Analysis of Emotional Intelligence and Learning Outcomes of Students in Science Learning

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Abstract: Emotional intelligence is one indicator of academic success, where students who have high emotional intelligence will be active and work better in their groups. Emotional intelligence is very necessary for understanding the lesson delivered by the teacher. This study aims to analyze the effect of the learning model on student learning outcomes and analyze the influence of emotional intelligence on student learning outcomes. This study uses 3 learning models, namely, Project-Based Learning (PBL), guided inquiry, and conventional. This study employs a quasi-experimental method known as "factorial design 3 x 3. Data was collected using a questionnaire sheet to measure the emotional intelligence of students and an essay test to measure student learning outcomes. Data analysis used normality test, homogeneity test, and hypothesis test using one-way ANOVA at a significant level of 0.05. The results of testing the learning model hypothesis using analysis of variance (ANOVA) with the SPSS version 22 for windows program at a significant level, = 0.05, obtained a significance value (0.003 <0.05). This shows that there is an influence of learning models and emotional intelligence on student learning outcomes. The results of testing the emotional intelligence hypothesis at a significant level, = 0.05, obtained a significance value (0.001>0.05). This shows that there is an influence of emotional intelligence on student learning outcomes.

Keywords: Emotional intelligence; Learning outcomes; Guided inquiry; Project-based learning

Introduction

Emotional intelligence is one of the important factors that must be possessed by students who need to achieve better learning achievement in school (Kurniawan and Syakur, 2017). With emotional intelligence, a person can know and respond to their feelings well and can read and deal with other people's feelings effectively (Salaver, et al., 2017).

According to Ahmad (2019) emotional intelligence, namely the ability to manage his feelings, the ability to motivate himself, the ability to be strong in the face of frustration, the ability to control impulses and delay momentary gratification, regulate relative moods, and be able to empathize and cooperate with others. These abilities support students in achieving their goals and ideals (Trisnawati & Suryaningsum, 2003). Emotional intelligence is one indicator that affects student learning outcomes (Nurfitriyanti, 2017).

Based on the results of the initial field study, information was obtained that: (1) students tend to memorize concepts in science textbooks, so that when teachers provide examples outside of textbooks students are unable to solve problems, (2) students tend to accept whatever is given by the teacher. The teacher, without wanting to express the opinions that crossed his mind from each class and only a few students played an active role in the problems given by the teacher in learning. Teachers have made various efforts to improve students' abilities but are constrained by the motivation of students themselves which is difficult to build, this is also supported by the learning model used by teachers,

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most of whom still tend to use conventional learning models with lectures, so they do not involve active students in the process learning and making student learning outcomes low in science learning (Hadisaputra et al., 2019).

Science material is material that requires more conceptual understanding, if students do not understand the concept they will have difficulty learning (Ramdani et al., 2020). In this material also many things related to everyday life. Therefore, an appropriate model is needed so that students are more active in learning and do not feel bored quickly (Ramdani et al., 2021). So, it is necessary to strive for learning that can activate students in presenting interesting science material, so that it can help students overcome learning difficulties and eliminate bad perceptions and their initial mindset of difficult science lessons.

The PBL model provides opportunities for students to hone their creativity in solving a problem related to the concepts being taught (Gunawan et al., 2017). The rationale of this learning model is to provide direct experience to students, namely a real process, in accordance with procedures and apply the understanding formed into new experiences (Hanif et al., 2019). In the learning process, students not only act as recipients of lessons through teacher explanations but students are allowed to solve problems and find new problems so that students become motivated and get better learning outcomes.

As for other learning models such as guided inquiry learning models that can encourage students to think and work on initiative (Nurmayani & Doyan, 2018). The habit of this activity can stimulate and improve critical thinking in students (Amijaya et al., 2018). Students can find answers to formulated questions. Through guided inquiry learning, students are conditioned to think critically and creatively to find conclusions based on observations, and the search for answers is carried out. The number of activities in the guided inquiry learning model shows the magnitude of the involvement of students' activities in learning (Nisa et al., 2018).

The application of the PBL model and guided inquiry will add variations to learning that are interesting, and fun and involve students in actively finding concepts so that it will increase student activity and collaboration in groups. Build students' self-confidence so that it will be more fun and interesting for students in learning science (Kuhlthau et al., 2018).

Method

This research is a type of quasi-experimental research (quasi-experimental). This study wanted to determine the effect of learning models and emotional intelligence on student learning outcomes. This study used a 3 x 3 factorial design because it used manipulative independent variables which were divided into three and the variables were also divided into three groups.

This study used 3 classes consisting of 1 PBL model class, 1 guided inquiry model class, and 1 conventional model class. Data was collected using a questionnaire sheet and an essay test. The questionnaire aims to measure the level of students' emotional intelligence using a Likert scale. The learning outcome test uses an essay instrument consisting of 10 essay questions. The instrument preparation stage includes the preparation of test specifications, writing test questions, reviewing and correcting test questions, compiling assessment guidelines, and determining completeness criteria. The instrument had previously been tested for validity, reliability, and level of difficulty using the Rasch Model application.

The instrument that was tested for validity, reliability, and level of difficulty used the Rasch Model (Sumintono & Widhiarso, 2014) with the help of Ministep. This modeling makes statistical results more accurate in the analysis of the results performed. Data analysis for the effect test used the one-way ANOVA test which was preceded by the prerequisite test for normality and homogeneity with the help of SPSS 22 for the window. All statistical tests were performed at the 5% significance level. The hypotheses in the research are:

H1: there is an effect of learning models on student learning outcomes, and there is an influence of emotional intelligence on student learning outcomes.

Ho: there is no influence of the learning model on student learning outcomes, and there is an influence of emotional intelligence on student learning outcomes.

Result and Discussion

Learning outcomes

The results of the analysis of the description of the learning outcomes of class students in terms of the learning model for the three classes after being taught using the PBL, guided and conventional learning models can be seen in Table 1.

Table 1. Description of Student Learning Outcomes with Learning Models

Description	Class with Learning Model		
	PBL	Guided Inquiry	Conventional
Number of samples	32	32	33
The highest score	87	88	86
Lowest value	32	36	36
Average	56.11	63.33	60.5

Description: Minimum Completion Criteria value = 75

Table 1 which describes the learning model on student learning outcomes in each experimental class shows that the average student taught using the guided inquiry model is higher than the experimental class taught using the conventional and PBL models.

After the fulfillment of the prerequisite test for the analysis of variance which consists of the normality test and the homogeneity test of variance, it is continued with hypothesis testing. The results of hypothesis testing are the answers to the problem formulations that have been made and hypothesis testing using ANOVA analysis. The results of hypothesis testing for the learning model on student learning outcomes can be seen in Table 2.

Table 2. Results of Hypothesis Testing of Learning Models on Learning Outcomes Using Anava Analysis

Source	Sig.	Decision
Learning model	0.003	H_1 accepted

Based on the results of the analysis, Table 2 shows that the value of sig, $0.003 > = 0.05$, means that H_1 is accepted and H0 is rejected, meaning that there is an influence of PBL, guided and conventional models of inquiry on student learning outcomes.

Based on the results of the descriptive statistical analysis, the learning model on student learning outcomes in each experimental class showed that the average student taught using the guided inquiry model was higher than the experimental class taught using the conventional and PBL models.

The guided inquiry model can improve and enhance skills in the learning process of students, for example, guided inquiry efforts are carried out depending on how the students learn (Ramdani et al., 2020). This is a pleasure in itself because with the guided inquiry model students are successful and confident in finding a concept because they can work together with others in a group (Bilgin, 2009). This model can make students develop by finding new information and concepts for themselves as well as conducting investigations into a problem and can gain more meaningful knowledge (Marganuyasa, et al., 2019). This is in accordance with the theory put forward by Mc Daniel & Green (2002), that the application of the guided inquiry learning model has several advantages, one of which is to improve students' academic achievement. The results of previous research conducted by Fajariyah, et al (2016) guided inquiry learning models can improve students' learning abilities and achievements on solubility material and solubility results. This model can make students develop with and find new information and concepts for themselves as well as investigate a problem and can gain more meaningful knowledge.

The application of the PBL model shows that students are less skilled in solving problems with problems found in the group and individual student worksheet. According to Stachová et al, (2019) learning is a process by which an organization changes its behavior. Learning consists of three important components, namely external conditions, internal conditions, and learning outcomes. Learning outcomes include learning achievements in the aspect of knowledge, determined by the interaction of students' internal and external conditions. In the discussion process, it was seen that only a few people in the group were more dominant and active in solving problems, others only wanted the final result without participating in the discussion, this was seen from the learning process.

The statement shows that the learning model (external conditions) is not the only determinant of knowledge achievement. Students' internal factors such as learning styles, logical thinking skills, verbal abilities, numerical abilities, analytical skills, and memory abilities also contribute to learning achievement. Constructivism learning theory assumes that science is not a fact that remains to be discovered, but a formulation created by people who want to study it. According to Nerita et al, (2017), students must be active to make their concept discoveries. Knowledge gained through their own experience will be remembered longer and will be better understood by students. According to Thuneberg (2018), the level of cognitive development of high school students is at the stage of formal operations where these students can use higher-level thinking to conclude the problem-solving process.

The PBL model is constructivist learning that requires students to build their knowledge through the active involvement of students in group work to solve problems. The results obtained are not in accordance with the results of previous researchers, that the PBL model can improve student learning outcomes (Tarigan, 2015) because it is a learning model that involves students in learning knowledge related to problems as well as having skills to solve problems (Husni, 2015). In fact, not all students have good learning outcomes.

Another obstacle encountered when learning with the PBL model was that during the first meeting the class atmosphere was not conducive because students were not familiar with the learning model, so students had difficulty following the lesson. However, after the second and subsequent meetings, students have begun to adapt to the PBL model applied in the classroom. The groups that were initially left behind have started to be able to compete with other groups so that learning in class is more active. However, there are still obstacles such as ineffective time management. Another cause that makes learning less effective and less conducive is undisciplined students. Some students did not follow the rules properly, such as being late for class, inviting other group friends to talk during the discussion, and

leaving the class for a long time. For this reason, the effective target that has been set has not been achieved.

Meanwhile, learning with conventional models has a fairly good average value of learning outcomes compared to the PBL model. This is because the influence of the model in managing and controlling the class is quite good so that students can know to what extent they have mastered the material presented. The conventional model turns out to be able to provide a pleasant atmosphere so that students do not feel bored and bored. According to Rosdiani (2012), the conventional model is a learning model that is more teacher-centered and prioritizes effective learning strategies to expand information on teaching materials. Although teacher-centered, the conventional model can cover a wider range of material and efficient learning time because learning is more focused on teacher instruction. Students can know the learning objectives clearly so that it is easier to master the concepts that have been formulated by the teacher.

In addition, based on research by Sakti et al, (2012) concluded that conventional learning models have an effect on physics learning outcomes. Likewise, research from Ibrahim (2018) concludes that the conventional model is successful and effective in improving students' understanding of learning.

The application of this model in conventional classes has the advantage of learning basic skills (procedural knowledge) and obtaining information (declarative knowledge) which is taught step by step. This means that teaching is designed very systematically so that it can make it easier for students to understand the material gradually. In addition, students are also actively and enthusiastically involved in the learning process, because the principle of conventional learning models always involves students in demonstrating knowledge, then students experiment to find a concept, then finally the teacher will be given feedback to test students' understanding. learn about a material that has been studied. In addition, the use of the conventional model also uses assistive media in the form of student worksheet. These teaching materials are arranged systematically and regularly and the substance of the hydrocarbon material is associated with everyday life so that it can make it easier for students to understand the material being taught.

The difficulty of students in chemistry lessons can be caused by two factors, namely internal factors that come from within the students and external factors that come from outside the students themselves. These internal factors are influenced by three factors, namely physical factors, psychological factors, and fatigue factors, while external factors that affect students in learning activities are family factors, school factors, and community factors (Sutrisno & Siswanto, 2016). Internal factors, especially fatigue factors greatly affect the

teaching and learning process, because schools implement full-day school. And the placement of chemistry learning hours is placed in break hours, namely at 13.10-15.30, before the learning process begins, students are sluggish, sleepy, and lose their enthusiasm for learning, thus affecting the learning outcomes of class students.

Research by several learning style experts (learning style), learning achievement does not depend on time absolutely but depends on the choice of time that matches the readiness of students (Purnama, 2016), thus, the time used by students to learn has been trusted affect student learning outcomes, because it is not a matter of time that is important in learning, but the readiness of the student's memory system in absorbing, managing, and storing the information or knowledge that the student learns. But according to most of the class students, they prefer chemistry lessons to be held in the morning (07.15 – 12.00) because the body is still fresh, not sleepy, so it is easy to absorb the material. So that the average value of student learning outcomes for each learning model is obtained, PBL with an average value of 56.11, guided inquiry with an average value of 63.33, and conventional with an average value of 60.5.

The constraints or weaknesses of the PBL, guided, and conventional inquiry models are time constraints, while this learning model requires a lot of time, so it is expected that teachers in carrying out the teaching and learning process can plan and process time allocation properly and correctly. This can also be overcome through learning activities that involve media for delivering material such as student worksheet.and asking students to find and study the next material so that the time required in the learning process is not too long.

Emotional intelligence

The results of the analysis of the description of the emotional intelligence of students in terms of emotional intelligence for the three classes after being taught using the PBL, guided and conventional learning models can be seen in Table 3 and Table 4.

Table 3. Description of Emotional Intelligence on Student Learning Outcomes

Statistics	Value of Emotional Intelligence		
	PBL	Guided Inquiry	Conventional
N	32	32	33
Mean	163.71	161.50	154.44
Std. Deviation	19.954	18.390	15.023
Minimum	117	94	120
Maximum	221	194	187

Table 4. Description of Emotional Intelligence by Category of Emotional Intelligence (Medium, Low and High)

Emotional Intelligence	Learning Outcomes		
	PBL	Guided Inquiry	Conventional
Low	57.24	58.56	61.00
Medium	54.52	66.62	68.72
High	59.47	63.00	53.80

Based on Table 3 and Table 4 which describe the emotional intelligence of students based on the learning outcomes taught by the learning model, it can be seen that the average value of the learning outcomes of students taught by the guided inquiry model has a lower emotional intelligence higher than the average value of learning outcomes. on conventional and PBL models. Meanwhile, the moderate emotional intelligence that was taught using the conventional model had a higher average learning outcome than the class taught using the guided inquiry and PBL models. And high emotional intelligence shows that the average value of student learning outcomes is taught using a guided inquiry model compared to PBL and conventional.

After the fulfillment of the prerequisite test for the analysis of variance which consists of the normality test and the homogeneity test of variance, it is continued with hypothesis testing. The results of hypothesis testing are the answers to the problem formulations that have been made and hypothesis testing using ANOVA analysis. The results of hypothesis testing for emotional intelligence on student learning outcomes can be seen in Table 5.

Table 5. Results of Hypothesis Testing of Emotional Intelligence on Student Learning Outcomes Using Anava Analysis

Source	Sig.	Decision
Emotional Intelligence	0.001	H_1 accepted

Based on the results of the analysis, Table 5 shows that the value of sig, 0.001 > = 0.05 means that H1 is accepted and H0 is rejected, meaning that there is an influence of emotional intelligence on student learning outcomes.

Based on the research that has been done, the overall average value of emotional intelligence of students who have low, medium, and high emotional intelligence is different so emotional intelligence does not significantly affect student learning outcomes. This happens because in the implementation process the material is delivered to students by paying attention to the three categories of emotional intelligence, thus describing the learning outcomes of students based on the learning model and categories of emotional intelligence of students, it can be seen that emotional intelligence is low, the average value is 60. Medium

emotional intelligence, the average value is 59.88, and high emotional intelligence, the average value is 59.53.

The results of the analysis show that the value of sig, 0.001 > = 0.05 means that H1 is accepted and H0 is rejected, meaning that there is no influence of emotional intelligence on the learning outcomes of class students. In accordance with the research of Sudiantari and Rustika (2019) concluded that students with high levels of emotional intelligence are less prone to stress than students with low levels of emotional intelligence when students are approaching exams. In addition, Thaib (2013) shows that emotional intelligence can be stated as one of the important factors that must be possessed by students as a need to achieve better learning achievement in school and prepare them to face the real world.

The research above shows that the factors that influence learning outcomes are the level of emotional intelligence of the students themselves, if students can control their emotions in any situation, especially during learning, they are not easily stressed and are better prepared to face exams. However, in this study, there was no influence of the level of emotional intelligence of students on student learning outcomes.

This study shows that emotional intelligence does not affect student learning outcomes. This proves that students have different levels of emotional questions. However, it cannot be denied that emotional intelligence is an important source of learning to achieve not only learning success but also life success. In this case, success includes everything related to learning outcomes where students are required to be actively involved in every learning process so that students will not understand the material more easily but will also be able to answer the questions given.

The data shows that the average learning outcomes of students taught with the PBL model with emotional intelligence do not significantly affect the learning outcomes of students and the learning outcomes of students with high emotional intelligence. The learning outcomes of students taught with the PBL model of moderate emotional intelligence and learning outcomes of students taught with the PBL model of low emotional intelligence. Meanwhile, the learning outcomes of students taught by guided inquiry models with low emotional intelligence, and learning outcomes of students taught using guided inquiry models with moderate emotional intelligence, learning outcomes of students taught by guided inquiry models with high emotional intelligence. And for the conventional model of learning outcomes of students who are taught by conventional models with low emotional intelligence, and learning outcomes of students who are taught using conventional models with moderate emotional intelligence. And the learning outcomes of students who

are taught with conventional models with high emotional intelligence.

It was found that the learning outcomes of students with high emotional intelligence who were taught using the PBL model and guided inquiry had better average learning outcomes than students who were taught using the conventional model. This study is in line with research conducted by Goleman who found that the equality of intellectual and emotional intelligence is the main source for students to get high learning outcomes. In addition, the PBL and guided inquiry classes with high emotional intelligence found that students with high emotional intelligence would easily get better learning outcomes compared to using conventional models. This is because the application of the PBL model and guided inquiry in chemistry learning requires students to work together in finding a concept and principle and be able to work together with others in a group and in the learning process students are allowed to explain the material in their way. themselves until their group mates understand what is being explained.

Students with high emotional intelligence need communication to work with others in group discussions so that students can express and explain new ideas and students are more happy and comfortable in completing the learning process. To engage with others, students are asked to take responsibility for their assignments. Meanwhile, students with low emotional intelligence were taught using the PBL model, guided inquiry showed that students with low emotional intelligence seemed rather difficult to mingle with other students in group discussions. Students find it difficult to trust others, they are more likely to care less.

Related to this fact, students with low emotional intelligence have difficulty getting good learning outcomes if the teacher is not right in choosing the learning model. For this reason, it can be suggested that students with high emotional intelligence will be more effective if students are taught with PBL and guided inquiry models while students with low and moderate emotional intelligence are more effectively taught using conventional models.

Conclusion

Based on the results of testing the learning model hypothesis using analysis of variance (ANOVA) with the SPSS version 22 for windows program at a significant level, = 0.05, a significance value (0.003 <0.05) was obtained, indicating that the hypothesis was accepted. This shows that there is an influence of learning models and emotional intelligence on student learning outcomes. The results of testing the emotional intelligence hypothesis at a significant level, = 0.05, obtained a significance value (0.001>0.05), indicating the hypothesis was accepted. This shows that there is an influence of emotional intelligence on student learning outcomes.

Acknowledgments

References

Ahmad, J. (2019). *Aspects of emotional intelligence*. Cambridge Scholars Publishing. https://books.google.co.id/books?hl=id&lr=&id=d0OeDwAAQBAJ&oi=...f=false

Amijaya, L. S., Ramdani, A., & Merta, I. W. (2018). Pengaruh model pembelajaran inkuiri terbimbing terhadap hasil belajar dan kemampuan berpikir kritis peserta didik. *Jurnal Pijar Mipa, 13*(2), 94-99. https://doi.org/10.29303/jpm.v13i2.468

Bilgin, I. (2009). The effects of guided inquiry instruction incorporating a cooperative learning approach on University students achievement of acid and bases concepts and attitude toward guided inquiry instruction. *Scientific Research and Essays*, *4*(10), 1038-1046. https://doi.org/10.5897/SRE.9000908

Fajariyah, N., Utami, B., & Haryono, H. (2016). Penerapan model pembelajaran inkuiri terbimbing untuk meningkatkan kemampuan berpikir kritis dan prestasi belajar pada materi kelarutan dan hasil kali kelarutan siswa kelas xi SMA al islam 1 surakarta tahun ajaran 2014/2015. *Jurnal Pendidikan Kimia*, *5*(2), 89-97. Retrieved from https://jurnal.fkip.uns.ac.id/index.php/kimia/article/view/8380/6153

Gunawan, G., Sahidu, H., Harjono, A., & Suranti, N. M. Y. (2017). The effect of project based learning with virtual media assistance on student's creativity in physics. *Cakrawala Pendidikan*, (2), 87812. https://doi.org/10.21831/cp.v36i2.13514

Hadisaputra, S., Gunawan, G., & Yustiqvar, M. (2019). Effects of Green Chemistry Based Interactive Multimedia on the Students' Learning Outcomesand Scientific Literacy. *Journal of Advanced Research in Dynamical and Control Systems*, *11*(7), 664-674. Retrieved from http://eprints.unram.ac.id/24638/1/Saprizal_JARDCS%202019.pdf

Hanif, S., Wijaya, A. F. C., & Winarno, N. (2019). Enhancing Students' Creativity through STEM Project-Based Learning. *Journal of science*

Learning, 2(2), 50-57. Retrieved from https://files.eric.ed.gov/fulltext/EJ1226168.pdf

Husni, H., Sari, S. A., & Suhendrayatna, S. (2015). Implementasi Pembelajaran Kimia Berbasis Lingkungan Dengan Model Problem Based Learning (Pbl) Untuk Meningkatkatkan Minat Dan Keterampilan Berpikir Kritis Pada Siswa SMA. *Jurnal Pendidikan Sains Indonesia (Indonesian Journal of Science Education)*, 3(1), 47-58. Retrieved from http://www.jurnal.unsyiah.ac.id/JPSI/article/view/7650/6271

Ibrahim, A. (2018). Pengaruh Metode Pembelajaran dan Kemandirian Belajar Terhadap Hasil Belajar Sejarah di SMA Negeri 1 Parung. *Jurnal Pendidikan Sejarah*, 7(1), 29-39. https://doi.org/10.21009/JPS.071.02

Kuhlthau, C.C., Maniotes,L.K, danCaspari, A. K. (2008). *Guided Inquiry: Learning in the 21th century*. London: Libraries Unlimited. https://books.google.co.id/books?hl=id&lr=&id=LxCFCgAAQBAJ&oi...&f=false

Kurniawan, A., & Syakur, A. (2017). The Correlation of Emotional Intelligence and Spiritual of Intelligence to Effectiveness Principals of Leadership. *International Journal of Psychological and Brain Sciences*, 2(1), 1-9. Retrieved from https://repository.stkippgri-sidoarjo.ac.id/339/1/10.11648.j.ijpbs.20170201.11.pdf

Margunayasa, I. G., Dantes, N., Marhaeni, A. A. I. N., & Suastra, I. W. (2019). The Effect of Guided Inquiry Learning and Cognitive Style on Science Learning Achievement. *International Journal of Instruction*, 12(1), 737-750. Retrieved from https://files.eric.ed.gov/fulltext/EJ1201135.pdf

McDaniel, S. N., & Green, L. (2012). Independent Interactive Inquiry-Based Learning Modules Using Audio-Visual Instruction In Statistics. *Technology Innovations in Statistics Education*, 6(1). https://doi.org/10.5070/T561012656

Nerita, S., Maizeli, A., & Afza, A. (2017, September). Student analysis of handout development based on guided discovery method in process evaluation and learning outcomes of biology. In *Journal of Physics: Conference Series* (Vol. 895, No. 1, p. 012006). IOP Publishing. https://doi.org/10.1088/1742-6596/895/1/012006

Nisa, E. K., Koestiari, T., Habibbulloh, M., & Jatmiko, B. (2018, March). Effectiveness of guided inquiry learning model to improve students' critical thinking skills at senior high school. In *Journal of Physics: Conference Series* (Vol. 997, No. 1, p. 012049). IOP Publishing. https://doi.org/10.1088/1742-6596/997/1/012049

Nurfitriyanti, M. (2017). Pengaruh model pembelajaran kooperatif tipe jigsaw terhadap hasil belajar matematika ditinjau dari kecerdasan emosional. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 7(2). http://dx.doi.org/10.30998/formatif.v7i2.2229

Nurmayani, L., & Doyan, A. (2018). Pengaruh model pembelajaran inkuiri terbimbing terhadap hasil belajar fisika peserta didik. *Jurnal Penelitian Pendidikan IPA,* 4(2). https://doi.org/10.29303/jppipa.v4i2.113

Purnama, I. M. (2016). Pengaruh kecerdasan emosional dan minat belajar terhadap prestasi belajar Matematika di SMAN Jakarta Selatan. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 6(3). http://dx.doi.org/10.30998/formatif.v6i3.995

Ramdani, A., Jufri, A. W., Gunawan, G., Fahrurrozi, M., & Yustiqvar, M. (2021). Analysis of Students' Critical Thinking Skills in terms of Gender Using Science Teaching Materials Based on The 5E Learning Cycle Integrated with Local Wisdom. *Jurnal Pendidikan IPA Indonesia*, 10(2), 187-199. https://doi.org/10.15294/jpii.v10i2.29956

Ramdani, A., Syukur, A., Gunawan, G., Permatasari, I., & Yustiqvar, M. (2020a). Increasing Students' Metacognition Awareness: Learning Studies Using Science Teaching Materials Based on SETS Integrated Inquiry. *International Journal of Advanced Science and Technology*, 29(5), 6708-6721. Retrieved from https://www.researchgate.net/profile/Abdul-Syukur-...Inquiry.pdf

Rosdiani, D. (2012). Model Pembelajaran Langsung Dalam Pendidikan Jasmani. *Riduwan, Ed.). Bandung: ALFABETA*.

Sakti, I., Yuniar Mega, P., & Risdianto, E. (2012). Pengaruh model pembelajaran langsung (Direct Instruction) melalui media animasi berbasis macromedia flash terhadap minat belajar dan pemahaman konsep fisika siswa di SMA Plus Negeri 7 Kota Bengkulu. *Exacta*, 10(1), 1-10. Retrieved from http://repository.unib.ac.id/487/1/01%20Isi%20vol%20x%...pdf

Salavera, C., Usan, P., & Jarie, L. (2017). Emotional intelligence and social skills on self-efficacy in secondary education students. Are there gender differences?. *Journal of adolescence*, 60, 39-46. https://doi.org/10.1016/j.adolescence.2017.07.009

Stachová, K., Papula, J., Stacho, Z., & Kohnová, L. (2019). External partnerships in employee education and development as the key to facing industry 4.0 challenges. *Sustainability*, 11(2), 345. https://doi.org/10.3390/su11020345

Surdiantari, L. N., & Rustika, I. M. (2019). Peran Kecerdasan Emosional dan Efikasi Diri Terhadap Problem Focused Coping pada Mahasiswa Preklinik Program Studi Pendidikan Dokter Fakultas Kedokteran Universitas Udayana. *Jurnal*

Psikologi Udayana, 99-110. Retrieved from https://jurnal.harianregional.com/index.php/psikologi/article/view/52508/31019

Sutrisno, V. L. P., & Siswanto, B. T. (2016). Faktor-faktor yang mempengaruhi hasil belajar siswa pada pembelajaran praktik kelistrikan otomotif SMK di Kota Yogyakarta. *Jurnal pendidikan vokasi*, *6*(1), 111-120. https://doi.org/10.21831/jpv.v6i1.8118

Tarigan, S., & Manurung, H. (2015). Penerapan Model Pembelajaran Problem Based Learning (PBL) dengan Menggunakan Macromedia Flash Untuk Meningkatkan Berpikir Kreatif dan Hasil Belajar Siswa Pada Pokok Bahasan Kelarutan dan Hasil Kali Kelarutan. *TABULARASA*, *12*(2). https://doi.org/10.24114/jt.v12i2.3244

Thaib, E. N. (2013). Hubungan Antara prestasi belajar dengan kecerdasan emosional. *JURNAL ILMIAH DIDAKTIKA: Media Ilmiah Pendidikan dan Pengajaran*, *13*(2). http://dx.doi.org/10.22373/jid.v13i2.485

Thuneberg, H. M., Salmi, H. S., & Bogner, F. X. (2018). How creativity, autonomy and visual reasoning contribute to cognitive learning in a STEAM hands-on inquiry-based math module. *Thinking Skills and Creativity*, *29*, 153-160. https://doi.org/10.1016/j.tsc.2018.07.003