

## The Analysis of Students' Affective Through Learning with Problem Posing Approach

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### Abstract

Affective need to be considered by the teacher because it makes learning more effective. Therefore, the aim of this research is to analyse students' affective through learning with problem posing approach. The present research employs qualitative study. The subject of the research involved 39 students of science class 3 on grade X of Wachid Hasyim 2 Senior High School in Taman, Sidoarjo. The instruments to analyse students' affective consists of observation note, questionnaires and interview guide. The data is analysed throughout descriptive qualitative. Implementation of the research emphasised composing and problem posing aspects which was done by the students on linear equation system of three variables. The result of the analysis shows that the students' affective could be identified through receiving, responding, valuing, organizing and characterizing by a value. The subjects with high affective had completely met the aspects of affective and tended to likely be more active during the learning process.

**Keywords:** Affective; Learning; Problem Posing

### INTRODUCTION

Affective is a domain that needs to realize effective learning, has characteristics that include attitudes, self-concepts, interests, values, and morals. Affective have a close relationship with morals and attitudes namely responsibility, discipline, commitment, cooperation, honesty, confidence, honesty respecting the opinions of others, and the ability to control themselves (Rosa, 2015). Affective have a relationship with self-concept, interest, and value can be introduction form of desire, beliefs, weaknesses, and self-excellence. (Arifin, 2009) The affective must have a part of the appropriate learning goals. The learning outcomes that apply the affective domain can improve behavior, motivation, and the various positive values in students. (Indiati, 2008) Therefore, learning outcomes depend on the learning strategies used. The success of the learning process strategy is measured by the assessment of learning outcomes. However, the assessment of student learning outcomes cannot be seen from cognitive aspects only, but also the affective domain which includes attitudes and characters based on values must be thought to the student (Negara, H. R., Atmojo, T., & Sujadi, 2014)

At present, too many teachers who pay little attention to learning outcomes from the affective of students. Most teachers give an assessment of the learning outcomes of the cognitive only so that the affective is neglected. The affective of students includes five things, namely, acceptance, response, organizational appreciation, and character values. (Sukanti, 2011). Based on these five aspects, all teachers are expected to be developed and applied. The teacher should have a learning strategy that is appropriate for developing the affective because the difference in the affective of students belonging. Therefore, the teacher should know the affective in students that must be developed, and choose the appropriate learning approach, the approach that emphasizes cognitive and affective abilities is *the problem posing approach*. (Anto, 2012)

Based on previous research, several researches have been conducted in the use of *problem posing methods* (Akay & Boz, 2010; Astriyani, 2016; Ayllon, Gomez, & Claver, 2016; Falach, 2016; Gonzales, Gomez, & Alex, 2015; Irawati, 2015; Kilic, 2013; Ngaeni & Saefudin, 2017; Nuha, Waluya, & Junaedi, 2018; Ozdemir & Sahal, 2018; Rahman, Hartini, & An'nur, 2015; Rezvykh, 2015; Rosli, Capraro, & Capraro, 2014; Sari & Surya, 2017; Siswono, 2000; Susanti, Sukestiyarno, & Sugiharti, 2012a, 2012b; Yulianti, An'nur, & Wati, 2014) and research on effective domains in learning (Ngaeni & Saefudin, 2017) However, there is no research who analyzed the affective through learning with the problem posing approach. So, the purpose of this research is to analyze the affective through problem posing approach.

## THE RESEARCH METHODS

The research type is qualitative research, which is research that reveals, analyzes, and provides the overview of the research subjects' activities results such as perceptions, behaviors, actions, etc. in depth by describing in the words and languages using various scientific methods. The subject of this study was class X IPA 3 students of Senior high School Wachid Hasyim 2 Taman Sidoarjo who had obtained the material of the Two Variable Linear Equation System as the prerequisite material. the Determination of the research subject was conducted based on the results of observations that was conducted by the researcher with learning based on the affective assessment observation sheets that was developed by the researcher. The choice of subject is based on the following criteria.

**Table 1. Selection of Affective Subjects**

No.	Student Activity ( $x$ )	Category
1.	$6 \leq x \leq 7$	High Affective
2.	$4 \leq x < 6$	Medium Affective
3.	$0 \leq x < 4$	Low Affective

(Indrianto, 2009)

Six students were selected as research subjects, with the selection criteria namely: (1) two high affective students, (2) two medium affective students, and (3) two low affective students. The determination of the value of  $x$  based on seven statements from the observation sheet filled by the observer. The next subject of the research was followed *the problem posing* approach on SPLTV material with all students of class X IPA 3. Next the researcher conducted an affective assessment of students during teaching and learning activities. the student was given affective assessment after the learning is complete, observations, and interviews.

## THE RESULTS OF THE RESEARCH AND THE DISCUSSION

1. The results of the student affective analysis are based on the stages of learning with the problem posing approach as follows:

### Explain Learning Material

The teacher asks all students to take the textbook and open it on page 113. The teacher goes around to all groups and make sure all group members open the textbook page 113. After

that, the teacher asks all students to understand the problem. The problems 3.3 in the student textbook below.

*Mr Usman has two hectares of rice fields planted with rice and must be given fertilizer. There are three types of fertilizers (Urea, SS, TSP) that are used so that rice yields are maximized. Each type of fertilizer is Rp. 75,000.00; Rp120,000.00; and Rp. 150,000.00 per sacks. The amount of fertilizer needed by Mr Usman is 40 sacks. Urea is used twice as much as SS . Pak Usman only has IDR 4,020,000 to buy fertilizer. Some sacks for each type that Pak Usman must buy?*

SAT (S6) accepts learning by listening to the explanation of the teacher, and begins the discussion by re-explaining the purpose of problem 3.3 in the textbook to the group members. It helps group members understand the problem 3.3. This can be seen as an indicator of the affective.

### Receive and Response.



**Figure 1. SAT Starts the Discussion in Group II**

Based on Figure 1 SAT (S6) as a member of group II actively involved in the group. SAT (S6) can solve problems 3.3 and explain regularly to group members. SAT (S6) is actively involved in group discussions orally and shows the attitude of accepting learning well. It can also be seen in transcripts of interview records after learning.

*P : What did you do when the teacher explain the material?*

*S6 : Follow it well, so if you don't understand please ask, if you have a friend who don't understand please help him/her.*

*P : did you listen to the teacher though?*

*S6 : seldom, I often take a chatting with my friend, but prefer to listen the teacher.*

The interview above shows SAT (S6) has received the learning well by starting the discussion. SAT (S6) has participated in all learning activities. SAT (S6) has an active role in helping his/her friends in difficulties and help him/her. Sometimes, the subjects talk to their own friends. However, the discussion is still about learning. It shows the affective of receiving and responding when the teacher explains the learning material.

### 2. Provide the exercise

The teacher guides students to practice working on the SPLTV material questions. The teacher asks students to work on the questions in the textbook. The teacher then asks students to work on some of the questions



**Figure 2. SAT did the questions on the white board**

Based on Figure 2 SAT (S6) The students do practice questions on the board. SAT (S6) does on a question that has been given in detail. SAT (S6) brings a notebook to make it easier when working in front. The teacher asks all students to pay attention to the results of the SAT (S6) work on the board. After that, the teacher asks SAT (S6) to explain the results of the exercise to all students. SAT (S6) explains briefly, the teacher repeat the the student explanation what was delivered by SAT (S6). All students can understand when SAT (S6) and the teacher explain in detail and clearly. This can show indicators of the affective to **receive and respond** well. Because, SAT (S6) did all the exercise correctly, and brief to do the exercise in front of the class.

### 3. Pose the challenging question and answer it

The teacher asks each group to make five questions that have relevance. Each group must make five questions and each group member must make a question.

*TDR 046\_Guru : Next, please make each group five questions and answers. The five relevant questions .*

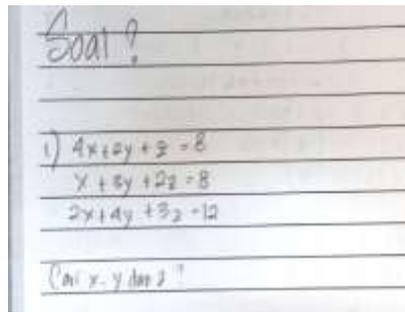
*TDR 047\_S6 : sorry sir, I don't understand, about what the relevant is it?*

*TDR 048\_Guru : please, make five questions, the first question and the answer must be related to the other questions.*

*TDR 049\_S6 : I see, If I suppose the answer to the first question, it can be the third question is that, sir ?*

*TDR 050\_Guru : Yeah right, so you make a chain question and also the key answer*

SAT (S6) shows indicators of the affective is more responses actively asking to the teacher about what the teacher explains group assignments. When there are tasks that are not understood yet, SAT (S6) is more courageous to ask the teacher (TDR 047\_SAT, TDR 049\_SAT). SAT (S6) question are very important, because they are the key to completing the assignment given by the teacher. One group was asked to make five questions. Each question must be related to another.

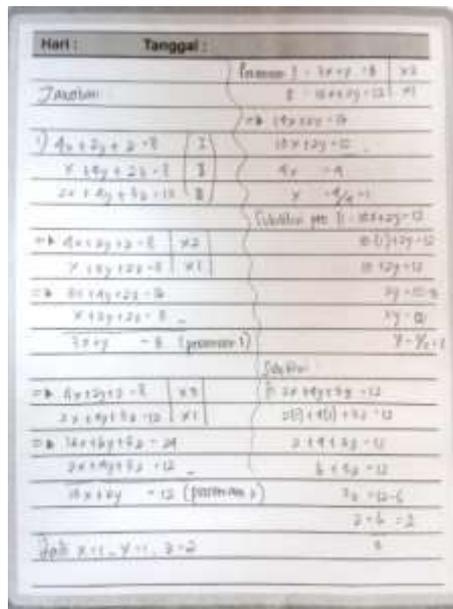


Soal?

$$1) \begin{cases} 4x + 2y + z = 8 \\ x + 8y + 2z = 8 \\ 2x + 4y + 3z = 12 \end{cases}$$

(di x, y, dan z)

Figure 3. The questions were made by SAT



Hari: \_\_\_\_\_ Tanggal: \_\_\_\_\_
   
 Diketahui:
   

$$\begin{cases} 4x + 2y + z = 8 & (1) \\ x + 8y + 2z = 8 & (2) \\ 2x + 4y + 3z = 12 & (3) \end{cases}$$
  
 Ditanyakan:
   
 Jawab:
   

$$\begin{aligned} & \times 4 \rightarrow 4x + 2y + z = 8 & (1) \\ & \times 1 \rightarrow x + 8y + 2z = 8 & (2) \\ & \times 2 \rightarrow 2x + 4y + 3z = 12 & (3) \end{aligned}$$
  

$$\begin{aligned} & (1) - (2) \rightarrow 3x - 6y - z = 0 & (4) \\ & (1) - (3) \rightarrow 2x - 2y - 2z = -4 & (5) \end{aligned}$$
  

$$\begin{aligned} & (4) \times 2 \rightarrow 6x - 12y - 2z = 0 & (6) \\ & (5) \times 3 \rightarrow 6x - 6y - 6z = -12 & (7) \end{aligned}$$
  

$$(6) - (7) \rightarrow -6y + 4z = 12$$
  

$$-6y + 4z = 12 \rightarrow -3y + 2z = 6$$
  

$$-3y + 2z = 6 \rightarrow -3y = 6 - 2z$$
  

$$y = \frac{6 - 2z}{-3}$$
  

$$y = -\frac{2}{3}z + 2$$
  
 Substitusikan ke (1)
   

$$4x + 2\left(-\frac{2}{3}z + 2\right) + z = 8$$
  

$$4x - \frac{4}{3}z + 4 + z = 8$$
  

$$4x - \frac{4}{3}z + z = 8 - 4$$
  

$$4x - \frac{4}{3}z + \frac{3}{3}z = 4$$
  

$$4x - \frac{1}{3}z = 4$$
  

$$4x = 4 + \frac{1}{3}z$$
  

$$x = \frac{4 + \frac{1}{3}z}{4}$$
  

$$x = \frac{4}{4} + \frac{1}{12}z$$
  

$$x = 1 + \frac{1}{12}z$$
  
 Substitusikan ke (2)
   

$$\left(1 + \frac{1}{12}z\right) + 8\left(-\frac{2}{3}z + 2\right) + 2z = 8$$
  

$$1 + \frac{1}{12}z - \frac{16}{3}z + 16 + 2z = 8$$
  

$$\frac{1}{12}z - \frac{16}{3}z + 2z = 8 - 16 - 1$$
  

$$\frac{1}{12}z - \frac{16}{3}z + \frac{8}{6}z = -9$$
  

$$\frac{1}{12}z - \frac{32}{6}z + \frac{8}{6}z = -9$$
  

$$\frac{1}{12}z - \frac{24}{6}z + \frac{8}{6}z = -9$$
  

$$\frac{1}{12}z - \frac{16}{6}z + \frac{8}{6}z = -9$$
  

$$\frac{1}{12}z - \frac{8}{6}z + \frac{8}{6}z = -9$$
  

$$\frac{1}{12}z = -9$$
  

$$z = -9 \times 12$$
  

$$z = -108$$
  
 Substitusikan ke (1)
   

$$4x + 2\left(-\frac{2}{3}(-108) + 2\right) + (-108) = 8$$
  

$$4x + 2\left(\frac{216}{3} + 2\right) - 108 = 8$$
  

$$4x + 2(72 + 2) - 108 = 8$$
  

$$4x + 2(74) - 108 = 8$$
  

$$4x + 148 - 108 = 8$$
  

$$4x + 40 = 8$$
  

$$4x = 8 - 40$$
  

$$4x = -32$$
  

$$x = \frac{-32}{4}$$
  

$$x = -8$$
  
 Jadi  $x = -8, y = 1, z = 2$

Figure 4. The answers were made by SAT

Based on figures 3 and 4, SAT (S6) shows the affective on the **receiving aspect** because It appropriates in making the question and the answers in procedural making the questions. The questions that have detail in key answer. This makes it easier for the reader to understand the questions were made by SAT (S6). The answer key were given by SAT (S6) uses the combination, so it is more varied in solving the questions. SAT (S6) makes it easier to make questions and answers because it has mastered the prerequisite material. SAT (S6) can distinguish the previous material between previous material and taught material. It shows that SAT (S6) has understood the SPLTV material and its prerequisite material. It shows that the affective is on the organizing aspect.



**Figure 5. SAT lead the member of group in making questions**

Based on Figure 5, SAT (S6) is seen making the questions with the group members. Based on observations, SAT (S6) began the discussion by leading group members. SAT (S6) asks all members to make questions and solutions. When choosing five questions that must be related, SAT (S6) receives suggestions and solutions from the group members. SAT (S6) helps his/her group mates when got difficulties. It can be seen from the quote from the interview with SAT (S6) like the following.

- P* : do you always appreciate your group idea?  
*S6* : yes I do, but if there is mistake I fix it.  
*P* : what is your group discussion contribution ?  
*S6* : Rule it, be a leader of the group, and give suggestion each other.

Based on the explanation of the figure 5 and the interview (P, S6), SAT (S6) has shown the affective on the aspect of appreciation because it has **appreciated** all the opinions of the group members. SAT (S6) also shows the affective of character aspects based on values because having helped each other during the discussion. The results of the questionnaire were filled out by SAT (S6) after learning with the problem posing approach showed that the value of the affective questionnaire on aspects of receiving, responding, rewarding, organizing, and character **based on average got the value of 5**. This indicates that activities SAT (S6) is done when learning is in line with the questionnaire that was filled out. Based on observations, making questions and questionnaires it can be said that SAT (S6) has an active role in group discussions.

#### **4. The teacher asks the student serving the finding question in front of the class.**

In this step, the teacher asked each group to present the results of the discussion with the members of their respective groups. The maximum time that was given is 5 minutes for each group to present the results of their discussion.



**Figure 6. The representative of SAT Group II Performs their Presentations**

Based on figure 6, SAT (S6) becomes a group representative to present the results of the group discussion. SAT (S6) is briefly to become the group representative. SAT (S6) presents the results of the answers that have been discussed with the members. SAT (S6) explains that there is one question from group 6 that has no answer so it does not form of five related questions. The teacher checked the questions that was made by group 6 (TDR 079\_S6). It can be seen from the learning transcript.

*TDR 079\_S6 : Sir, this questions is no answer, sir, can you help us to check ?*  
*Sir, the answer is not appropriate so it does relate*

*TDR 080\_Guru : May I see, where is the error question?*  
*Please present it.*

*TDR 081\_S6 : the question number 3 to 5 is not relate.*

*TDR 082\_Guru : it is true , the question is not relate, there is any error in making question. Please give the punishment the group six*

##### **5. The teacher gives the assignment individually**

The teacher gives individual assignments to students to do in their homes. The teacher asks students to make two SPLTV questions and their answers. This can be seen from the learning transcript.

*TDR 094\_teacher: please do the indivudually assignmnet in your home. Please note the assigment, make 2 question of SPLTV and also the answer.*

*TDR 095\_S6 : When does the assignment collect sir?*

*TDR 096\_teacher: collect on next meeting, the student who will not collect the assignment, he should not follow the learning procces.*

*TDR 097-Student: Yes sir, (Part of the student answer)*

Based on (TDR 094\_Teacher) the teacher gives assignments individually. SAT (S6) shows indicators of the affective **receiving** by recording assignments from the teacher, and trying to ask the teacher when the task is collected (TDR 095\_S6). SAT (S6) records all assignments that was given by the teacher in their notebook. The task given is to make two SPLTV questions and also the answers.

Problem posing is an approach that asks students to make questions or ask their own questions by learning independently. There are six steps used in the research. The First, explain the subject

material with the media provided. The Second, the student are divided into several groups heterogeneously. the Third, in groups, the student makes the question on the question sheet. The Fourth, the question sheet is exchanged to other groups. The Fifth, the questions are answered by each group. The Sixth, the results of the discussion are presented in front of the class (Thobroni, 2012)

The research that is relevant to this research is research from Asmara, which reviews mathematical skills, including: conceptual understanding, procedural fluency, strategy competence, adaptive reasoning and productive disposition by integration. This research aims to describe students' scientific skills that students have when *the problem posing approach*. (Asmara, 2013) The Second, the research written by Ferdianto, namely students make questions independently who have mastered and understood the material asked in the questions. between students who get *the problem posing approach* and conventional learning. (Herawati, 2010) Based on the three relevant reasearches above there are similarities in the research written by researcher who use the problem posing approach. However, the three researches above use different reviews, so that it is the difference each other.

## CONCLUSION AND SUGGESTION

The conclusions of the analysis of students' affective through learning with problem posing approach. namely high affective subjects can fulfill all aspects of the affective and be more active, it can be seen from the following learning steps: (1) the teacher explains the material. There are two affective of students who appear to be accepting and responding. (2) the teacher provides the problem exercise. There are two affective that appear that are accepting and responding. (3) make questions that challenge in groups. The five aspects of the affective of students in various activities carried out by low, medium, and high affective subjects. (4) the teacher asks students to present the finding question in front of the class. There is one student's affective domain that appears as character based on values. (5) the teacher gives the assignments individually. There is one affective of students that appears that is receiving what is shown by all subjects when take note the assignment that is given by the teacher.

The suggestions that can be considered by the next researcher as a follow-up of this research are as follows; (1) the time spent needs to be considered, so that it does not exceed the lesson hours (2) before conducting further research, the need for the existence of guidelines for the affective of the school as the comparison with the theories held by the researcher. (3) the mathematical abilities should also be considered for further research. (4) when observations are made, the observer is better than two people to make the observation is more optimal. (5) Further research should consider the student from other classes as the comparison of the research.

## REFERENCE

Akay, H., & Boz, N. (2010). The Effect of *Problem posing* Oriented Analyses-II Course on the Attitudes toward Mathematics and Mathematics Self-Efficacy of Elementary Prospective Mathematics Teachers. *Australian Journal of Teacher Education*, 35(1).

- Anto. (2012). Pemanfaatan Model Pembelajaran *Problem posing* untuk Peningkatan Keterampilan Berpikir Kritis Siswa di SMP Negeri 27 Purworejo. *Jurnal Radiasi*, 2(1), 4–6.
- Arifin. (2009). *Evaluasi Pembelajaran Prinsip Teknik Prosedur*. Bandung: Remaja Rosdakarya.
- Asmara. (2013). Kecakapan Matematis Siswa Melalui Model Pembelajaran *Problem posing*. In *Prosiding Seminar Pendidikan Matematika* (pp. 23–28). Yogyakarta: Universitas Negeri Yogyakarta.
- Astriyani, A. (2016). Peningkatan Kemampuan Pemecahan Masalah Peserta Didik Dengan Penerapan Model Pembelajaran *Problem posing*. *Fibonacci: Jurnal Pendidikan Matematika Dan Matematika*, 2(1), 23–30.
- Ayllon, M. F., Gomez, I. A., & Claver, J. B. (2016). Mathematical Thinking and Creativity Through Mathematical *Problem posing* and Solving. *Propositos Y Representaciones*, 4(1), 169–218.
- Falach, H. N. (2016). Perbandingan keefektifan pendekatan problem solving dan *problem posing* dalam pembelajaran matematika pada siswa SMP. *Phytagoras : Jurnal Pendidikan Matematika*, 11(2), 136–148.
- Ferdianto, F. (2012). Meningkatkan Kemampuan Pemahaman Matematis Siswa Melalui *Problem posing*. *Euclid*, 1(2), 47–54.
- Gonzales, J. E., Gomez, J. L. L., & Alex, I. S. (2015). A Scheme To Analyses The Statments of The Student In Context Of *Problem posing*. *Uniciencia*, 29(1), 58–81.
- Herawati, O. (2010). Pengaruh Pembelajaran *Problem posing* terhadap Kemampuan Pemahaman Konsep Matematika Siswa Kelas XI IPA SMA Negeri 6 Palembang. *Jurnal Pendidikan Matematika*, 4(1), 70–80.
- Indiati, I. (2008). Keefektifan Startegi Pembelajaran Kooperatif dan *Problem posing* dengan Kombinasi Tutorial Online untuk Meningkatkan Pemahaman materi Mata Kuiah Fisika Dasar. *Jurnal Media Penelitian Pendidikan*, 2(2), 214–225.
- Indrianto. (2009). *Pembelajaran Kooperatif dengan Pendekatan Problem posing untuk Topik Integral Tak Tentu di Kelas XII IPA*. UNESA.
- Irawati, R. K. (2015). The Effect of Problem Solving and *Problem posing* Models and Innate Ability to Students Achievmnt. *Jurnal Pendidikan Sains*, 2(4), 184–192.
- Kilic, C. (2013). Turkish Primary School Teachers' Opinions about *Problem posing* Applications: Students, the Mathematics Curriculum and Mathematics Textbooks. *Australian Journal of Teacher Education*, 38(5), 143–155.
- Negara, H. R., Atmojo, T., & Sujadi, I. (2014). Eksperimentsi Model Pembelajaran Kooperatif Tipe Jigsaw dengan Pendekatan CTL terhadap Prestasi belajar dan Aspek Afektif Siswa pada Materi bangun Ruang Sisi Datar Ditinjau dari Kemampuan Spasial. *JMME*, 4(2), 47–63.

- Ngaeni, E. N., & Saefudin, A. A. (2017). Menciptakan Pembelajaran Matematika yang Efektif Dalam Pemecahan Masalah Matematika Dengan Model pembelajaran *Problem posing*. *Jurnal Aksioma*, 6(2), 264–274.
- Nuha, M., 'Azmi, Waluya, S. B., & Junaedi, I. (2018). Mathematical Creative Process Wallas Model in Students *Problem posing* with Lesson Study Approach. *International Journal of Instruction*, 11(2), 527–538.
- Ozdemir, A. S., & Sahal, M. (2018). The Effect of Teaching Integers through the *Problem posing* Approach on Students' Academic Achievement and Mathematics Attitudes. *Eurasian Journal of Educational Research*, 18(78), 1–21.
- Rahman, A., Hartini, S., & An'nur, S. (2015). Perbedaan Keterampilan Pemecahan Masalah Pada Pembelajaran Fisika Menggunakan Metode *Problem posing* dan Problem Solving. *Berkala Ilmiah Pendidikan Fisika*, 3(1), 44–51.
- Rezvykh, T. (2015). Posing the problem of time in S.N.Bulgakov: In The Context Of Nature and Freedom Antimony. *Vestnik Pravoslavnogo Svato-Tihonovskogo Gumanitarnogo Universiteta. Seria Bogoslovie*, 53(3), 55–68.
- Rosa, F. O. (2015). Analisis Kemampuan Siswa Kelas X pada Ranah Kognitif, Afektif dan Psikomotorik. *Jurnal OMEGA*, 1(2), 24–28.
- Rosli, R., Capraro, M. M., & Capraro, R. M. (2014). The effects of *problem posing* on student Mathematical learning: A meta-analysis. *International Education Studies*, 7(13), 227–241. <https://doi.org/10.5539/ies.v7n13p227>
- Sari, N., & Surya, E. (2017). Analysis Effectiveness of Using *Problem posing* Model in Mathematical Learning. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, 33(3), 13–21.
- Siswono, T. Y. E. (2000). Pengajuan soal (*problem posing*) oleh siswa dalam pembelajaran geometri di SLTP. In “*Peran Matematika Memasuki Melinium III.*” Surabaya.
- Sukanti. (2011). Penilaian Afektif dalam Akutansi. *Jurnal Pendidikan Akutansi*, 9(1), 74–82.
- Susanti, E. L., Sukestiyarno, Y. L., & Sugiharti, E. (2012a). Efektifitas Pembelajaran Matematika dengan Metode *Problem posing* Berbasis Pendidikan Karakter. *Unnes Journal of Mathematics Education*, 1(1), 13–19.
- Susanti, E. L., Sukestiyarno, Y., & Sugiharti, E. (2012b). Efektivitas Pembelajaran Matematika dengan Metode *Problem posing* Berbasis Pendidikan Karakter. *Unnes Journal of Mathematics Education*, 1(1), 10–15.
- Thobroni, & M. (2012). *Belajar dan Pembelajaran Pengembangan Wacana dan Praktek Pembelajaran dalam Pembangunan Nasional*. Yogyakarta: Ar-Ruzz Media.
- Yulianti, H., An'nur, S., & Wati, M. (2014). Meningkatkan Hasil Belajar Siswa Pada Materi Ajar Listrik Statis Dengan Pendekatan *Problem posing*. *Berkala Ilmiah Pendidikan Fisika*, 2(3), 244–252.