

EFFECTIVENESS OF A CONSTRUCTIVIST BYBEE MODEL SUPPORTED BY ENRICHING ACTIVITIES ON SCIENCE ACHIEVEMENT AND THE DEVELOPMENT OF METACOGNITIVE SKILLS FOR SCIENTIFICALLY – TALENTED STUDENTS IN PREPARATORY SECOND GRADES

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Abstract – The current research aims at identifying the effectiveness of a constructivist Bybee model supported by enriching activities on science achievement and the development of metacognitive skills for scientifically – talented students in preparatory second grades. The sample of the research includes twenty – nine pupils from EL Oroba preparatory school (Aswan – Egypt) who are selected according to the procedural definition for scientifically – talented student in this research.

The research derives its importance from the necessity to detect scientifically – talented students and care for them. In addition to entry modifications in a constructivist Bybee model via supporting it by enriching activities which match with these students. So the researcher uses the descriptive methodology in preparing the theoretical framework for the research and the experimental unit. These include: the student's book, activity notebook, and the teacher's guide. In analyzing and explaining the results the previous method is also used. The quasi – experimental methodology is used in the field part which represented in one sample group experimental design based on the pre and post measurement for dependent variables.

The research comes to the following results:

- 1- There are statistically – significant differences between means of scores of the experimental group students in both pre and post application in: Achievement as a whole, and its six levels (Recalling – Comprehension – Application – Analysis – Synthesis – Evaluation). This also applies to metacognitive skills as a whole, and its other sub – skills (knowledge of cognition – regulation of cognition).
- 2- Blake's modified gained ratio is acceptable in general for: Achievement as a whole, and its levels except synthesis (0.78), while not acceptable in metacognitive skills scale as a whole, and its other sub – skills.
- 3- The effect size of a constructivist Bybee model supported by enriching activities is large in: Achievement as a whole, each level from its levels, and metacognitive skills as a whole, and its other sub – skills.

The research recommends:

- The necessity to design some units or programs in preparatory stage science according to a constructivist Bybee model supported by enriching activities.
- It also recommends preparing a guidance booklet for parents and the school to detect for scientifically – talented students and the nurture for them.
- It also recommends holding training courses for science teachers and guides to be aware of the importance for developing metacognitive skills through teaching science.
- Finally there should be new programs in Egyptian Faculties of Education to link between constructivism theory, scientific talent and training on a constructivist Bybee model supported by enriching activities during practical education or microteaching courses.

Keywords: A Constructivist Bybee Model Supported Enriching Activities, Science Achievement, Metacognitive Skills, Scientifically talented Students in Preparatory Second Grades.