



ISSN 0852-601X  
e-ISSN 2549-838X

Available online at  
<http://www.pancaranpendidikan.or.id>

*Pancaran Pendidikan FKIP  
Universitas Jember  
Vol. 8, No. 1, Page 1-10, February, 2019*

**Pancaran Pendidikan**

DOI:  
[10.25037/pancaran.v8i1.211](https://doi.org/10.25037/pancaran.v8i1.211)

## **The Effect of Contextual Teaching and Learning (CTL) Based on Lesson Study on the Biology Learning Achievement of High School Students**

**Uswatun Hasanah<sup>1</sup>, Suratno<sup>1\*</sup>, Mochammad Iqbal<sup>1</sup>**  
**<sup>1</sup>University of Jember, Jember, Indonesia**

Email: [suratno.fkip@unej.ac.id](mailto:suratno.fkip@unej.ac.id) \*

### **ARTICLE INFO**

#### **Article History:**

*Received Date: 1<sup>st</sup> January 2019*

*Received in Revised Form Date:  
10<sup>th</sup> January 2019*

*Accepted Date: 15<sup>th</sup> January 2019*

*Published online Date 01<sup>st</sup>  
February 2019*

#### **Key Words:**

**CTL; Lesson Study; Learning  
Achievement**

### **ABSTRACT**

The implementation of Contextual Teaching and Learning (CTL) based on lesson study aimed to determine its effect on the biology learning achievement of high school students. This referred to a quasi experimental research by applying CTL learning based on lesson study to the experimental class and conventional learning in the control class. The population in this study amounted to 286 students (Science X class students of SMA Negeri 2 Jember). The sample in this study was determined through homogeneity test, normality test, and random sampling to determine the control class and the experimental class. The students' affective learning achievement were analyzed by using the independent sample t-test, while their cognitive learning achievement was analyzed by using ANAKOVA test. Based on the test results of the independent sample t-test, it was found that the students' affective learning achievement differed significantly between the students in experimental class and control class. Based on the results of ANAKOVA test, it was known that the application of CTL learning based on Lesson Study has a significant effect on students' cognitive learning achievement.

**Copyright © Uswatun et al, 2019**, this is an open access article distributed under the terms of the Pancaran Pendidikan Journal license, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited

### **INTRODUCTION**

Curriculum 2013 is an improvement from the previous curriculum which has the characteristics of being based on character and competence, by changing the pattern of education from orientation to results and material to education as a process (Rakhmawati, 2016). Implementation of curriculum 2013 oriented process has not been implemented optimally. Current learning leads to student-oriented independent learning

activities, so students can construct their knowledge which is still very lacking. The learning process so far is still dominated by information delivery, which is not emphasized in information processing so that the understanding transferred by the teacher becomes less than optimal (Isyasiska, 2015). Students especially high school students today should be able to construct their knowledge and be active in class especially in problem-based learning. The current learning must be able to provide opportunities for students to be active in learning, searching, and finding information by themselves (Rakhmawati, 2016).

The students' activity in the classroom is influenced by the quality of the teacher who teaches in the class. The students in the class will tend to be passive if the teacher always uses a lecturing method (Maspiyah, 2011). The ability of teachers to develop learning models or methods that can improve students' thinking processes to achieve better skills and learning outcomes is also weak, so the students become less active in the class (Destaliai, 2014). The teachers should now play a role as facilitators who have considerable influence in learning so that they are required to be able to develop professionalism, especially in terms of learning preparation. The teacher no longer acts as an informant, the teacher's job is to manage the class as a team that works together to build new knowledge and skills so that the students become active and productive (Susanto, 2017), so that it can improve students' learning achievement.

Learning achievement is a reflection of the abilities possessed by students after following a learning or a change in behavior as a result of the experience of individuals interacting with their environment. Learning achievement is very important in education (Sönmez, 2017). The reason, the main factor that influences students in making a decision in learning depends on someone's ability in terms of knowledge (cognitive), ability, and skills (psychomotor) (Nurtanto, 2015). Cognitive learning achievement is an assessment of the learning done by the teacher, so that cognitive learning achievement can be used by the teacher to determine the level of students' learning success (Harahap, 2013). The benefits of measuring cognitive domains are to improve quality or improve students' achievement in the cognitive domain, especially at the level of memorization, understanding, application, analysis, synthesis and evaluation (Bustami, 2017). Character building (affective) is very important to instill good habits, so students become aware of what is right and what is wrong, being able to understand good values and being able to implement it. The benefit of measuring affective domains is to improve the achievement of instructional goals by students in the affective domain, especially at the level of acceptance, participation, assessment, organization and internalization. In addition, it can improve students' attitudes, interests, self-concepts, values and morals (Nurbudiyani, 2013). Psychomotor domains are basically learning standards according to industry needs. The benefits of the psychomotor domain are in addition to improving the achievement of instructional objectives by students in the psychomotor realm, especially at the level of imitation, manipulation, precision, articulation, and naturalization, it can also increase students' reflex ability, basic movements, perceptual skills, physical skills, skilled movement, and non-discussive communication (Nurbudiyani, 2013).

Learning innovations that can be applied to achieve desired expectations are learning by using Contextual teaching and learning (CTL). CTL is able to increase students' motivation to learn what they have learned and apply it, so that the learning becomes more meaningful. One of the educator's innovations that can be applied to improve and enhance school learning is lesson study (Fadillah et al, 2017). The

professionalism of a teacher can be developed through Lesson study (Saito, 2013). In Lesson Study, a group of professional teachers will work together to identify learning goals, and set goals for improving students' achievement (Puchner, 2006).

Based on the background above, the research was conducted with the title "The Effect of Contextual Teaching and Learning (CTL) Based on Lesson Study on Biology Learning Achievement of High School Students".

**METHODOLOGY**

This research referred to a quasi-experimental research conducted at Senior High School 2 Jember. A treatment in the form of Contextual Teaching and Learning (CTL) based on lesson study was applied to the experimental class and a treatment in the form of conventional learning (lecturing, questioning and answering and discussing) was applied to the control class. The subject of the material used in this study was about kingdom plantae. The subject (sample) in this study was determined by using the normality and homogeneity test using the SPSS application on the students' UAS score. The results of the normality test revealed that the students' UAS score were normally distributed and the results of the homogeneity test showed that the the students' UAS score was homogeneous, then the determination of the next sample was done using the random sampling method and obtained the control class and experimental class. The sample in this study were students of X IPA 2 class about 36 students (experimental class) and students of X IPA 3 class about 36 students (control class) taken from the population of X IPA class at SMA 2 Jember about 286 students.

After the control class and experimental class were determined, the lesson study (plan, do and see) stages were applied to the experimental class. Planning stage (plan), the actions taken at this stage were compiling a lesson plan that will be carried out based on the initial reflection of the observations results that have been made. The activities included: (1) preparing the implementation schedule, (2) preparing RPP (3) preparing learning media devices to be used in the experimental class, (4) socializing the Contextual Teaching and Learning (CTL) learning model. Implementation stage (do), the actions taken at this stage were the application of the RPP. Based on what has been planned, the implementation of learning was divided into three parts, namely the first introductory section that contained the pretest activities, delivery of learning objectives and motivation to students. The second is the core part which contained the delivery of learning material activities, the formation of discussion groups, giving a problem to students, guiding students to solve the problems and helping students to communicate the results of group discussions. The third is the closing section which contained the conclusions from the learning that has been done and performed the posttest at the end of learning.

Students' cognitive learning achievement were assessed from tests (pre-test and post-test) and their affective learning achievement were assessed based on observations at each meeting conducted by the observer. The cognitive aspect instruments were in the form of test questions consisting of 20 multiple choice questions and 5 essay questions. The quasi-experimental research design pre-test and post-test is presented in the following table 1:

Table 1. Quasi-experimental research pre-test and post-test design

|          |           |           |           |
|----------|-----------|-----------|-----------|
| <b>E</b> | <b>O1</b> | <b>X1</b> | <b>O2</b> |
| <b>K</b> | <b>O3</b> | <b>X2</b> | <b>O4</b> |

Note:

- E : experimental class  
 C : control class  
 O1 : experimental class pre-test results  
 O2 : experimental class post-test results  
 O3 : control class pre-test results  
 O4 : control class post-test results  
 X1 : *Contextual Teaching and Learning* (CTL) based on *lesson study*  
 X2 : Conventional learning

The cognitive aspect instruments were in the form of observation sheets. Indicators of students' affective learning achievement assessed were students' attitudes in cooperation, politeness, responsibility and discipline. The assessment was employed according to the assessment rubric including aspects of attitudes assessed, maximum scores, attitude scores and value / predicate codes. Learning achievement of students' cognitive domain can be measured by using ANAKOVA using the pre-test and post-test score results, while the students' affective learning achievement were measured using the independent sample t-test by using SPSS.

## RESULT AND DISCUSSION

The first fulfillment test of the data in this research was the normality test for the distribution of biology UAS score of class X students at SMA Negeri 2 Jember in the odd semester of the 2018/2019 academic year. Based on the results of the normality test, it is known that the significance of X MIPA 1 class was 0.198; X MIPA 2 class was 0.465; X MIPA 3 class was 0.559; X MIPA 4 class was 0.103; X MIPA 5 class was 0.047; X MIPA 6 class was 0.098; X MIPA 7 class was 0,112; X MIPA 7 class was 0.078. Among all classes, X MIPA 5 had a significance level of less than 0.05 so that the biology UAS score data of the students were not normally distributed. The other seven classes namely X MIPA 1, X MIPA 2, X MIPA 3, X MIPA 4, X MIPA 6, X MIPA 7 and X MIPA 8 had a significance level of more than 0.05, indicating that their UAS biology score data was distributed normally. After it was discovered that there were seven classes that were normally distributed, the next seven classes were tested for their homogeneity to determine the level of uniformity of each class.

Based on the results of the homogeneity test, it could be seen that the four classes (X MIPA 1, X MIPA 2, X MIPA 3, X MIPA 4) had a significance value greater than 0.05, which was 0.231 which meant the four classes had the biology UAS score with the same variant (homogeneous). Three classes (X MIPA 6, X MIPA 7, X MIPA 8) had a significance value of less than 0.05, which was 0.021 which meant the three classes had the biology UAS score with different variants (different). Furthermore, the selection of research samples was done randomly or random sampling from a class that had a homogeneous data distribution. Based on the selection, it was obtained X MIPA 2 class as the experimental class and X MIPA 3 class as the control class.

Analysis of Independent Sample t-test was conducted to determine the difference in students' affective learning achievement average between the experimental class and the control class. The results of Independent Sample t-test about students' affective learning are presented in table 2 below.

Table 2: Results of Independent Sample t-test for students' affective learning achievement

|                          | T     | Db     | Sig. |
|--------------------------|-------|--------|------|
| Asumsi varian sama       | 2.209 | 70     | .030 |
| Asumsi varian tidak sama | 2.209 | 68.539 | .031 |

Based on the table above, it could be seen that the Independent Sample t-test results for students' affective learning achievement had a significance value of 0.030 (sig. = 0.030 < 0.05) which meant H<sub>0</sub> assuming there are no differences in students' affective learning achievement rejected and H<sub>1</sub> was accepted so It could be said that there is a significant difference between the affective learning achievement of the students in experimental and control class.

ANAKOVA test analysis was conducted to determine the effect of Contextual Teaching and Learning based on Lesson Study on students' cognitive learning achievement. The ANAKOVA test results on the value of students' cognitive learning achievement are presented in table 3 below.

Table 3 The ANAKOVA pre-test and post-test score results

| Sumber        | Kuadrat<br>jumlah tipe III | Db | Rerata<br>kuadrat | F       | Sig. |
|---------------|----------------------------|----|-------------------|---------|------|
| Model koreksi | 3948.292 <sup>a</sup>      | 2  | 1974.146          | 20.535  | .000 |
| Intersep      | 14298.306                  | 1  | 14298.306         | 148.729 | .000 |
| Pretest       | 2380.292                   | 1  | 2380.292          | 24.759  | .000 |
| Kelas         | 1238.561                   | 1  | 1238.561          | 12.883  | .001 |
| Error         | 6633.427                   | 69 | 96.137            |         |      |
| Total         | 222645.000                 | 72 |                   |         |      |
| Total koreksi | 10581.719                  | 71 |                   |         |      |

Based on the table above, it could be seen that the ANAKOVA test results on students' cognitive learning achievement (pre-test and post-test) in the correction model had a significance value of 0,000 (sig. = 0,000 < 0,05) which meant H<sub>0</sub> assuming no influence to the treatment of students' cognitive learning achievement was rejected and H<sub>1</sub> was accepted or in other words there is a significant effect of the treatment of Contextual Teaching and Learning based on Lesson Study on students' cognitive learning achievement.

Assessment of affective learning achievement was done based on observations at each meeting. Indicators of students' affective learning achievement were students' attitudes in cooperation, politeness, responsibility and discipline. Based on the average score between the experimental class and the control class, it could be seen that Contextual Teaching and Learning based on lesson study was proven to have an effect on better students' affective learning achievement. The results of the study are supported by the results of Suryawati's (2017) study which states that contextual learning can encourage students to have more positive attitude in learning Science (Suryawati, 2018). CTL can develop the students' characters including the characters of discipline, responsibility, curiosity and communicative learning (Prabowo, 2017).

Significant differences in students' affective learning achievement between the experimental class and the control class can be due to the application of Contextual Teaching and Learning based on Lesson Study which can support for better development of students' affective learning achievement. This can be seen in the first student's affective learning achievement indicator, namely the attitude of students in collaboration, the average value of the experimental class was 91.00 greater than the average value of the control class about 83.00. It was seen that the experimental class students were more able to cooperate well in groups. Contextual learning is very important in developing scientific attitudes, especially the attitude of being able to cooperate (Suryawati, 2018). Cooperation is one of the internal factors that influence the success of learning. Cooperation is one way for students to be active in learning (Sari, 2017; Wulandari, 2015).

The second indicator is politeness, the average value of the experimental class was 96.00 smaller than the average value of the control class about 98.00. Although the experimental class had a smaller average value than the control class, the experimental class students were more active in expressing their opinions or questions. The attitude of manners is

an important element in the daily social life of everyone, because by showing manners, someone can be valued (Suryani, 2017).

The third indicator is the attitude of responsibility, the average value of the experimental class was 91.00 greater than the average value of the control class about 86.00. It was seen that the experimental class students were more responsible for the tasks given. Contextual learning is very important in developing scientific attitudes, especially in responsibility (Suryawati, 2018). The attitude of responsibility possessed by individuals can strengthen all aspects of ability including students' social attitudes (Bustami, 2017).

The fourth indicator is discipline, the average value of the experimental class was 93.00 greater than the average value of the control class about 86.00. It was seen that the experimental class students were better able to take part in learning. Even though at some time there were some students who lost their concentration in following the learning. Discipline is a form of obedience to both written and unwritten rules. Discipline is one of the factors that have a big influence on someone's learning achievement (Lomu, 2018).

The students in the experimental class who applied Contextual Teaching and Learning based on Lesson Study had a better attitude during the learning process. They were more conducive, active and able to follow the learning well during the learning process. There were some students in the control class who were not able to learn well, there were some students who often did not seem to pay attention to the teacher who was teaching and busy playing cellphones or chatting with friends. The students in the experimental class were also more disciplined and responsible for the tasks given by doing them as well as possible.

Cognitive learning achievement was measured based on the new version of cognitive taxonomy developed by Anderson & Krathwohl which includes remembering, understanding, applying, analyzing, evaluating, and creating (Suratno, 2009). Based on the average value between the experimental class and the control class and ANAKOVA analysis test results, it can be seen that Contextual Teaching and Learning based on Lesson Study is proven to have a better influence on students' cognitive learning achievement. The results of this study are supported by the results of research by Fadillah and Dimas (2017) which state that Contextual Teaching and Learning based on Lesson Study can improve students' cognitive learning outcomes (Dimas, 2017; Fadillah et al, 2017). The results of a similar study, Agustya (2017) also states that Contextual Teaching and Learning can affect students' cognitive learning outcomes (Agustiya, 2017). Lesson Study in this case is used to help teachers preparing good learning and improving teachers' professionalism in teaching, so that it has a good impact on students. Lesson Study is an effort to improve the learning process carried out by a group of teachers together and continuously in planning, implementing, observing, and reporting learning outcomes that are expected to improve the quality of students' learning environments (Asyari, 2016).

Contextual Teaching and Learning emphasizes on a meaningful learning and associates with the environment and students' experience making it easier for students to understand what is being learned. Contextual Teaching and Learning also gives students the opportunity to gain knowledge, find experience and then discuss it in groups so students become motivated in learning and their learning outcomes will increase. Learning by using Contextual Teaching and Learning will emphasize the context relating to the students' learning environment, so that the learning will lead to a meaningful and influential learning on students' cognitive learning outcomes (Agustiya, 2017).

Contextual Teaching and Learning also emphasizes a learning by forming joint study groups. Learning in the form of group work proved to be able to show excellent learning outcomes. This is due to the process of constructing knowledge on Contextual Teaching and Learning carried out together while in the conventional learning process with the lecturing system, discussion and question and answer process the construction of knowledge is carried out individually according to what is captured by individual students. Constructing knowledge together with study groups allows students to express ideas and opinions, listen to the opinions

of others and jointly build knowledge. Study groups can also encourage each student to help each other to master the material topics taught by the teacher.

Contextual Teaching and Learning based on Lesson Study that has been implemented in the experimental class shows an increase. The class conditions at the second meeting became more active and the enthusiasm of the students increased and the teachers were better able to manage the class compared to the first meeting. Learning by using Contextual Teaching and Learning can increase students' motivation so students become active in class. This is evidenced by students being very enthusiastic in learning when students are given fresh preparations of bryophyta and pterydophyta plants that are diverse and attract the attention of students and students become active in group discussions. Contextual learning has a positive impact on students' learning outcomes and makes students more active in the learning process in the classroom (Pramita, 2016).

Contextual Teaching and Learning based on Lesson Study can help students be more active and also help teachers in the process of designing a learning that is appropriate for students. Contextual Teaching and Learning model based on Lesson Study can be well received by students, shown through a positive response in the application of learning models and the learning atmosphere noted to be dynamic (Khotimah, 2016). Contextual Teaching and Learning model based on Lesson Study can also help students become easier in understanding the learning indicated by the increased learning outcomes in the cognitive domain (Fadillah et al, 2017). Lesson Study is able to develop the knowledge, abilities and professionalism of the teacher (Akiba, 2016; Cajkler, 2015)

## CONCLUSION

The application of Contextual Teaching and Learning (CTL) based on Lesson Study affects the learning outcomes of high school students. There are differences in Contextual Teaching and Learning based on Lesson Study with the conventional learning on students' affective learning outcomes, based on the average affective value that the average affective value in the experimental class is higher than the average in the control class and based on the Independent Sample t-test between the experimental class and the control class is known to have a significance value of 0.030 (sig. = 0.030 <0.05) which indicates that both classes have significant differences in students' affective learning outcomes. The effect of Contextual Teaching and Learning based on Lesson Study on students' cognitive learning outcomes based on the average pre-test and student post-test scores is that the average in the experimental class is higher than the average in the control class and based on ANAKOVA results on students' cognitive learning outcomes. The significance value of 0,000 (sig. = 0,000 <0,05) which indicates that the learning treatment of Contextual Teaching and Learning based on Lesson Study in the experimental class influences students' cognitive learning outcomes.

## REFERENCES

- Agustiya, F., A. Sunarso, & S. Haryani. (2017). Influence of CTL Model by Using Monopoly Game Media to The Students' Motivation and Science Learning Outcomes. *Journal of Primary Education*, 6(2), p.114-119.
- Akiba, M., & B. Wilkinson. (2016). Adopting an International Innovation for Teacher Professional Development: State and District Approaches to Lesson Study in Florida. *Journal of Teacher Education*, 67(1), p.74 –93.
- Asyari, Marhamah. (2016). Improving critical thinking skills through the integration of problem based learning and group investigation. *International Journal for Lesson and Learning Studies*, 5(1), p.36-44

- Bustami, Yakobus. (2017). The Social Attitude Empowerment of Biology Students: Implementation JiRQA Learning Strategy in Different Ethnics. *International Journal of Instruction*, 10(3), p.15-30
- Cajkler, W., P. Wood, J. Norton, D. Pedder, & H. Xu. (2015). Teacher perspectives about lesson study in secondary school departments: a collaborative vehicle for professional learning and practice development. *Research Papers in Education*, 30(2), p.192-213.
- Destalia, L., Suratno, & S. Aprilia. (2014). Peningkatan Keterampilan Pemecahan Masalah Dan Hasil Belajar Melalui Penerapan Pembelajaran Berbasis Masalah (Pbm) Dengan Metode Eksperimen Pada Materi Pencemaran Lingkungan. *Pancaran*, 3(4), p.213-224.
- Dimas, Arba'in. (2017). Implementasi Strategi Pembelajaran Contextual Teaching And Learning Dalam Lesson Study Untuk Meningkatkan Aktivitas Dan Hasil Belajar Akuntansi Siswa Kelas XI IPS SMA W.R. Supratman 2 Medan T.P 2016/2017. *Undergraduate thesis*. Medan:UNIMED
- Fadillah, A., et al. (2017). The effect of application of contextual teaching and learning (CTL) model-based on lesson study with mind mapping media to assess student learning outcomes on chemistry on colloid systems. *International Journal of Science and Applied Science*, 1(2), p.101-108.
- Harahap, Nurmahni. (2013). Penerapan Model Pembelajaran Kooperatif Tipe STAD terhadap Hasil Belajar Kognitif, Motivasi, Dan Aktivitas Belajar Siswa pada Konsep Ekosistem di MTSN Model Banda Aceh. *Visipena Journal*, 4(2), p57-76
- Iyasiska, D. (2015). Pengaruh Project Based Learning Terhadap Motivasi Belajar, Kreativitas, Kemampuan Berpikir Kritis, Dan Kemampuan Kognitif Siswa Pada Pembelajaran Biologi. *Jurnal Pendidikan Biologi*, 7(1). p.9-21.
- Khotimah, R. P., & Masduki. (2016). Improving Teaching Quality and Problem Solving Ability Through Contextual Teaching and Learning in Differential Equations: A Lesson Study Approach. *Journal of Research and Advances in Mathematics Education*, 1(1), p.1-13
- Lomu, L., & S. A. Widodo. (2018). Pengaruh Motivasi Belajar Dan Disiplin Belajar Terhadap Prestasi Belajar Matematika Siswa. *Prosiding Seminar Nasional Etnomatnesia. Universitas Sarjanawiyata Tamansiswa*. 745-751
- Maspiah, E. (2011). Pengaruh Pendekatan Contextual Teaching Learning (CTL) Terhadap Hasil Belajar Siswa Pada Konsep Bioteknologi. *Skripsi*. Jakarta: UIN
- Nurbudiyani, Iin. (2013). Pelaksanaan Pengukuran Ranah Kognitif, Afektif, dan Psikomotor pada Mata Pelajaran IPS Kelas III SD Muhammadiyah Palangkaraya. *Anterior Jurnal*, 13(1), p88 – 93
- Nurtanto, Muhammad (2015). Implementasi Problem-Based Learning untuk Meningkatkan Hasil Belajar Kognitif, Psikomotor, dan Afektif Siswa di SMK. *Jurnal Pendidikan Vokasi*, 5(3), p352-364
- Prabowo, Y., & H. Susanto, N. Hindarto. (2017). Implementasi Contextual Teaching And Learning (CTL) Terintegrasi Karakter Dalam Pembelajaran Fisika Untuk Meningkatkan Hasil Belajar Siswa. *Unnes Physics Education Journal*, 6(1), p.16-25



- Pramita, M., S. Mulyati, H. Susanto. (2016). Implementasi Desain Pembelajaran Pada Kurikulum 2013 Dengan Pendekatan Kontekstual. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 1(3), p289-296
- Puchner, L. & D., Taylo. (2006). Lesson study, collaboration and teacher efficacy: Stories from two school-based math lesson study groups. *Teaching and Teacher Education*. 22(7), p. 922-934
- Rakhmawati, S. (2016). Analisis Pelaksanaan Kurikulum 2013 Ditinjau Dari Standar Proses Dalam Pembelajaran Biologi Kelas X Di Sma Negeri 1 Krangkeng. *Jurnal Sains dan Pendidikan Sains.*, 5(2), p.156-164.
- Saito, E. & Atencio, M. (2013). A conceptual discussion of lesson study from a micro-political perspective: Implications for teacher development and pupil learning. *Teaching and Teacher Education*, 3(1), p.87-95.
- Sari, S., & A. Wijayanti. (2017). Talking Stick: Hasil Belajar IPA Dan Kemampuan Kerjasama Siswa. *Wacana Akademika*, 1(2), p.175-184
- Sönmez, V. (2017). Association of Cognitive, Affective, Psychomotor and Intuitive Domains in Education, Sönmez Model. *Universal Journal of Educational Research*, 5(3), p347-35
- Suratno. (2009). *Pengaruh Strategi Kooperatif Jigsaw dan Reciprocal Teaching terhadap Keterampilan Metakognisi dan Hasil Belajar Biologi Siswa SMA Berkemampuan Atas dan Bawah di Jember*. Disertasi. Program Studi Pendidikan Biologi, Program Pascasarjana, Universitas Negeri Malang.
- Suryani, Lilliek (2017). Upaya Meningkatkan Sopan Santun Berbicara Dengan Teman Sebaya Melalui Bimbingan Kelompok. *e-jurnalmitrapendidikan.com*, 1(1), p.112-124
- Suryawati, E., & K. Osman. (2018). Contextual Learning: Innovative Approach towards the Development of Students' Scientific Attitude and Natural Science Performance. *EURASIA Journal of Mathematics, Science and Technology Education*, 14(1), p.61-76
- Susanto, A. S. (2017). Pengaruh Model Pembelajaran Contextual Teaching And Learning (Ctl) Berbasis Lesson Study Terhadap Pemahaman Konsep Ditinjau Dari Kemampuan Awal Matematis. *Prosiding Seminar Nasional Matematika dan Pendidikan Matematika*. 06 Mei 2017. *Universitas Raden Intan Lampung*: 7-20
- Wulandari, N. C., Dwijanto, & Sunarmi. (2015). Pembelajaran Model Reactdengan Pendekatan Saintifik Terhadap Kemampuan Berpikir Kritis Dan Kerjasama. *Journal of Mathematics Education*, 4(3), p.266-274

