Needham's Theory in Computer-Based Learning

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Abstract. The study was conducted to analyze the Needham's theory in computer-based towards Malay language learning, regarding motivation and attitude. According to Needham's theory, learning process explains the step of knowledge composition in mind. Content analysis that based on qualitative design was used to answer the research questions. Books, journals, theses and dissertations were analyzed in this study. The finding indicates that the generation of mind occurs in student's experience. Student will build up the structures, categories, concepts and schemes that required the new knowledge in Malay language learning. Teacher must take into consideration that the main aim of cognitive structures is to construct new and higher thinking knowledge. Student's minds can promote and refine the orientation of ideas, restructuring ideas, applied ideas and reflects motivation and attitude in computer-based learning.

Keywords: Needham's theory, learning process, cognitive, Malay language learning

1. Research Background

Learning is a way to get knowledge via cognitive processes. Student has a variety of motivation and attitude in the process of learning Malay language in the classroom. According to Woolfolk (1998), the learning process referred as "the differences in learning". In this challenging decade, the role of teacher was required to examine the motivation and attitude based on learning through computer with more focuses on constructive ideas.

2. Statement of Problem

Student has the motivation and attitude in language learning based on computer technology that relying upon a variety of theories (Reid, 1998). Learning motivation and attitude towards Malay language that based on computer technology is widely used by students in the classroom in order to finalize the credibility of thinking (Adenan Ayob, 2010). It is undeniable that in theories arose confusing variety of opinions raised by Needham's opinion (Chapman, 1988). The confusion exists because the opinions were not properly analyzed and explained. In an effort to prevent the existence of different ideas among members towards learning motivation and attitude that based on computer, analysis and explanation in scientific contexts is fair. Thus, this study attempts to analyze and describe the Needham's theory towards Malay language learning, regarding motivation and attitude that based on computer.

3. Research Objectives

The research objectives were formulated from the statement of problem. The research objectives are shown below.

- To analyze the Needham's theory towards learning motivation of Malay language that based on computer.
- To describe the Needham's theory towards learning attitude of Malay language that based on computer.

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- From the research questions above, two questions was highlighted by the researcher. The questions are shown below.
- What is the Needham's theory towards learning motivation of Malay language based on computer?
- How the Needham's theory describes the learning attitude of the Malay language based on computer?

4. Learning Motivation and Attitude

Motivation can be defined as a stimulation to contribute ideas (Chapman, 1988). It is a process that can be associated with a variety of approaches, in particular the needs of highly thinking (Reid, 1998). Gagne (1977) states that learning occurs when a situation based on the specific motivation influence to change. The formulation of some of the above definition reveals that the concept of learning is the attitude of change. It involves changing of response, training and experience.

5. Needham's Theory

The original idea of Needham's theory is started from Piaget and Vygotsky Proximal Development Theory (Chapman, 1988). Needham describes the learning process as the way how knowledge is prepared in mind. Individuals construct knowledge based on "existing knowledge" and adapted to an environment, but not derived from the knowledge of others (Adenan Ayob, 2010). According to Chapman in Needham' theory, the learning function is a method and technique of knowledge compiled in minds of an axis attitude. Not all intertwined learning process arises from the experiences of student (Fischer, 1980). Needham theory was prepared and used to stimulate student to develop knowledge and understanding certain mind concept.

6. Research Methodology

Content analysis that based on qualitative design was used to analyze computer-based on learning motivation, and to describe the attitude from Needham's theory. A number of books, journals, theses and dissertations were analyzed and described analytically to answer the research questions.

7. Finding

7.1. Needham's Theory towards Learning Motivation of the Malay Language Based on Computer Technology

In this study, the Needham's view was generated through analytical thinking. Von Glasarfeld (1989) views that some of the assumptions about learning motivation through computer technology-based have been peeled from the knowledge that formed by its own initiative, self-modification of the environment and the rationalization of experience. Language can not be transferred from one teacher to a student in perfect shape (Chapman, 1988).

Experience and knowledge of language passed by in life is a skills and ideas that make a student learning motivation more dynamic (Maturana, 1980). From the knowledge that based on computer technology, student will build structures, categories, concepts and needed schemes. In developing the concept or knowledge of a new language, teacher must take into account the existing student's cognitive structures.

According to Piaget (1969), the function of language learning is constantly changing. The changes will occur in the engineering, evaluation, research and implementation. For example, the theory led to the changes of motivation that focuses on achieving the right to replicate on anything presented by the teacher. The aim is to facilitate student to build a scheme based on concept of an active experience.

Teacher was considered as teaching designers and provides opportunities for student to develop new language knowledge (Maturana, 1980). The language learning motivation and attitude on computer technology-based through Needham's theory can be applied to encourage questions and dialogue; boost the process of inquiry through research and experiment; giving the opportunity to develop new knowledge and to understand it through involvement in a conducive environment; taking into account the findings on how to observe an idea; supports cooperative learning; consider learning as a process to obtain results; and efforts to encourage and accept student autonomy and thinking.

7.2. Needham's Theory Describes the Learning Attitude of Malay language on Computer-Based

Explanation of research question focuses on the authenticity of evidence in language learning attitude is aligned with perfect ideas. The views are also related to Needham theory (Vygotsky, 1978, Piaget, 1985, Clark, Nguyen, & Sweller, 2006; & Hilbert, & Renkl, 2007). The description of the attitude in language learning is presented as follows.

7.2.1. Attractive Orientation

The purpose of the attitude orientation is to attract attention and interest and also motivate the student to engage in language learning through computer-based (Chapman, 1988). Among the examples are the game and questioning activities that can generate student curiosity.

7.2.2. Reflective Ideas

In attitude, the idea of language was identified through the questions that posed to link the assessment and drive thinking. Questioning in computer-based environment may encourage reflective language thinking from time to time (Piaget, 1967). Computer technology can expand inquiry techniques to boost student's ideas, explore and investigate the problem in language learning.

7.2.3. Conceptual Ideas

Student has the opportunity to modify the alternative framework of thought in language learning environment through computer-based. From attitude, the new ideas presented by student occur in various forms, according to the intelligence. Activities that are consistent in intelligence can be used to develop more new concepts of ideas (Piaget, 1967). Student is able to provide definitions, describe the concept, asked to obtain further explanation, other than claiming justification and explanation. The effect of this attitude could make student more confident and daring to challenge the hypothesis that language has been decided and encouraging.

7.2.4. Identification of New Ideas

The concept of grouping allows identification of new ideas for the modification of language. Modification occurred in the restructuring of the idea that based on dynamic environment. This concept can be linked and expanded to additional knowledge (Hilbert & Renkl, 2007). Consequently, the understanding of a concept and the idea becomes clear when student is directly involved in constructing a new language knowledge.

7.2.5. Modifying Ideas

Reflection focus on the assessment of student understanding in language is to identify whether the previous ideas have changed or not. Examples of such activities are asking questions and giving evidence of the link range of what student should know the aspects of language learning (Vygotsky, 1978). Existing knowledge is used by student to provide an explanation through observation, in addition to revealing the meaning of its own, built by adding or modifying an existing idea.

8. Discussion

The finding supports the Dick's opinion (1991) who asserts that the motivation and attitude of the language learning that based on computer from the view of Needham's theory. It helps student to follow the sequence of development and accurate understanding upon such phenomenon. Obviously, teacher can apply computer in language learning to cultivate a deeper understanding by encouraging orientation, ideas, ideas restructuring, application ideas and reflections that has a variety of levels of thinking (Piaget, 1967).

Trowbridge and Wandersee (1994) pointed out that the motivation and attitude on computer-based of language learning through Needham's opinion can help student to develop an understanding of the mind map concept. Stanbridge (1990) also pointed out that the motivation and attitude through Needham's theory had reflective properties and the active involvement of student via presentation and explanation of the activities in small groups (Von Glasersfeld, 1989). The goal is to help student generalize and restructure the ideas. It also indirectly lends itself to enhance student's understanding on such a topic in conversation and discussion.

9. Conclusion

Analysis and interpretation of motivation and attitude pave the way for the Malay language teacher in the cyber trend to consider selecting a more appropriate approach in the classroom. The rationale of these statements can stimulate student to do self-assessment, in addition to assessing understanding and increasing knowledge in Malay language learning. Knowledge is something that can be adjusted and varied. Hopefully student will realize that there is a responsibility to use a variety of approaches in the processing of information, including a constructive idea to solve problems.

10. References

[1] Adenan Ayob. Effects of Animation Techniques in the Identification of Basic Malay Words to Chinese International Students. *Dewan Bahasa dan Pustaka Brunei Journal*, 2010, No. 21, September - Disember.

[2] Chapman, M. *Constructive Evolution: Origins and Development of Piaget's Thought*. New York: Cambridge University Press, 1988.

[3] Clark, R.C., Nguyen, F., & Sweller, J. *Efficiency in Learning: Evidence-based Guidelines to Manage Cognitive Load*. San Francisco: Pfeiffer, 2006.

[4] Dick, W. *An instructional designer's view of constructivism*. Educational Technology, 1991, May, 41-44.

[5] Fischer, K.W. A Theory of Cognitive Development: The Control and Construction of Hierarchical Skills. *Psychological Review*, 1980, 87(2), 477-531.

[6] Gagne, R.M. *The Conditions of Learning* (3rd. ed.). New York, NY: Holt, Rinehart, & Winston, 1977.

[7] Hilbert, T.S., & Renkl, A. Learning How to Learn by Concept Mapping: A Worked-Example Effect. *Oral presentation at the 12th Biennial Conference* EARLI, 2007 in Budapest, Hungary.

[8] Maturana, H. *Biology and Cognition: The Organization of the Living*. Dordrecht: Reidel, 1980.

[9] Piaget, J. *Biology and Knowledge*. Chicago University Press, 1967.

[10] Piaget, J. *Mechanisms of Perception*. (Translation by G.N. Seagrim) New York: Basic Books, 1969.

[11] Piaget, J. *Equilibration of Cognitive Structures*. University of Chicago Press, 1985.

[12] Reid, J. The Learning Style Preferences of ESL Students. *TESOL Quarterly*, 1998, 21(1), 87-111.

[13] Stanbridge, B. A Constructivist Model of Learning Used in the Teaching of Junior Science. *Australian Science Teacher Journal*, 1980, 36(4), 20–28.

[14] Trowbridge, J.E., & Wandersee, J.H. Identifying Critical Junctures in Learning a College Course on Evolution. *Journal of Research in Science Teaching*, 1994, 31, 459–473.

[15] Von Glasersfeld, E. Abstraction, Representation and Reflection. *Epistemological Foundations of Mathematical Experience*. New York: Springer Press, 1989.

[16] Vygotsky, L.S. *Mind in Society: The Development of Higher Mental Processes*. Cambridge, MA: Harvard University Press, 1978.

[17] Woolfolk, A.E. *Educational Psychology* (7th ed.). Boston: Allyn and Bacon, 1998.