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Learning Quantum Chemical Model with Learning Media Concept Map and Power Point Viewed from Memory and Creativity Skills Students

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Abstract. This research is experimental, using first class learning aquantum model of learning with concept maps media and the second media using real environments by power point presentation. The population is all class XI Science, number 2 grade. The sampling technique is done by purposive random sampling. Data collection techniques to test for cognitive performance and memory capabilities, with a questionnaire for creativity. Hypothesis testing using three-way ANOVA different cells with the help of software Minitab 15.Based on the results of data processing, concluded: (1) there is no influence of the quantum model of learning with media learning concept maps and real environments for learning achievement chemistry, (2) there is a high impact memory ability and low on student achievement, (3) there is no the effect of high and low creativity in student performance, (4) there is no interaction learning model quantum media learning concept maps and real environments with memory ability on student achievement, (5) there is no interaction learning model quantum media learning concept maps and real environments with creativity of student achievement, (6) there is no interaction memory skills and creativity of student achievement, (7) there is no interaction learning model quantum media learning concept maps and real environments, memory skills, and creativity on student achievement.

Keywords: Model Quantum Learning; Concept Maps; Real Environment; Memory Skills; Creativity; Colloidal Systems; Student Achievement

I. INTRODUCTION

National government to improve education by implementing the national education system. National government make a policy to increase the quality of a teacher by regulation Undang-undang Guru dan Dosen tahun 2005concern to increaseprofesionality of ateacher by giving them certification and increase academic qualification. Teachers in the national education system are seen as the key to success to achieve aquality education by providing training and education of the Regulations of teachers and lecturers. Because it is a national education system, then the best step is to harmonize all the elements or components in learning to achieve learning objectives.

The factors which affect the learning in the students' success in general are divided into two they are external factors and internal factors. External factors such as climate, environment, and learning media. Internal factors are students' memory skills and creativity of students. Both are interrelated and can not be ignored in the study of success in learning quantum learning model. Internal factors can be affected by external factors, relaxed and fun atmosphere certainly can improve memory students receive course materials. Brain in the relaxed state is optimal to receive new information. The student creativity can grow when the emotions in a safe condition, without any pressure. Learning can not be separated from the problem of memory or memory, "there is one theory of learning that explicitly basing learning on memory ability learners is Cognitive information processing theory" [1]. Memory in the human brain is modelled is divided into 3 parts, namely sensory memory, short-term memory and long term memory. Learning according to this theory should base how the brain works. Optimal way the brain works as an ideal reference conditions for optimal learning occurs. Content and context in learning instrumental in the success of learning. Knowledge will last a long time if it enters the area long-term memory, and that is the target of learning, that knowledge or learning material into long-term memory area. Creativity is not confined to students who are geniuses or gifted students, but all students are owned by the NII. Teachers must be able to recognize the creativity of the students to be able to choose the media and appropriate learning models. Teachers can act as facilitators to enhance students' creativity [2]. Students' creativity can be measured by knowing the components of creative attitude, namely: fluency (fluency), flexibility (flexibility), authenticity (originality), elaboration (elaboration) and re-purposing (redefinition) in mind. So that the instrument can be measured using a questionnaire study of creativity. The level of creativity influence how students getsknowledge in the

learning process. Students who would be more in-depth creative in exploring the information or knowledge.

Teacher as a source of the misconception that the need for an approach that can overcome the misconception that the concept maps and powerpoint presentations. Approach to learning concept maps can be used as a tool in designing learning and evaluation tools. Another approach is to use a real environment that emphasizes presentation utilization of IT, the real environmental presentation approach is expected to visualize all the concepts and events that have not been shown concretely. Of these two approaches researchers want to know about the effects on student achievement in learning chemistry. There is a lot of learning chemistry concepts so there needs to be a trick or a way to simplify the concept that is easy to remember or to give effect to the extra ordinary brain to last a long time in the minds of students.

Learning quantum learning model ever implemented in SuperCamp shows that students who take SuperCamp get better grades, participate more and feel more proud of themselves [3]. Now learning quantum learning was a focus and expectations of the education specialists and classroom instruction in an effort to revive the maximum of several aspects.This study was preceded by a literature review on the meaningful learning theory of David Ausubel, Piaget and learning theory according to which adopts Vigotsky constructivism, and how the role and development of concept maps and real environments in learning chemistry.

According to the systems approach, instructional media also plays an important role in the success in achieving the learning objectives. Instructional media in line with the development and progress of science and technology teachers have many choices to make in determining the instructional media. Used instructional media course students should be confirme with the condition of the existing school, which depends on several factors of infrastructure and students. The teacher as a facilitator of learning should be qualified to determine what is appropriate learning media.Media used in this study is the concept maps and real environments. Media selection concept maps as learning media account of several studies on the use of concept maps in learning it can increase or advantageous to the success of learning, as described by Josiane Basque and Marie Claude Lavoie in a paper entitled Collaborative Concept Mapping in Education: Major Research Trends [4] of 39 studies on the use of concept maps in teaching, has a great contribution to learning. Competency-based curriculum development process using the assumption that students will learn to have the knowledge and skills needed to master the initial specific competencies it is in accordance with a concept map linking new knowledge with the knowledge possessed by students. . While the selection of real media environment as a medium, as has been observed by Munir Tanrere in the Journal of Applied Sciences in Environmental Sanitation[5] conducted a study on chemistry learning berbasih environmental problems, at 3 Napier High School. This study reveals the child turns by linking knowledge with direct experience with the environment may improve the quality of learning chemistry. Novak [6] proposed that concept maps are used in determining the initial knowledge in the cognitive structure of students at the beginning of teaching. This can be done by the students create a concept map of a subject taught by the teacher. Based on the concept map that the students, the teacher can determine the initial knowledge contained in the student's cognitive structure in a relatively short time. Novak [6] also proposed that concept maps can be used as a tool to develop the contents of the teaching content that is characterized Potentially meaningful.Potentially meaningful traits are traits that must be possessed by the teaching materials if you want to achieve meaningful learning by students. Materials that have the characteristics of instructional materials that are meaningful and can be logically linked to knowledge than it is in the student cognitive structure [7]. Teaching materials that "are logically meaningfull" means that the teaching materials that contain concepts related with each other specifically.Submission of a material or concepts more effectively by using sketches and more meaningful and can make text simplification that sometimes when read time and energy consuming. Thus for learning model with quantum learning researchers tried out by using concept maps media.
Concept maps can be used to redesign the learning materials that can be received and recorded on the brain very quickly. Concept maps or mind map is a two-dimensional image consisting of concepts and sketches connected with the use of such road maps developed by Tony Buzan. Concept maps developed by Tony Buzan known as mind maps (Mind Map) and is widely used not only in education but in the field of general psychology. Map of mind (Mind Map) or concept map is a recording method that involves recording the form of a two-dimensional structure to accommodate the overall shape of a topic, interest and relative relationships between each of the components and mechanisms relationship [8]. Then Novak (1985) in Ratna Dahar Willis [9] suggests that teachers can learn from students' knowledge of concepts using concept maps or concept mapping. By using concept maps as well as an analysis of students' initial ability. Several instructional models tested in asia and europe all through the initial analysis was successful [10]. Real media environment has advantages emotionally and visually can give meaning to the students about the learning materials. Information that has emotional meaning more memorable [8].

Real environment are materials or natural phenomena that are around students who are not laboratory materials, so it does not really need to get it cost too much. The materials that exist around these students went on to become an experience that can be named by the students, so the verbal can be avoided. Real media environment can also be documented in the form of pictures or movies which can then be used to study

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media. Shapes, colors and dimensions are owned real media environment makes students have fun learning.

Media concept maps and real environments is not widely used by teachers to support successful learning. The manufacture and use of concept maps and real media environment that is quite simple in terms of economic and difficulty level, especially with the help of information technology and the computer facilitate the creation and development of concept maps and real media environment. Concept maps can be helped by using software manager.5 mind and the real environment can be assisted with presentation software powerpoint presentation that they can put images, animations or videos that can support learning fun. Why there are many teachers who do not use?

Learning chemistry especially in colloidal material that is generally theonly school in the form of lectures and impart information only, so there is a tendency that the colloidal material must teach many stories and memorization. Students sometimes get bored and tend to skip this material. Subject matter in the form of knowledge if only to convey to memorize then there is the problem that can be observed from the claims put forward students as follows: "We have not been getting the material. I do not understand what exactly is being taught. My teacher explains something that has nothing to do. My teacher taught something beyond our ability. I do not understand "[11]. Colloidal material in the content standards stated that the basic competencies that students need to have been explaining the system and colloidal properties and their application in everyday life. This suggests that the colloidal material is very important for the life of students in particular and society in general to improve their quality of life. So basically demands competency has mastered the concept and its application in everyday environments. Of colloidal material plays an important role in improving the lives and welfare of human life. In humans such as blood, milk and collagen, which is an example of biological colloids present in the human body, so that the colloidal material development in health benefit in dialysis washing the blood in a process that can also be experienced by the colloid. In the environmental field, students with colloid aerosol know more careful when there is fog of smoke from burning forests to clear land, so that students are embedded in his heart for nurturing theenvironment. In the management of clean water for household consumption, by learning about how the events colloid adsorbs and coagulation gave rise to the development of water purification technologies to solve water shortage problems, especially in areas Singkawang when the dry season water becomes very scarce.

In Singkawang as the second administrative city Pontianak in West Kalimantan is a growing city in all fields, as well as in education and teaching. There are many teachers who still use the lecture method in delivering chemistry, because they feel that learning should chemistry laboratory while the laboratory facilities are relatively expensive. This gives rise to a sense of pessimism for teachers to develop learning models. So they returned to the learning model hereditary and conventional. Ie the material explained in class, given the example problems, give the task is completed. This affects the learning achievement of children especially learn chemistry is still not satisfactory.In SMA Negeri 1 Singkawang, as a high school student in accepting new RSBI using psychological tests (psychological). Memory ability and creativity of students as one of the skills that are measured in thepsychological test to be considered acceptable or not a student of SMA Negeri 1 Singkawang. Creativity and memory skills of students as internal factors that contribute to the success of students of students in learning, so that the new admissions process were taken into account. During this memory skills and creativity of the students had never observed or have never studied about her contribution to the success of students in learning, especially learning chemistry.Quantum model of learning to do with the learning concept maps and real media environment by looking at aspects of students' creativity and memory skills of students on the subject of Colloids in SMA Negeri 1 Singkawang necessary research. So as to know the ratio of the two media students and internal factors (memory skills and creativity of students) in their influence on learning achievement in a colloidal material. And to know how the interaction between the model of learning quantum learning with concept maps and real media environment, student creativity and memory skills. This can contribute information to teachers, especially to improve the professionalism of teachers which in turn will achieve quality learning and quality education is as expected in Law Teachers and Lecturers in 2005.

As well as to explore the various studies that have been conducted as the basis for providing a framework to determine which hypothesis is taken before the study is 1). influence of differences in learning with concept maps and real environments for learning achievement colloidal material chemistry. 2). The big difference in the effect of high and low memory capacity on learning achievement chemistry. 3) The influence of high creativity and low on student achievement. 4). There was an interaction between the use of concept maps and real media with amemory capacity of students on student achievement. 5) There is aninteraction between media use concept maps and real environments with the creativity of students on student achievement. 6) There is aninteraction between memory ability and creativity of students' learning achievement. 7). There was an interaction between media use concept maps and real environments, memory skills and creativity of students on student achievement.

II. RESEARCH METHOD

Used research method is experimental research by taking a purposive sample of cluster random sampling in SMA Negeri 1 Singkawang class XI science in the school year 2010-2011 totaled 56 students, divided into two classes used in the

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treatment of learning quantum learning concept maps media 28 students and 28 students with the real environment by power point presentation. Analysis of the data in this study is three-way ANOVA design with theunequal cell. By using the software if the data is anates 4, excel and Minitab 15.

The method used in this study is the experimental method because the variables are generated experimental manipulation [12]. In this study wanted to test the effect of differences in learning with concept maps and learning media with real media environments on learning achievement chemistry on the subject of colloidal systems in terms of memory capacity and creativity of students. In this study is also to investigate the interaction between the independent variable quantum learning with concept maps and real media environment, with variable memory capabilities as well as the independent variable on the dependent variable of student creativity student achievement.In this study using a 2x2x2 factorial design study with engineering design analysis of variance (ANOVA) followed by 3 lines Scheefe test. This test is used to determine differences in the use of concept maps and real media environment with chemistry learning achievement in terms of memory capacity and creativity of students with high and low categories.

TableI
Factorial Design Research

Treatment	Categories	Learning Chemistry with Model QL (A)			
		Media Concept Map (A1)		Real Media Environment (A2)	
		High memory capability (C1)	Low Memory Capability (C2)	Capability High Memory (C1)	Low Memory Capability (C2)
Creativity of the students (B)	Height (B1)	A1B1C1	A1B1C2	A2B1C1	A2B1C2
	Low (B2)	A1B2C1	A1B2C2	A2B2C1	A2B2C2

Research step is divided into three stages, detailed as follows:

A. Preparation ResearchPhase

Planning includes planning instrument learning research (treatment), planning data collection instrument. Treatment planning in this research is making a lesson plan based on the syllabus KTSP SMA Negeri 1 Singkawang, with modifications to the quantum learning approaches and use of instructional media that concept maps and real environments. Media concept maps used in this study were made by the researchers who then consulted with experts in this case the supervisor. Planning a data collection instrument includes tests and questionnaires, namely: a. Instrument tests to determine the ability to determine the outcome of memory and learning or student achievement. b. Instrument questionnaire to find out creativity

B. Research Implementation Phase

The experiment begins by providing test memory skills and creativity questionnaires to both classes. Provision of test and questionnaire to determine students' memory skills and creativity of students.The planning of the implementation of learning as learning quantum learning scenario experiments with concept maps and real media environment, in which there are syntax learning model of Quantum Learning has the main characteristics are known as grafts (Keep, Natural, Rename, Demonstrate, Repeat and Celebrate). The main characteristic of the quantum model of learning is interpreted in a learning phase as a table 2 follows:

Table II
Learning Phases

Quantum Learning Steps Learning Class Experiments With Learning quantum learning	
Concept Maps Media	Real Media Environment
Phase 1, making agreements and structuring a learning environment that is free from the barriers of learning. (Fun atmosphere, open communication, mutual has).	Phase 1. Making an agreement between students and teachers about learning to be done
Phase 2, presenting a common experience that can be experienced by students	Phase 2. Bring the experience or common occurrence experienced by students with exposure pictures or videos
Phase 3. Guide students to plan and prepare to make a concept map of the colloidal system name or keyword (symbol) to a knowledge of the common experiences that were presented in the form of notes or mind maps	Phase 3. Guide students to make power point presentation with the data from real environment around the students
Phase 4, presenting the results of a note or mind map on phase 3	Phase 4. Help students delivered a presentation on data obtained from the environment in front of the class
Phase 5, to discuss the presentation notes or mind maps	Phase 5. Check for student understanding and provide feedback
Phase 6, giving recognition or awards presentation results	6. Provide opportunities for further training

Post-study phase donethen the second step after the study group was given a final test achievement in the form of a written test on cognitive aspects in order to compare the treatment effect in the experimental group with concept maps media and real media

III. RESULT AND DISCUSSION

Obtained from the research achievement data, scores and memory capabilities creativity questionnaire scores were then processed by using current three-way ANOVA with unequal cells, previously tested with a test of homogeneity and normality Levine, Bartlet and Anderson darling. Once processed using Minitab software such results are obtained in the following table:

Tabel III
Result Of Three Way Anova: Achievement Versus Media, Memory Skill and Creativity

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Media	1	484.4	131.6	131.6	0.91	0.344
Memori	1	659.6	659.6	659.6	4.83	0.033
kreativitas	1	87.8	30.3	30.3	0.21	0.648
media* Memori	1	64.2	95.4	95.4	0.66	0.420
Media* kreativitas	1	122.5	123.2	123.2	1.81	0.360
Memori* kreativitas	1	54.2	46.1	46.1	0.32	0.575
media* Memori * kreativitas	1	99.6	99.6	99.6	0.69	0.410
Error		48	6917.6	6917.6	144.1	
Total		55	8489.9			

From table 3 give explanation that learning models of quantum learning using concept maps and environmental media does not give effect to the real achievement of chemical materials colloidal systems. It is shown from the results of GLM analysis

of variance for student achievement obtained p-value is greater than 0344 or 0.05 which accept the null hypothesis (H_0). Media concept maps and real environmental media no differential effect on learning achievement significantly. Memory abilities have a significant influence on student achievement on the material colloidal systems. It is shown from the results of GLM analysis of variance obtained p-value price of 0.033 or greater than 0.05 which reject the null hypothesis (H_0). Students who have a high memory capacity has an average of 70.02 higher learning outcomes than students who have low memory capacity on average 61.27 memory capability study results provide a significant impact on student achievement.The creativity of the students did not have a significant influence on student achievement on the material colloidal systems. It is shown from the results of GLM analysis of variance obtained p-value price of 0648 or greater than 0.05 which accept the null hypothesis (H_0). Chemistry learning achievement in terms of high and low creativity there is no difference or in other words that student achievement is not affected by high or low creativity students.There is no interaction between the students who were learning model of quantum learning with concept maps media or real media environment the learning achievement of material chemistry colloidal systems. Results of analysis of variance p-value for interaction between instructional media with amemory capacity of learning achievement of students is 0.420 or greater than 0.05 (significance level) means H_0 which states "There is no interaction between the media with amemory capacity of students to learn chemistry achievement" is not rejected.There is no interaction between media and creativity of students toward chemistry learning achievement. Results of analysis of variance p-value for interaction between media creativity of students learning with the learning achievement is 0.360 or greater than 0.05 (significance level) means H_0 which states "There is no interaction between media and creativity of students toward academic achievement chemistry" is not rejected.There is no interaction between memory ability and creativity of students toward chemistry learning achievement. Results of analysis of variance p-value for interaction between students 'memory skills with creativity to the learning achievement of students is 0.575 or greater than 0.05 (significance level) means H_0 which states "There is no interaction between memory skills and creativity of the students' learning achievement chemistry" is not rejected.There is no interaction between the media and the concept map learning real environment, high and low memory capacity, and high and low creativity students toward chemistry learning achievement. Results of analysis of variance p-value for interaction between media learning, memory skills and creativity to the learning achievement of students is 0.410 or greater than 0.05 (significance level) means H0 which states "There is no interaction between the media of learning, memory skills and creativity of students on achievement studied chemistry "is not rejected.

IV. CONCLUSIONS

Learning model of quantum chemistry learning with concept maps and the media can be applied to the real environment students with high memory capacity as well as students with low memory capacity. Media learning quantum learning with concept maps and the real environment can be applied to students with student creativity in students with high or low creativity.Media map concept with character graphics and visual real environment with the familiar three-dimensional characters, both balanced in giving effect to academic achievement. Both of them may be an alternative to the learning process. Media use concept maps and real environmental media is not too significantly different effects on student achievement of learning model of quantum chemistry with learning. Quantum model of learning can overcome the deficiencies in each medium. Memory factors affect student learning achievement. Learning memory skills students need to pay attention to high and low by using a model of learning and media that can improve students' memory skills. The creativity of students as students varied internal factors. With learning model of quantum memory skills and creativity to overcome low schoolachievement is accomplished so insignificantly statistically different.

REFERENCES

[1] D. Muijs and D. Reynolds.*Effective Teaching: Teori dan Aplikasi. Diterjemahkan oleh: Helly Prajitno Soetjipto dan Sri Mulyantini*. Yogyakarta: Pustaka Pelajar, 2008.
[2] M.J.Rockler. *Innovative Teaching Strategies*. Arizona: Gorsuch Scarisbrick. Publishers, 1988.
[3] B. DePorter, M. Reardon and S. Singer-Nourie. *Quantum Teaching: Mempraktikan Quantum Learning di Ruang-ruang Kelas. Diterjemahkan oleh Ary Nilandri*. Bandung: Kaifa, 2010.
[4] J. Basque and M.C. Lavoie. "*Collaborative Concept Mapping in Education: Major Research Trends,"* in*Proceeding of the Second International Conference on Concept Mapping*, 2006, pp. 79-86.
[5] M. Tanrere. "Environmental Problem Solving In Learning Chemistry For High School Students".*Journal of Applied Sciences in Environmental Sanitation*, vol. 3, pp. 47-50, 2008.
[6] J.D. Novak. "Concept mapping: A useful tool for science education". *Journal of research in science teaching*, vol. 27, pp. 937-949, Dec. 1990.
[7] D.P. Ausubel.*The Psychology of Meaningful Learning: an Introduction to School Learning*. New York: Grune and Stratton, 1968.
[8] Y.P. Putra. *Memori dan Pembelajaran Efektif*. Bandung: Yrama Widya, 2008.
[9] R.W. Dahar. *Teori-teori Belajar*. Jakarta:Erlangga, 1989.
[10] Harjanto.*Perencanaan Pengajaran*. Jakarta: Rineka Cipta, 2006.
[11] M. Arifin. *Pengembangan Program Pengajaran Bidang Studi Kimia*.Surabaya:Airlangga University Press, 1995.
[12] S. Arikunto. *Prosedur Penelitian Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta, 2006.