his experience with administrators and teachers and also to teach science to the students. Dimyati agreed to that offer. After sharing experience with 7 teachers and 5 administrators then he continued to teach students question. There are 3 students for third grader and 5 students for 5th grade. Part of the teaching material was cardinal directions. This concepts was very important in daily life. He began by asking the students queation. "Hi kids! Do you know cardinal direction?". Almost all of the students responded: " Of course, yes sir, yes sir. That's an easy thing sir.". Then he continue responded: " Good, but let me draw the cardinal directions in this white board". He drew two line across each other perpendicularly, and put the sign of North, South, East, and West. One of the students complained that the picture was too simple, the drawing was supposed to be not just 2 lines, but need additional 2 line so 4 lines in total. So that we can draw the cardinal directions completely, such as North, North North East, North East, North East, East etc.

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