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Designing Framework of Designing Tablet Application Learning Environment for Enhancing Analytical Thinking on Science

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Abstract: Analytical thinking involves the process of gathering relevant information and identifying key issues related to this information. This type of thinking also requires you to compare sets of data from different sources; identify possible cause and effect patterns, and draw appropriate conclusions from these datasets in order to arrive at appropriate solutions. Also, the purpose of this research was to synthesize designing framework of the tablet application learning environment for enhancing analytical thinking on science. The research was documentary analysis research and survey research was employed in this study. The procedures were as following: 1) to examine and analyze the principles and theories 2) to review relevant literature 3) to explore the context concerning tablet application learning environment and analytical thinking, and 4) to synthesize designing framework of the tablet application learning environment and analytical thinking. Using the framework of analytical thinking as following: 1) Identifies 2) Specifies a reason and 3) Classifies. The result revealed that: The tablet application learning environment for enhance analytical thinking on science comprise of 6 elements as following: 1) Problem base 2) Knowledge bank 3) Analytical thinking center 4) Collaboration 5) Scaffolding and 6) Coaching.

Keywords: Learning Environment, Analytical Thinking, Tablet Application, Constructivist

1. Introduction

Globalisation, changing demographics and technological advancements are some of the key driving forces of the future. Learning in the 21st century, it is a concept that is the result of a rapidly changing world. Emphases have been placed on morality, preference for Thai-ness, skills in analytical and creative thinking, technological know-how, capacity for teamwork and ability to live in peace and harmony in the world community (Ministry of Education, 2008). Analytical thinking involves a series of mental processes in finding solutions to many problems. Science process skill and analytical thinking are the two interrelated things. A cognitive process, so that students can apply the scientific method used to solve the problem or to study other inquiry. Especially, analytical thinking skills that encourage learners to think analytically (Samat & Chaijaroen, 2015).

In addition, currently teaching using tablet applications. The results showed that the use of tablet applications. The principles of learning theory based constructivist Whistler used in design-based learning tablet applications. These features of the media as text, graphics, sound and animation. Including a Hyper link and Hyper media to help the students learn better and features that can be linked to the Internet. The tablet application provides a response to the ability to adapt to the needs of individual learners as well and fit for living in the present. This is consistent with the learning in the 21st century that focuses on providing students with the skills, knowledge and skills in the use of ICT in the quest for self-knowledge to achieve the goal of learning. During science to promote analytical thinking and more efficient.

2. Methodology

The purpose of this research was to synthesize designing framework of the tablet application learning environment for enhancing analytical thinking on science subject. The research was documentary analysis research and survey research was employed in this study.

3. Research results

The results of designing theoretical framework and designing framework of the tablet application learning environment for enhancing analytical thinking on science subject was synthesized to examine and analyze the principles, theories, review relevant literature, explore the context concerning tablet application learning environment and analytical thinking skills. Also, designing framework of tablet application learning environment for enhance analytical thinking on science consist of 4 main idea as following: 1) The motivation of cognitive structure (2) The support of cognitive equilibrium (3) Promoting the creation of knowledge and analytical thinking, and 4) The support knowledge creation and analytical thinking base as shown in Figure 1.

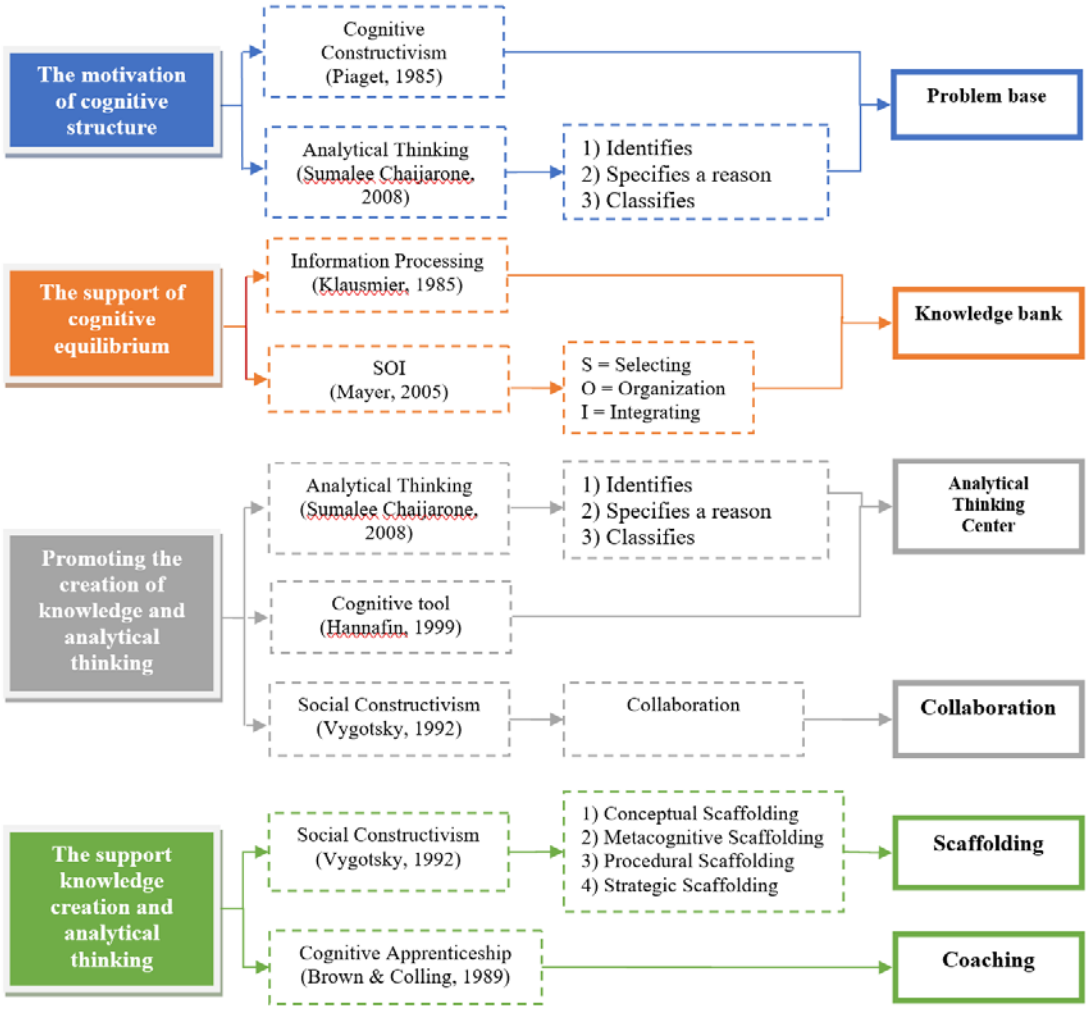

Figure 1. Theoretical framework and designing framework of the tablet application learning environment for enhancing analytical thinking on science subject.

The tablet application learning environment for enhancing analytical thinking on science comprise of 6 elements as following: 1) Problem base 2) Knowledge bank 3) Analytical thinking center

4) Collaboration 5) Scaffolding and 6) Coaching obtaining from major theories in various aspects: Constructivist base, Analytical Thinking base, Pedagogical base, Technologies and Media base, and Contextual base as shown in the following Figure. 2.-7.

Element	Describe the elements	Element	Describe the elements
(1) Problem base  Figure 2. Problem base	Problem base: It was shown Problem base for enhancing the learners to construct knowledge and analytical thinking.	**(4) Collaboration**  Figure 5. Collaboration	Collaboration: It was shown Collaboration for supporting the students to share their experience with experts on science subject through Facebook for expanding their multiple perspectives.
(2) Knowledge bank  Figure 3. Knowledge bank	Knowledge bank: It was shown Resources for collecting information, content, technology which the students used in Problem base while they were facing it.	**(5) Scaffolding**  Figure 6. Scaffolding	Scaffolding: It was shown Scaffolding for enhancing students to solve problems or learning in case that they couldn't be able to do their own task by themselves.
(3) Analytical thinking center  Figure 4. Analytical thinking center	Analytical thinking center: It was shown Analytical thinking center for enhancing analytical thinking based on Sumalee's (2008) approach for all 3 aspects including Identifies game center, Specifies a reason game center and Classifies game center.	**(6) Coaching**  Figure 7. Coaching	Coaching: It was shown Coaching by teachers and experts on scientist with best practice.

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