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Increasing motivation and learning outcomes through quantum teaching with mind-mapping and circuit learning (p2bm) method for natural science subject

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Abstract

This research aims to obtain the information related to Quantum Teaching with Mind Mapping and Circuit Learning (P2BM) method implementation on the natural science subject (IPA) in order to increase student's motivation and learning outcome, describe the assessment process and learning outcome assessment by implementing the Quantum Teaching with P2BM method. This is a qualitative descriptive research with some stages such as planning, action, observing, and reflection. The result showed significant increase and was able to solve the existing

problems. Based on the evaluation result at the end of the research, student's motivation and learning outcomes for the natural science subject is increased through implementing Quantum Teaching with P2BM method. This can be seen on the increasing student's average mark and completeness rate of each cycle. On cycle 1, 89,7% students were having high motivation and the percentage was increased to 93,1% on cycle 2. For the student's completeness rate, it was 51,7% on cycle 1 and was increased into 89,7% on cycle 2.

Keywords: Quantum Teaching with Mind-Mapping and Circuit Learning method, Student's motivation, and Learning Outcomes

Introduction

Based on the observation result on the student's condition during the learning process and the test result for natural science subject at the 8th grade in MTs Negeri 2 Trenggalek, 60% students were having no learning motivation, and 70% of the students had not yet meet the Minimum Completeness Criteria (KKM) where the KKM standard for natural science subject is 80. Thus, the problem arises later for the natural science subject teachers is to find a way to improve the learning process quality at the 8th grade that students will be highly-motivated to follow the learning process and increase the 8th grade student's learning achievement for the natural science subject.

Based on the explanation above, it takes efforts from the natural science subject teacher to improve the learning process quality. One of the ways conducted by the writer as a natural science subject teacher in improving the learning process is conducting a learning activity by using Quantum Teaching with Mind-Mapping and Circuit Learning (P2BM) method. This is based on the constructivism learning theory (Riyanto, 2010: 143) ^[7]. Constructivism is a (philosophical) thinking ratio where students shall independently find and transform the information in a complex way, solve the problems, find everything for their own selves, and struggle with ideas (Trianto, 2015:29) ^[9]. According to Deporter (2008) ^[3], several things affect the learning process are exciting learning atmosphere, a strong base, supportive environment which improve the student's awareness, participation, and thinking skill, and the dynamic teaching plan. Therefore, the leaning process by using Quantum Teaching with P2BM method will motivate the students to study and improve their learning outcomes since each student will be responsible to master the material, present their work result in front of the class, where they will be marked as success if they could show a good presentation, elegant facility, learning skill, life skill, and practical skill.

Thus, in solving the problems above, this class action research is entitled "Increasing Motivation and Learning Outcomes Through Quantum Teaching with Mind-Mapping and Circuit Learning (P2BM) method For Natural Science Subject at the 8th grade in MTs Negeri 2 Trenggalek Academic Year 2019/2020". The problems formulation in this research is How do we implement Quantum Teaching with P2BM method to increase the natural science subject learning outcomes of the 8th grade students at MTs Negeri 2 Trenggalek? This research aims to increase the natural science subject learning outcomes of the 8th grade students at MTs Negeri 2 Trenggalek through Quantum Teaching with P2BM method.

Literature Review

1. Student's Learning Motivation

Learning motivation is a developing psychological aspect which is affected by the student's physiological condition and psychological maturity. Learning motivation is everything that can motivate a student or an individual to learn. Without learning motivation, a student will not learn and achieve a success in their study at the end (Sani, 2014:49) ^[8]. Motivation and learning are both affecting each other. Students will study hard if they have a motivation. Thorndike (in Uno, 2011:11) ^[10] defined learning as an interaction process between stimulus (which can be in the form of mind, feeling, or movement) and response. This definition is in line with the opinion of Good and Brophy (in Uno, 2011:15) ^[10] that learning is a process or interaction of someone in obtaining something new in the form of behavior change as the result of learning experience.

Students with motivation in a learning process are usually: having a great enthusiasm, impassioned, having a high curiosity, able to work independently when the teacher ask the students to do something, confident, having a high concentration, considering a difficulty as a challenge to overcome, and having high patience and power struggle (Kompri, 2015:247-248) ^[6].

2. Student's Learning Outcome

According to Ahmadi in Warso (2016:160) ^[11], the definition of learning outcome is as follows: theoretically, if something is considered to be able to satisfy a need, then there is a great tendency to redo it. Learning reinforcement resources can be in the form of extrinsic factors (score, acknowledgement, reward) and intrinsic factors (an enthusiasm to investigate and comprehend the situation). Besides, the students need to and have to receive a feedback directly regarding the task completion success rate (evaluation report/test result). Meanwhile, Mardapi (2012:2) ^[4] said that learning outcome or learning achievement is a competency achieved by the learners which included three domains; cognitive, affective, and psychomotor. These three domains later will be a union in determining someone's ability.

Cognitive field is an intellectual ability related to the cognitive aspect. Based on the Bloom's taxonomy, this domain is classified into 6 (six); knowledge, understanding, application, analysis, evaluation, and creation (Mardapi, 2012:2) ^[4]. Thinking order involved within the cognitive aspect are remembering and memorizing. Aspect of understanding is an ability to understand; the characteristic is when the learners are able to explain a concept or a theory with their own language in which the main point is exactly the same as the original one. Aspect of application is an ability to apply a concept or theory to the various recent situations. Evaluation is an ability to determine the value of a program, while creation is an ability to create something new aside from the existing one.

Students learning outcome is a learning achievement. Learning achievement itself according to Haladaya and Mardapi (2012:2) ^[4] can be achieved in a relatively short span of time, while aptitude is relatively longer. Learning achievement is achieved after joining a certain learning process within a short span of time in a classroom. For example, an ability to calculate the width of a block is a learning achievement, but the verbal and quantitative ability are the example of aptitude. Learning achievement tend to fluctuate since this aspect is easy to learn but also easily

forgotten. Aptitude is obtained through a relatively long process but can be stored longer such as the verbal ability and quantitative ability.

Based on the explanation above, we can conclude that learning outcome is the result of an effort or a study which shows the proficiency measurement achieved in the form of score. While the learning effort result can be in the form of scores as the proficiency standard of someone's learning effort, learning achievement is showed through the sum of evaluation report score or summative test score.

3. Quantum teaching with mind mapping and circuit learning (P2BM) method

Quantum Teaching is a lively learning transformation, with all its nuances, and includes all the connections, interactions and differences that maximize learning moments (Riyanto, 2010: 199) ^[7]. The word 'quantum' means an interaction which transform energy into light. Thus, quantum teaching is an orchestration of various interactions (covering the elements of effective learning which affect the student's success) within and around the learning moment.

The term 'quantum' is initially adopted from physics. It was introduced by Albert Einstein. In physics, quantum is applied as the concept of energy transformation into light in which is focused by the $E=mc^2$ formula, where Energy equals mass times the speed of light squared. Making analogy from the concept, DePorter made the quantum concept relevant to learning. In this case, quantum learning is actually the combination of various cognitive psychology and neuro linguistic theories. According to Kosasih (2016:113) ^[5] quantum also utilizes learning theories such as accelerated learning (Lozanov), multiple intelligences (Gardner), neuro linguistic programming NLP (Grinder dan Bandler), experiential learning (Hahn), socratic inquiry, cooperative learning (Johnson dan Johnson), element of effective instruction (Hunter).

4. The characteristics of quantum teaching

Quantum teaching refers to the concept "bringing their world to ours and delivering their world to ours" (DePorter, 2008:6) ^[3] which reminds us to the significance of entering the student's world as the first step to earn the right to teach. This right to teach is given by the students, not the National Education Department. The department will only issue documents that enable someone to teach. It means we only have a permission to teach.

DePorter (2008:6) ^[3] said that learning, in all definition, is a full contact activity. In other words, learning involves all human's personality aspects: mind, feeling, and body language aside from knowledge, attitude, and previous belief as well as the perception on future. Hence, the right to ease the learning shall be given by students and earned by the teacher.

So, enter their world. Since this action will give us a permission to lead and ease their way to a broader awareness and science. Relate what you teach to a certain event, thought, or feeling obtained from their home, social, athletics, music, art, recreation, or academic life. After making the relationship, you may bring it into your world and give them an understanding concerning your understanding to their world. Here is where we reveal new vocabularies, mental modes, formulas, and etc. (Riyanto, 2010:201) ^[7]. Thus, the students will be able to bring what they learn into their world and apply it to different situation.

Applying Quantum Teaching with P2BM method according to DePorter (2008) [3] consisted of:

- a. Transforming class into a learning community by preparing the student’s learning place positively. A class shall be a home for the students to learn how to acknowledge and support others, a place to experience joy and satisfaction, give and take, and learn to grow.
- b. Creating a comfortable class ambiance which shows that social environment or class ambiance is the main psychological determiner that affects the academic learning.
- c. Creating a strong basis as the important part of a learning community. Although the aspects of each basis have unique and individual characteristics, the basic elements are still the same, they are: (1) the same goal for the students, (2) principles that will lead their behavior and help the environment to grow into a trustworthy and supportive one, (3) mutual agreement is more informal than a set of rule and is a list of simple and concrete ways to smoothen the learning process, (4) policy that supports the learning community goals, (5) rule shall be more strict than agreement or policy. Violating rules shall face a clear consequence.

d. Creating a supportive environment
 According to DePorter (2008:57) [3] the environment of quantum teaching that spur the students to learn and improve their memory capacity: (1) surrounding environment, (2) auxiliary equipment, (3) seat placement, (5) green plants to generate a beautiful association.

e. creating a dynamic instructional design
 It could be in the form of an instruction which stimulates the students’ satisfaction in learning, utilizing the set of students’ intelligences, uplift the student’s motivation and prepare them to achieve a success through: (1) bringing their world to ours and delivering their world to ours, (2) V-A-K modality, (3) success model, (4) Quantum Teaching framework design called as “TANDUR”, (5) multiple intelligences meet SLIM-N-BI.

f. creating success through context
 A context is more than just what we can see. Meanwhile, content includes a short but lively presentation, elegant but interesting, flexible, learning skill for learning, and life skill.

g. creating learning skill
 There are five skills to stimulate learning, they are: 1) focused concentration, 2) note taking, 3) test organization and preparation, 4) speed reading, 5) memorizing technique. To implement the five skills, we have to pay attention to several things: 1) utilizing the VAK learning style, 2) learning in an optimum condition, 3) organizing the information. We can organize the information through:

(a). Mind Mapping
 Mind mapping helps the students catching the thoughts and ideas clearly, completely, and understandable and easy to recall, and maximizing the learning moments. Mind mapping is a good note taking method since you will remember what the teacher said, increase the material-related knowledge, providing help in organizing the materials, and give us a new perception. Mind mapping is a form of learning used to nurture the ability

to present a material in the form of a mind map as a way to push the learners making a note only through keywords and figures. The result is a mind map or diagram used to present words, ideas, or other things which are associated to and placed at the surrounding of the main idea keywords (Sani, 2014:240) [8].

How to make a mind map: (1) using different colors for each main topic; (2) showing the association by drawing arrows in between the branches; (3) develop an individual steno by using figures, symbols, and abbreviations; (4) organize the information and the chronological order by putting numbers on the branches; (5) be creative. Mind map can be used both in the individual or group learning. Here are the correct instruction steps of using mind map: (1) teacher mentions the competency to achieve; (2) teacher explains the concept/problem that is going to be responded by the students and the problem should have alternative answers; (3) form a group of 2-3 students; (4) each group will write the alternative answers as the result of the discussion; (5) each group read the discussion result and the teacher will write it on the board and classify it based on the student’s need; (6) the learners make a mind map or diagram based on the discussed alternative answers; (7) give chances to some students to explain the idea of their thinking concept mapping; (8) ask the students to make a conclusion and teacher make a comparison based on the provided concept.

(b). Circuit Learning
 It is a method where the students shall go through the information with the same pattern every day, just like how the electricity goes around a household.

h. Creating life skill
 There are at least 3 life skills: 1) living with a sense of responsibility, choice, and solution. 2) freedom and security, 3) clear communication with observation, mind, feeling, and avidity, 4) build a relation, either with teachers, students, staffs, and guardians.

i. Creating success through practice
 Practicing any knowledge and understanding that has been obtained can be through: summarizing book chapters, making some learning steps, seizing chances and making some friends.

5. Thinking Framework

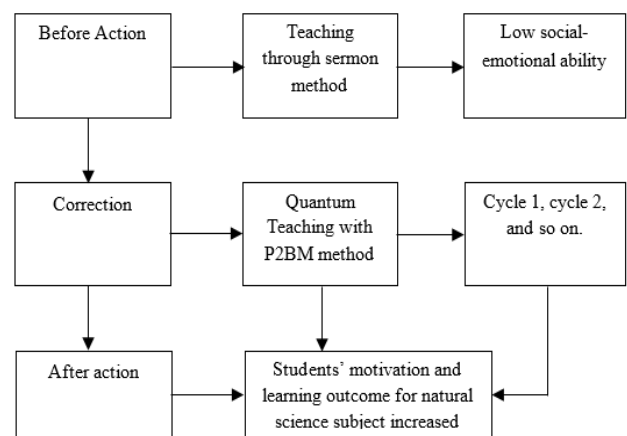


Fig 1

Research Method

This is a qualitative descriptive research which took 29 8th grade students of MTs Negeri Kampak Trenggalek Academic Year 2019/2020 as the research subjects. The research objects were Quantum Teaching, student's motivation, and learning outcome for natural science subject. This research used class action method with the procedures started from planning, action, observation, and reflection. Stages in conducting a research according to McNiff (1992) in Suharsimi (2008) are explained as follows:

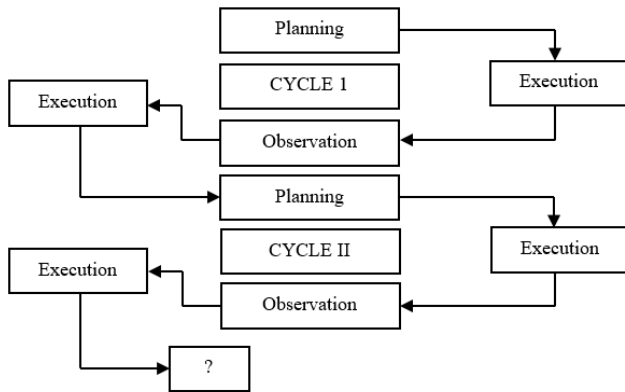


Fig 1: McNiff's Class Action Research Model

The data collected was student's motivation in the form of observation check list form. The student's learning outcome data was in the form of daily test instrument. The research was then indicated as successful if:

1. >75% of the 8th F grade students have high motivation in joining the natural science class conducted by using Quantum Teaching with Mind Mapping and Circuit Learning (P2BM) method.
2. >80% of the 8th F grade students have met the determined KKM for the natural science subject daily test.

Discussion

In the Quantum Teaching learning process with Mind Mapping and Circuit Learning (P2BM) method, the writer started the stages from planning, executing the action, observing the teaching learning process and the implication of Quantum Teaching with Mind Mapping and Circuit Learning (P2BM) method and the last is reflecting. Observing student's motivation and learning outcome was conducted by using the prepared instrument. After that, the observation result became an evaluation and reflection such as conducted in cycle 1. The distinguished actions between cycle 1 and cycle 2 were as follows: there was an additional explanation from the teacher and additional time for reading and reviewing the reading material while the procedure of quantum teaching with Mind Mapping and Circuit Learning (P2BM) method were still the same as in the instructional planning that was made before based on the syllabus. On the correction step in cycle 2, generally, there were 4 activity stages namely planning, execution, observation, and reflection. The planning stage included preparing lesson plan, student worksheet, teaching material, learning media, observation instrument organization, evaluation instrument preparation, and doing all activities related to the natural science subject preparation. On the execution stage, the writer conducted a Quantum Teaching with Mind Mapping

and Circuit Learning (P2BM) method such as in cycle 1 for 3 meetings to finish one Basic Competency (KD) as stated in the syllabus. Each learning session consisted of three activity stages namely introduction, core activity, and closing.

At the introduction stage, the writer started with

1. Teacher greeted the students and checked their attendance as well as asked them about how they were doing.
2. Prepared the students for learning activity.
3. Teacher did apperception and motivation by showing a phenomenon or asking questions such as "can you imagine what happen if you do not urinate or sweat? Will your body remain healthy?"
4. Teacher delivered the learning purpose as written in the 'Ayo Kita Pelajari?' activity.
5. Teacher announced the score obtained by the learners after learning Chapter VIII as stated on the 'Mengapa Penting?' activity.

The teacher informed the students that there were 2 activities to do; any activities to release the residual substance in 'Ayo Kita Diskusikan' activity and 'making a mind map concerning the relationship of organ structure and function in the excretion system' in 'Ayo Kita Diskusikan' activity.

At the introduction, the writer started with:

1. Praying together
2. Apperception activity
3. Delivering the lesson objective to achieve in the meeting.

After finishing the introduction activities and making sure that the class was conducive, the writer started the core activity as follows:

1. Presenting information to the student either through demonstration or providing a reading material.
2. Teacher gave an example of Mind Mapping method to the students.
3. Teacher gave an example of reading material while the students listening, and they would wave the reading material while saying "Aku akan membaca (I will read)" (T).
4. Students read the material loudly while others listening (A).
5. Students explained the Human Excretion System.
6. Students closed the reading material, closed their eyes, catch some breath, sit upright, and try to recall the reading material. Teacher gave an instruction regarding human excretion system and related it to the reading material. If the students have memorized it well, they will open their eyes and start making the mind map. (A)
7. Students explained the mind mapping concept idea (A).
8. Students determined the human excretion system in mind and wrote the concept on a prepared worksheet (A).
9. Students reported the mapping result (A).
10. Students explained the mind map content in front of the class (D).
11. Other students gave response and comments (D).
12. Students restated the mind map content (U).
13. Students made a conclusion and teacher compared it with the concept provided.
14. Teachers gave an applause and complimentary words "OK kalian bisa (OK You made it!)".

After conducting the core activities, there was a closing activity where the writer emphasized on several essential points in the material and gave homework for the next activity.

Those steps above are also used on the 2nd, 3rd, 4th, and 5th meeting until we completed and finished the Basic Competency (KD). The complete learning scenario for each meeting in the Quantum Teaching with Mind Mapping and Circuit Learning (P2BM) method had been stated in the Lesson Plan (RPP) (RPP was attached).

Result and Conclusion

Based on the explanation above, we can conclude that the implementation of Quantum Teaching with Mind Mapping and Circuit Learning (P2BM) method is following the principles of TANDUR; tumbuhkan (grow), alami (experience), namai (name), demonstrasikan (demonstrate), ulangi (repeat), and rayakan (celebrate). Each learning activity uses those principles. Then they were combined with discussion activity.

The result showed that the class action research conducted for two cycles with P2BM method can fundamentally change the learning process. The method makes the learning more meaningful to the students. It can be seen at the increasing student's motivation at some activities such as reading, listening, writing, and drawing. Based on the data obtained, there was an increase from cycle I to cycle II. The changes are as follows: 1) student's enthusiasm, 2) student's motivation, 3) student's interest, 4) student's participation, and 5) students accuracy in making an analysis.

Regarding the completeness rate, student's completeness rate increased at each cycle. On cycle I, it increased for 31,86 while on cycle II it became 46,07. It means the Quantum Teaching with Mind Mapping and Circuit Learning (P2BM) method can increase the student's motivation and learning outcomes in the natural science subject. Besides, the P2BM method enables chances for student to create and learn in a more interesting way based on the student's ability in delivering ideas and statements.

References

1. Arikunto, Suharsimi, Suhardjono, Supardi. Penelitian Tindakan Kelas. Jakarta: Bumi Aksara, 2008.
2. DePorter, Bobbi. Hernacki, Mike. Quantum Teaching. Bandung: Kaifa, 2009.
3. DePorter, Bobbi. Reardon, Mark. Singer-Nourice, Sarah. Quantum Teaching. Bandung: Kaifa, 2008.
4. Mardapi Djemari. Pengukuran Penilaian & Evaluasi Pendidikan. Yogyakarta: Nuha Medika, 2012.
5. Kosasih E. Strategi Belajar dan Pembelajaran: Implementasi Kurikulum 2013, Bandung: Yrama Widya, 2016.
6. Kompri. Motivasi Pembelajaran: Perspektif Guru dan Siswa, Bandung: Remaja Rosdakarya, 2015.
7. Riyanto, Yatim. Paradigma Baru Pembelajaran, Jakarta: Kencana, 2010.
8. Sani, Ridwan Abdullah. Inovasi Pembelajaran, Jakarta: Bumi Aksara, 2014.
9. Trianto Ibnu Badar al-Tabany. Mendesain Model Pembelajaran Inovatif, Progresif, dan Kontektual, Jakarta: Prenadamedia Group, 2015.
10. Uno Hamzah B. Teori Motivasi dan Pengukurannya, Jakarta: Bumi Aksara, 2011.
11. Warso, Agus Wasisto Dwi Doso, PKB Publikasi Ilmiah

PTK dan Nilai Angka *Kreditnya*, Yogyakarta: Pustaka Pelajar, 2016.