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The Syntax of Humanist Learning Science Model Based Gender and Optimization of The Right Brain - The Left Brain Function of The Learners With the TIMSS / PISA Assessment Type

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Abstract. This research was carried out in order to the teacher can teach the Science by viewing or positioning the learners as human beings essentially so that their intellectual ability of Science increased both nationally and internationally as well as their morals as well as the expectations of society. The presenting of humanist learning science model based gender and optimization of the right brain - the left brain function of the learners with the TIMSS / PISA assessment type was the target to be achieved. To achieve these objectives, researchers and teachers as partners have been developing a model of Science learning by following procedures: defining, designing, developing, and disseminating. The outcomes of this reasearch was the syntax or steps of the humanist learning science model based gender and optimization of the right brain – and the left brain function of the learners using TIMSS / PISA assessmen type.

1. Introduction

1.1. *The Nature Science and Science Education*

Science is concerned with how to systematically find out about nature, so science is not just the mastery of a collection of knowledge in the form of facts, concepts or principles, but also a process of discovery. It can also be said that Science is a competitive endeavor, the popularity of scientific knowledge is directly related to the prestige of those who finds that knowledge. The ease of a scientist receives knowledge directly related to how to close the paradigm (research program and others) to the paradigm of knowledge to one another [1].

Furthermore, science education emphasizes the provision of direct experience to develop competencies so that the students are able to explore and understand the natural surroundings naturally. Science education is directed to find out and do so that it can help students to gain a deeper understanding of the environment. In implementing science learning in the schools, science teachers should pay attention to several things: inquiry science, problem solving, science-environment-technology-society, fun science learning, and value-based science learning [2].

By looking at the explanation above, it can be drawn a conclusion that science and science education rely on nature where students become "a candidate of experts" associated with the nature. Gender Humanistic Learning Science Model, Left-Brain Left Brain Optimization with Assessment of TIMSS / PISA type is one approach to bringing the students to expected goals and objectives.



1.2. Humanistic Science Learning

Man is the subject or person who has the creativity, taste, and intention, which understand and be aware of his being, who can regulate, determine and control him or her self, have mind and will, have the impulse to develop his or her better and more perfect person, who is seeking his identity [3]. In his personal development and improvement process, man can only shape, develop, and perfect himself. A person can not perfect others. What others can do to us is to help, create conditions and opportunities that enable us to grow through experience.

Learning of science becomes humanistic when the teachers acknowledge and place or treats the students as subjects with such characteristics and recognition is manifested in the learning process, which gives the widest possible opportunity of students in a reasonable context so that they can develop themselves so that their potential, personality, and attitudes evolves toward a more good and more perfect. This means there must be human process, there must be an educational process. Students are treated as subjects with a role, can organize their activities, not as mere objects that are all determined by the teacher.

Thus, the education here can be interpreted as humanity of young man, improvement of young man to human level, help and guidance for children who are walking towards a more perfect human [4], and help the learners to find the values in his or her humanity [5].

1.3. Gender.

Gorman (1992) in Bastable [6] says that the versatility of both men and women shows how complex the riddle of gender requires the study of biology, sociology and culture to complete it. Such complexity, for example, it is indicated by the many differences between men and women in which differences affect their learning Bastable [7]. He goes on to say that some of the most striking differences between men and women are: (1) women are softer than men, (2) men are stronger than women in navigation (appointment of roads / directions / addresses), (3) women are superior to men in terms of language and verbalization but men are superior to women in terms of recognizing space and mathematics, (4) in men, women more involving their brains in when they think of sad things while in math (mathematics) they are less likely to involve their brains than men, (5) girls learn to talk, use sentences and more use vocabulary earlier than boys, and (6) how to speak girls more clearly, girls' reading ability earlier, and more consistent in spelling tests than boys.

Furthermore, Gage and Berliner (1992) in Bastable [8], say that men in terms of using the brain then he is more dominant using the right brain than his left brain while women tend to use both hemispheres in a balanced way. Similarly, according to him the male brain is larger than the female brain, however, the female neurons are more (11%) than the male neurons that travel within the cerebral cortex. In terms of maturity, females mature faster than men. This is based on the results of research conducted by researchers at Newcastle University (Tempo.Co, accessed on May 27, 2016). Why is that? Maturity is closely related to the downsizing of the brain, that is, when the brain trims the connectivity of the unnecessary tissue in the brain. Brain downsizing of girls has started since the age of 10 years while in boys just started at the age of 20 years. This is the reason why girls are mature faster than boys (Tempo.Co, accessed on May 27, 2016).

From the above explanation, it appears that boys and girls have many differences which can affect how they learn. Therefore, it is urgent that it seems to pay attention to gender differences in order to find appropriate strategies or learning models of Science in order that their capabilities are all improved as well as their good morals are more quickly established and developed.

1.4. Optimization of Right Brain Function-Left Brain.

From various references, it is known that the human brain is divided into two main parts, namely the right and the left. Right-brain and left-brain domination theories were first introduced by Nobel Prize winner Roger W Sperry in 1981. According to this theory of dominance, the right side of the brain works best when used on expressive and kinky tasks. Some of the famous abilities associated with the right side of the brain are about the following: recognizing faces, expressing emotions, feelings, music and artistic tastes, reading

emotions, reading colors, 3-dimensional shape (space), orientation of today and future, based on fantas, rush/patience, playing in risk zones, thorough thinking / holistic, and long memory memory (long memory).

While the left side of the brain is considered adept in a task that involves logic, language and analytical thinking. The left brain is often best described in terms of: objectivity, language, priority logic, speaking, writing and reading, numerical / mathematical skills, scientific skills, analyzing (degrading) and other critical thinking, reasoning, considerations, orientation today and past, based on reality, practical, play in safe zone, think detail / detail, and short memory.

- Learners of course should balance and simultaneously optimize the function of both parts of the brain in itself in order to increase their ability or more terrible. Especially in Science learning, the optimization of both is so necessary. Science learning demands both to be involved and optimized.
- There are several ways that can be taken so that our right brain can be function optimally, as follows: Always ask, "Is there any other way?". This question spurred the brain to always search for the latest roads that meant optimizes our creativity ability.
- Oppose old habits, routines, and traditions that are in conflict with the development that occurs and violate a reasonable life ethic. Then replace it with a new way that further supports the right atmosphere.
- Doing mental games.
- Try to always connect ideas or unrelated things to find new and innovative solutions.

1.5. Assessment of TIMSS / PISA Type.

Trends International Mathematics and Science Study (TIMSS) and the Program for International Student Assessment (PISA) are two international studies that conduct tests to look at trends or developments in math and science skills as well as reading literacy for school children. TIMSS is organized by the International Association for the Evaluation of Education Achievement (IEA), an international association to assess achievements in education centered at Lynch School of Education, Boston College, USA. While, PISA is an international study of literacy achievement reading, math, and science of 15-year-old school students. PISA is coordinated by OECD (Organization for Economic Cooperation and Development) based in Paris, France.

If we look at the textbooks of Science for students used in junior high schools, it is not easy to find practice problems that model or characteristics such as model or characteristics about-questions in TIMSS and PISA. In fact, the characteristics of both types of questions open up opportunities for students to explore their understanding of Science through the problem-solving process and other science capabilities such as Science modeling, critical and creative thinking in Science. Therefore, it is necessary to design a test type or Science assessment type as used by TIMSS and PISA in addition to conventional assessment type so that the students' Science competence can compete nationally and internationally.

2. Research Method

This research was a research and development. The developed was the Science Learning Model with the main foundation of learning that is seeing the gender, optimizing the right brain-left brain function with TIMSS/PISA assessment type. -heuristic. This learning model of Science is developed through certain stages. The selected stages are as the steps introduced by Thiagarajan [9] known as the Four-D Model (define, design, develop, and disseminate).

3. Results

The results of this study are the science learning humanist model based gender and optimization of the right brain - the left brain function of the learners with the TIMSS / PISA assessment type with the syntax or steps: (1) Explain the objectives of humanistic learning, (2) Generate the learning motivational of the learners according to the gender, (3) Encourage the learners to understand the material according to the gender, (4) guide the learners in mastering the material by optimizing their left and right brain, (5) Categorize the male and female learners based on right-brain optimization of their left brain (6) Evaluate the learners' abilities about the material they have just learned using ordinary problems and questions referring to

TIMSS / PISA, (7) Give motivation back to the students about the right-brain left-handedness, matter, optimization of the left brain and the solving of the problem- about TIMSS / PISA type and close learning.

Explanation of the seven steps are as follows.

Step 1: explain the purpose of humanistic learning.

The goals of humanistic learning are different from those of ordinary learning. The goal of humanistic learning seeks to always touch all aspects of the humanity of learners. Hence, the goals of humanistic learning include the goals of intellectual, emotional, and spiritual development. The purpose of intellectual development related to the mastery of the material, in this case the material Science. In this intellectual development learners are brought to the conditions of how they comprehend the Science comprehensively on the topics covered. The purpose of emotional development is related to attitudes or characters that should be established or held by learners after learning. The characters developed in learning are the main characters and urgent to be noticed. The purpose of spiritual development concerns how to develop the attitude of learners that leads to the ability to put behavior and life in the context of broader and more rich meanings, and have the belief that there are forces beyond the more determining human power.

Step 2: Generating motivational learners based on gender.

- a. The first 5 minutes of male students enter the class and motivate the potential of men.
- b. 5 minutes both male learners come out and female learners enter the class and give motivation related to the potential of women (In the next meeting reversed: women go first)

Step 3: Get the learners to understand the material by gender.

- a. First condition of male students sitting / being in groups of men and women students sitting / being in groups of women.
- b. Distribute the teaching materials to the learners.

Step 4: Guiding the learners in mastering the material by optimizing their left brain and right brain.

- a. Distribute to gender-based work sheet and optimize left brain.
- b. Work sheet uses common practice questions and practice questions referring to the TIMSS / PISA type

Step 5: Categorize the male and female learners based on right-brain optimization of their left brain.

Step 6: Evaluate the learners' abilities about the material they have just learned using ordinary problems and questions referring to TIMSS/PISA

Step 7: Give motivation back to the students about the right-brain-left, left-brain-right, and right-handedness of the brain and the solution of the TIMSS / PISA type and close the lesson. The principle of learning here is the beginning, middle and end of the learner's learning is always motivated by referring to the potential of the rendering and optimization of their left-left brain right

4. Conclusion

From this research, there is a science learning humanist model based gender and optimization of the right brain - the left brain function of the learners with the TIMSS / PISA assessment type with the syntax or seven steps: ((1) Explain the objectives of humanistic learning, (2) Generate motivational learners based on gender, (3) Encourage learners to understand the material by gender, (4) Guiding learners in mastering the material by optimizing the brain left and right brain, (5) classify male and female learners based on optimization of their right brain-brain left, (6) Evaluate learners' abilities of the material they have just learned using ordinary problems and problems which refers to the TIMSS / PISA problem, (7) Give motivation back to the students about the right-brain-left, material, left-brain brain-rightness and solution of the TIMSS / PISA model and close learning.

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