

The Effectiveness of Quantum Learning and SSCS Learnings Models in Improving High-Order Thinking Skills with Portofolio Assignment

Rini Danuwanti, Sudjarwo, Pargito

Master of Social Education, FKIP Universitas Lampung, Indonesia

Abstract: The purpose of this study is determine the significant difference between high order thinking skills in which learning uses the Quantum Learning model and the SSCS learning model, determine the significant differences in high-order thinking skills given portofolio assignments, and determine the interaction between learning models with portfolio assignments. The research method used is Quasi Experiment with factorial design patterns. The research sample is taken with Cluster Random Sampling. The data is collected through a higher-order thinking skills. The results showed is there was an significant difference in the high-order thinking skills using Quantum Learning and SSCS learning models, there was significant difference in the high-order thinking skills given the assignment of portfolio, there was an interaction between learning models with portfolio assignments.

Key words: Quantum Learning, SSCS Learning, High-Order Thinking Skills, Portofolio Assignment

I. INTRODUCTION

The government in order to anticipate improving the quality of learning tries to roll out the Teacher and Lecturer Law No. 14 of 2005 in which states that to guarantee the expansion and equitable access, quality improvement and relevance as well as good governance and educational accountability that are able to face challenges according with demands for changes in local, national and global life, it is necessary to empower and improve the quality of teachers and lecturers in a planned, directed, and continuous manner. Teachers as change bearers for improvement in the classroom must continue to build student's learning habits, including: learning to know, learning to do, learning to be something and learning to work together. With these various learning approaches, students are expected to be able to surf in clutter, dive in clutter, get feedback to do consolidation aimed at being able to be proactive and able to take emergency decisions in order to anticipate and overcome various complex events and turbulence in the future adaptively and generative (Suhana, 2014: 3).

Contained in the Training Module of 2013 Curriculum Implementation on High School (2018:4) the government presents the 2013 curriculum which has experienced several developments and improvements since it was rolled out in 2013. The curriculum improvement is based on the policy foundation of the Minister of Education and Culture contained

in Minister of Education and Culture Regulation No.160 of 2014 concerning the Implementation of the 2006 Curriculum and the 2013 Curriculum. In general, the 2013 Curriculum improvements aim to be aligned between ideas, designs, documents, and their implementation. Specifically, the 2013 Curriculum improvement aims to harmonize SKL, KI-KD, learning, assessment, and textbooks. These improvements in 2017 are adjusted to Presidential Regulation Number 87 of 2017 concerning Strengthening of Character Education (PPK). Strengthening these five character values will be able to encourage students to have 21st Century skills needed in pursuing life, such as critical thinking and problem solving skills, collaboration skills, creative skills, and communication skills. Economic subjects are included in the structure of subjects in the High School/Islam School for group of subjects specializing in social science in the 2013 curriculum. The scope of economic subjects as described in Minister of Education and Culture Regulation Number 64 of 2013 covers economic behavior and welfare related to economic problems that occur in the closest living environment to the farthest environment. Economic learning at X grade on high school level for Economic subjects in the even semester of the academic year 2017/2018 focus on research on the basic competencies of business entities in the Indonesian economy, aiming that students are able to describe business entities in the economy from understanding, functions, roles, forms, strength and weaknesses and stages of establishing a business in the business entity. The learning process about the material can be directed to develop thinking skills at the highest level.

High-order thinking skills, according to Wilson in Zainal Fanani (2018:60) the ability to think is a combination of words that have different meanings of thinking and skills. Thinking is a cognitive process such as knowing, remembering, and perceiving, while the meaning of skills, namely the act of collecting and selecting information, analyzing, drawing conclusions, ideas, solving problems, evaluating choices, making decisions and reflecting. King *et al* (2013:1) categorize HOTS (High Order Thinking Skills) as critical and logical thinking, reflective thinking, metacognitive thinking, and creative thinking.

Researchers took the Mid-Semester Assessment Data for economic subjects of odd semester to find out the extent to which student's thinking skills in answering HOTS (High

Order Thinking Skills) questions with multiple choice forms made by economics teacher at the level of C4 (analysis), C5 (synthesis) and C6 (evaluation). The ability of students to answer questions correctly at the C4 level (analysis) as many as 72 people (44.44%) more than students who answer questions at the C5 level (synthesis) only 56 people (34.56%) whereas students who answer questions at the C6 level (evaluation) were 23 people (14.19%). He said that in answering the question of analysis domain (C4) and synthesis (C5) students were less thorough because there were still errors in the question solving steps even though the concept used was correct and the mistakes that were often made were the most basic namely to determine the formula that would be used in answering the question, it was closely related to not being accustomed in answering the questions with High Order Thinking Skills type so that the thinking process of students in answering these questions was still very low.

The solution to overcome the improving of high-order thinking skills on student learning process in economic subjects that is still low, namely by using the Quantum Learning Model and SSCS learning model with portfolio assignments. The Quantum Learning model is a set of learning methods and philosophies that are proven effective in schools and businesses for all types of people and all ages. Quantum Learning was first used at Supercamp (DePorter, 2015:8). In line with research conducted by Saputro Trimo (2017:87) stated that the Quantum Learning method on static fluid material has a positive impact on high-order thinking skills. Quantum learning method of learning requires students to observe, adjust, and be able to try things in the surrounding environment with lessons.

In addition, research conducted by Ni Luh Ratna Tirtawati (2014:4) concludes that higher scores on groups of students who were taught with quantum learning and mind maps were better than direct learning models in improving creative thinking skills and learning outcomes in biology, due to a reason that quantum learning is a "natural" way to learn, motivate and attract people to take responsibility for their own education. In addition, the application of learning is integrated with the making of mind maps which are information organizational tools that work in accordance with the mechanism of action of the brain so that it can enter and release information from and into the brain carried out by taking notes that are effective, efficient, creative, interesting, and easy because it is done by mapping our thoughts, it causes students to be more creative, save time, be able to solve problems, concentrate, organize and clear minds, remember well, learn faster and more efficiently as well as more easily and can see the "whole" picture. Students play more role in the learning process and also explore their own knowledge, the teacher only becomes a facilitator who provides all the supporting facilities so that students get maximum results in the achievement of knowledge. Meanwhile, the direct learning model tends to be teacher centered, meaning that in the learning process, teachers play the most dominant role. On the

implementation of direct learning model, teacher presents information step by step while students only pay attention and accept what has been conveyed by the teacher. According to Baroto (2009) quoted by Dwi Retno Asih (2015:5) stated that the SSCS learning model is a model that uses a problem solving approach designed to develop critical thinking skills and improve understanding of science concepts. The results of hypotheses test in research conducted by Eni Widyastuti (2017:115) one of which is that there is an interaction influence between authentic assessments with High Order Thinking Skills on the ability to solve physics problems.

High Order Thinking Skills

High-level thinking skills known as High-order thinking skills are triggered by four conditions namely a particular learning situation that requires a specific learning strategy and cannot be used in other learning situations, intelligence that is no longer seen as an ability that cannot be changed, but the unity of knowledge that is influenced by various factors consisting of the learning environment, strategies, and awareness in learning, understanding views that have shifted from one-dimensional, linear, hierarchical or spiral towards understanding views to multidimensional and interactive, more specific high-order thinking skills such as reasoning, analytical skills, problem solving, and critical and creative thinking skills.

Highorder thinking includes critical, logical, reflective, metacognitive, and creative thinking. This skill is activated when students of various ages face problems, uncertainties, questions, or unusual dilemmas. The successful implementation of these skills produces valid explanations, decisions, performances and products in the context of existing knowledge and experience, and encourages continued growth in highorder thinking, as well as other intellectual skills. High-order thinking skills are based on low-level skills such as discrimination, simple implementation and analysis, and cognitive strategies and related to prior knowledge of subject (vocabulary, procedural knowledge, and patterns of reasoning). High order thinking occurs when someone takes new information and information stored in memory and interrelated and/or rearranges and expands this information to achieve a goal or find possible answers in a confusing situation. Various goals can be achieved through high order thinking in deciding what to believe; deciding what to do; creating new ideas, new objects, or artistic expressions; making predictions; and solve problems. (FJ.King, 2010: 32).

According to Saputra (2016:91) High-order thinking skills is a thinking process students in a higher cognitive level that is developed from a variety of cognitive concepts and methods and learning taxonomies such as the problem solving method from Krulik and Rudnick (1998), Bloom's taxonomy (1956), and the taxonomy of learning, teaching and assessment from Anderson and Krathwohl (2001). According to some experts, the definition of high-order thinking skills, one of them from Resnick (1987), is a complex thinking process in breaking

down material, making conclusions, building representations, analyzing, and building relationships by involving the most basic mental activities. This skill is also used to underline various high order processes according to Bloom's taxonomic level. According to Bloom, skills are divided into two parts. First is low level skills that are important in the learning process, namely: remembering, understanding and applying, and second are classified into high-order thinking skills in the form of skills of analyzing, evaluating, and creating. Learning oriented towards High-order thinking skills is learning that involves 3 aspects of high-order thinking skills, namely: transfer of knowledge, critical and creative thinking, and problem solving. In the process of learning high-order thinking skills do not look at the KD level, whether the KD is at the C1, C2, C3, C4, C5, or C6 levels.

Quantum Learning Model

Quantum Learning is rooted in the efforts of Dr. Georgi Lozanov, a Bulgarian teacher who is experimenting with what he calls "suggestology" or suggesto-pedia. The principle is that suggestions can and certainly influence the outcome of a learning situation, and every detail gives positive or negative suggestions. Some of the techniques that he uses in giving positive suggestions are to sit participants in a comfortable way, put on background music in class, increase individual participation, use posters to make a big impression while highlighting information, and provide teachers who are well trained in the art of suggestive teaching.

Another fill that is almost interchangeable with suggestology is "accelerated learning". Accelerated learning is defined as allowing students to learn at an impressive pace, with normal efforts, and accompanied by excitement. This method brings together elements that at first glance seem to have nothing in common: entertainment, games, colors, and positive ways of thinking, physical fitness, and emotional health.

Quantum Learning covers aspects that are important in the Neuro-Linguistic Program (NLP), which is a study of how the brain organizes information. This program examines the relationship between language and behavior and can be used to create a fabric of understanding between students and teachers. Teachers with NLP knowledge know how to use positive language to enhance positive actions - an important factor for stimulating the most effective brain functions. All of this can also show and create the best learning styles from everyone, and create a "grip" from the convincing moments of success.

Research shows that "SuperCamp" proved to be very successful and should be considered as a replica model conducted by Jeannette Vos Groenendal in 1991 involving 6.042 SuperCamp graduates, aged 12-22 years, and using qualitative and quantitative data, in addition to statistics, 97% of students with an GPA of 1.9 or lower success to increase their score by an average of one point. Providing data that are 68% increase motivation, 73% increase learning score, 81% increase self-confidence, 84% increase self-esteem, 96%

maintained a positive attitude Against SuperCamp, 98% continued to benefit from skills.

Quantum Learning can create interest known as AMBAK (What Benefits for Me), it is the motivation derived from a mental choice between the benefits and consequences of a decision. Creating interest to motivate students so that they can achieve their goals in which becomes a creative person. Creative people use their knowledge and make leaps that make it possible to see things in new ways. As the world continue to change with extraordinary speed, which is largely due to the abundance and availability of information which is very much and very easily accessible.

The implication as teachers and students requires thinking skills that enable us to assimilate new information to be used in schools. In recent years, we are faced with new terms for the problem solving process by using simple definitions, such as critical thinking that is a practicing or including careful assessment or evaluation, such as assessing the feasibility of an idea or product, analytical thinking is a process of problems solving or ideas into parts. Examine each section to see how the parts fit together, and explore how these parts can be combined again in new ways, and creative thinking can be defined as rearranging existing facts and emerging with new views about that problem, seeing the problem from a new angle. The process is instilled through the teaching of Quantum Learning using the concept of TANDUR (Embed, Natural, Name, Demonstrate, Repeat, Celebrate).

SSCS Learning Model (Search, Solve, Create and Share)

According to Pizzini in Suciati (2013:195) the use of this model in classroom learning can provide assistance to teachers to develop problem-oriented learning creativity. This learning model refers to the four steps of problem solving in which the sequence starts at investigating a problem (search), planning a problem solving (solve), constructing a problem solving (create), and the last is communicating the final solution (share). The SSCS model is designed to develop critical thinking skills and enhance understanding of science concepts. The SSCS learning model also involves students in investigating something, arousing interest in asking questions and solving real problems.

Portfolio Assignment

In the world of education, a portfolio is a collection of student's work. As a result of implementing performance tasks, which are determined by teachers or by students together with teachers, as part of efforts to achieve learning goals, or achieve competencies specified in the curriculum (Purnomo, 2016:63). As an assessment instrument, the portfolio is focused on documents about productive student performance, that is evidence of what students can do, not what cannot be done (answered or solved) by students.

According to Purnomo (2016: 63) the type of work of a student for example project results, student's investigations or practices, which are presented in writing or with written

explanations, drawings or reports of student's observations, in order to carry out tasks for the subject concerned, description and problem solving diagrams, in certain subjects, solving open questions, group work reports, student work obtained using video recording equipment, audio recording equipment, and computer, work in the subject concerned, which is not commissioned by teachers and stories about the participant's own efforts in overcoming psychological barriers, or self-improvement efforts, in studying the related subject. Therefore, the portfolio assigned to be made needs to be adjusted to the ability of students in written language and the time available for teachers to read it.

II. METHODOLOGY

Research Design

According Suharsimi Arikunto (2014:207) experimental research is research that is intended to determine whether or not there is a result of "something" imposed on the subject of inquiry. In other words, experimental research tries to examine whether or not there is a causal relationship. The trick is to compare one or more experimental groups that are treated with one or more experimental groups that are treated with one or more comparison groups that not receive treatment.

According to Sugiyono (2008:73) in general on the research talks, there are several types of experimental research known as: true experiments and not trully experiments but just like experiments. That is why the second study is known as "mock research" or quasi experiment, with factorial design patterns. Factorial design is a modification of true experimental design, namely by considering the possibility of a moderator variable that influences the treatment (independent variable) on the outcome (dependent variable).

Fig.1 Factorial Design with 2 x 2

Learning Model	<i>QUANTUM LEARNING</i> A1	<i>SSCS LEARNING</i> A2
Assignment	HIGH-ORDER THINKING SKILLS (HOTS) A1 B1	HIGH-ORDER THINKING SKILLS (HOTS) A2 B1
PORTFOLIO B1		

Figure 1 of factorial design explains about A1 that is Quantum Learning Model, A2 isSSCS learning model, B1 is portfolio assignment, A1B1 is a Quantum Learning Model with portfolio assignments, A2B1 isSSCS learning model with portfolio assignments.

Sample

The sample is part of the number and characteristics possessed by the population. If the population is largeand researchers may not learn everything in the population, for example due to limited of funds, manpower, and time (Sugiyono, 2008: 81). Sampling in this study is determined using cluster random sampling by randomly selected two classes from the population without strata differences between each class. In

accordance with the sampling technique that has been described, then two classes are chosen as the experimental class and controlling class by drawing. The lottery results that became the experimental class are X grade of Social 2 totaling 32 students will be given learning treatment using the Quantum Learning model while the controlling class is X grade Social 3 totaling 32 students will be given learning treatment using the SSCS learning model.

Data Collection and Data Analysis Techniques

Data collection techniques used to obtain data in this study was multiple choice tests. According Arikunto (2015:183) multiple choice test consists of a statement or notification about an incomplete understanding, and in order to complete, it must choose one of several possible answers that had been provided or choose a multiple choice test consisting of parts of possible answers or alternatives (options). Possible answers (options) consisted of one correct answer, which were the answer key and several distractors. Multiple choice tests were used to measure student's high-order thinking skills (HOTS) in economic subjects after being treated, namely the Quantum Learning (QL) and SSCS learning models. High-order thinking skills test in the form of questions in the cognitive domain with C4 level (analysis), C5 level (synthesis) and C6 level (evaluation). A total of 40 multiple choice test questions on Business Entity material in the Indonesian Economy.

The results of data processing from normalized Gain test could be interpreted that the experimental class had an average (mean) about 65.05 while the minimum value about 40 and the maximum value about 81 including the medium category at $0.3 < g < 0.7$. In conclusion, the Quantum Learning model was quite effective in enhancing high-order thinking skills. While the controlling class had an average (mean) about 49.04 while the minimum value about -42.86 and a maximum value about 75 including the medium category at $0.3 < g < 0.7$, this means the SSCS learning model was quite effective in enhancing high-order thinking skills. In conclusion, the two learning models were both quite effective in enhancing high-order thinking skills.

The influence test aimed to find out the magnitude of the influence (effect) of a variable on other variables. Based on the measurement results for high-order thinking skills obtained d (effect test) about 0.39 located between $0.2 \leq d < 0.5$ meaning the influence of learning models.

The measurement scale of the two independent variables (predictor) and a dependent variable that to be analyzed was an interval or ratio so to explain the effect or relationship between these variables could be done by using multiple linear regression with two predictors, the results could be seen on data processing below:

III. RESULTS

Table 1. Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1	(Constant)	-6046.517			
	QL	75.381	1.682	.534	44.814
	SSCS	80.056	.961	.993	83.345
Dependent Variable: QL_KALL_SSCS					

From the analysis results presented in the table above, the value was obtained: $t_1 = 44.814$, $db = (2.29)$, $p\text{-value} = 0.00/2 = 0.00 < 0.05$, or H_0 was rejected. Thus, the Quantum Learning model had a positive influence on high-order thinking skills (HOTS). From the analysis results presented in the above table, the price was obtained: $t_2 = 83.345$, $db = (2.29)$, $p\text{-value} = 0.00 / 2 = 0.00 < 0.05$, or H_0 was rejected. Thus, the SSCS learning model had positive influence on high-order thinking skills.

Table 2. ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	1.748E7	2	8739815.318	3.762E3	.000 ^a
	Residual	67381.082	29	2323.486		
	Total	1.755E7	31			
a. Predictors: (Constant), SSCS, QL						
b. Dependent Variable: QL_KALL_SSCS						

From the results of the analysis presented in the table above, the value was obtained: $F_{\text{count}} = 3.762$, $db = (2.29)$, $p\text{-value} = 0.00 < 0.05$, or H_0 was rejected. Thus, the Quantum Learning model and the SSCS learning model had a positive influence on high-order thinking skills.

Table 3. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.996 ^a	.996	.996	48.20255	.996	3761.510	2	29	.000
a. Predictors: (Constant), SSCS, QL									

From the results of the analysis presented in the table above, the value was obtained $R^2 = 0.996$, $F_{\text{count}} = 3761.510$, $db = (2.29)$; $p\text{-value} = 0.00 < 0.05$ or H_0 was rejected. Thus, there was influence of variables of Quantum Learning model and SSCS learning model on high-order thinking skills about 0.996 or 99.6%.

The requirements in parametric statistical test in this study had been met because the data analyzed had been normally distributed and had homogeneous variants. The next step taken in this study was to test the hypothesis. Hypothesis test in this study used statistical analysis of variance (ANOVA) of 2 X 2 factorial design and mean difference test statistics. Hypothesis test of 1, 2 and 5 used Two-Way Anova with test criteria as follows: If $F_{\text{count}} > F_{\text{table}}$ with alpha 0.05 then H_0 was accepted, If $F_{\text{count}} < F_{\text{table}}$ with alpha 0.05 then H_0 was rejected. Hypothesis 3 and 4 were tested by using independent sample t-test with test criteria as follows: jika $t_{\text{count}} < t_{\text{table}}$ then H_0 was accepted and if $t_{\text{count}} > t_{\text{table}}$ then H_0 was rejected.

Hypotesis Test

The next step taken in this study was to test the hypothesis. Hypothesis test in this study used statistical analysis of variance (ANOVA) of 2 X 2 factorial design and mean difference test statistics. Hypothesis test of 1, 2 and 3 by using Two-Way ANOVA with test criteria as follows: if $F_{\text{count}} > F_{\text{table}}$ with alpha 0.05 then H_0 was accepted, if $F_{\text{count}} < F_{\text{table}}$ with $t = 0.05$ then H_0 was rejected.

Table 3. Two-Way ANOVA

Varian Source	Sum of Squares	db	MK	Fo	F _{tabel}
Between A	172,27	1	172,27	4,623	4,00
Between B	328,52	1	328,52	8,816	4,00
Interaction of AB	1016	1	1016	27,26	4,00
In	2238,95	60			
Total	3752,74	63			

Source : Statistic Data Processing of 2019

First Hypothesis was answered through the results of data processing seen in the column of variance source of between A obtained $F_{\text{count}} > F_{\text{table}} = 4.617 > 4.00$, so it could be concluded that H_0 was rejected, meaning there was a significant difference in high-order thinking skills between learning used Quantum Learning model and learning used the SSCS learning model in economic subjects.

While second hypothesis was based on the column of variance source of between B that the data processing results obtained $F_{\text{count}} > F_{\text{table}} = 8.816 > 4.00$, so it could be concluded that H_0 was rejected, meaning there was a significant difference in the high-order thinking skills given the assignment technique of portfolio form and assignment of project forms on economic subjects.

Third hypothesis was obtained based on the results of data processing in the AB interaction column obtained $F_{\text{count}} > F_{\text{table}} = 27.26 > 4.00$, so it could be concluded that H_0 was rejected, meaning there was an interaction between the learning model with the type of portfolio assignments in economic subjects.

IV. DISCUSSION

The Quantum Learning model was more effective than the Search, Solve, Create And Share learning model because the Quantum Learning model was a learning process that was and enjoyable for both students and teachers in the learning process and had a learning syntax known by the acronym of TANDUR.

V. CONCLUSION

The results of research conducted on the effectiveness of the Quantum Learning model and the SSCS learning model in improving high-order thinking skills by assigning a portfolio to X grade students:

- ✓ There was significant difference in high-order thinking skills between the using of Quantum Learning (QL) model and the Search, Solve, Create and Share (SSCS) learning model in economic subjects.
- ✓ There was significant difference in High-order thinking skills given the assignment of portfolio forms to economic subjects
- ✓ There was an interaction between the learning model with the assignment of portfolio forms and the assignment of project forms in economic subjects

Based on the conclusions above, the researcher proposed suggestions for teachers to use the Quantum Learning Model and Search, Solve, Create, Share (SSCS) Model because it could train students in high-order thinking skills. However, it should be noted that not all subject could use these two learning models. And teachers must foster student achievement motivation, so students who had low achievement motivation could be motivated so that they were enthusiastic in participating in learning activities. Students should arouse enthusiasm, motivation, interest, and creativity in honing high-order thinking skills and fostering confidence in solving problems encountered in learning. The Quantum Learning model and Search, Solve, Create, Share (SSCS) learning model enhance student's high-order thinking skills. The school should give encouragement to students to foster internality, namely the level of intelligence, emotional level, creativity, motivation, talent, interests and others to be enthusiastic in participating in learning activities, providing support to teachers through the curriculum, social environment, complete infrastructure and others for learning activities, conducting trainings to improve the quality of teachers, especially in enhancing the high-order thinking skills (HOTS) of students by using Quantum Learning model and Search, Solve, Create and Share (SSCS) model because it can train students to the high-order Thinking Skills. However, it

should be noted that not all subject could use these two learning models.

ACKNOWLEDGMENT AND NOTES

I thank to promotor lecturers for giving guidance in conducting the research, teachers and principals as well as the students of X grade of Senior High School 7 Bandar Lampung, Indonesia, who gave a good welcome to the learning process.

REFERENCES

- [1]. Arikunto, Suharsimi. 2015. *Dasar-Dasar Evaluasi Pendidikan*. Bumi Aksara: Jakarta.
- [2]. Arikunto, Suharsimi. 2014. *Manajemen Penelitian*. Rineka Cipta: Jakarta.
- [3]. Asih, Dwi Retno. 2015. *Pembelajaran Model SSCS Untuk Meningkatkan Kemampuan Berpikir Kritis Siswa Kelas XI Materi Barisan dan Deret Tak Hingga*. Skripsi. Universitas Negeri Semarang.
- [4]. _____, 2018. *Modul Pelatihan Implementasi Kurikulum 2013*. Kementerian Pendidikan dan Kebudayaan : Jakarta.
- [5]. Deporter, Bobbi & Mike Hernacki. 2015. *Quantum Learning Membiasakan Belajar Nyaman dan Menyenangkan*. PT Mizan Pustaka: Bandung.
- [6]. Fanani, Zainal. 2018. *Strategi Pengembangan Soal HOTS Pada Kurikulum 2013*. Jurnal IAIN Kediri, Volume 2, Nomor 1, Tahun 2018.
- [7]. King, F.J., Goodson, L., & Rohani, F. (2010). Higher order thinking skills. Diakses tanggal 23 Maret 2018 dari http://www.cala.fsu.edu/files/higher_order_thinking_skills.Pdf.
- [8]. Purnomo, Edy. 2016. *Dasar-dasar dan Perancangan Evaluasi Pembelajaran*. Media Akademi: Yogyakarta.
- [9]. Saputra, Hatta. 2016. *Pengembangan Mutu Pendidikan Menuju Era Global*. CV. Smille's Indonesia Institute: Bandung.
- [10]. Saputro, Trimo. 2017. *Efektivitas Metode Pembelajaran Quantum Learning Terhadap Kemampuan Berpikir Tingkat Tinggi Peserta Didik Kelas X MIA Nurul Islam Gunung Sari Ulubelu Tanggamus*. Skripsi. UIN Raden Intan.
- [11]. Sugiyono. 2008. *Metode Penelitian Pendidikan*. Alfabeta: Bandung.
- [12]. Suhana, Cucu. 2014. *Konsep Strategi Pembelajaran*. PT Refika Aditama : Bandung.
- [13]. Suciati, Nia. 2013. *Pengaruh Pembelajaran Search, Solve, Create dan Share dengan Strategi Metakognitif terhadap Kemampuan Menyelesaikan Masalah dan Berpikir Kritis Fisika*. Jurnal Pendidikan Sains, Volume 1, Nomor 2, Juni 2013, Halaman 194-200.
- [14]. Tirtawati, Ni Luh Ratna. 2014. *Pengaruh Pembelajaran Kuantum (Quantum Learning) Dan Peta Pikiran (Mind Mapping) Terhadap Keterampilan Berpikir Kreatif Dan Hasil Belajar Biologi Siswa SMA*. Jurnal Pendidikan dan Pembelajaran IPA Indonesia, Volume 4, Nomor 2, Tahun 2014.
- [15]. Undang-Undang Nomor 14 Tahun 2005 tentang *Guru dan Dosen*. PT Media Pustaka Mandiri : Jakarta.
- [16]. Widyastuti, Eni. 2017. *Effect Of Authentical Assessment And High Order Thinking Skill (HOTS) Against Troubleshooting Physical Problems (An Experiment in The Students of SMA Negeri 2 Depok City)*. Jurnal Evaluasi Pendidikan, Volume 8, Nomor 2, Oktober 2017.