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Moral Sensitivity and Science Cognitive Learning Outcomes of Junior High School Students through the Meaningful Learning Model

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ABSTRACT
This study was intended to describe the improvement of students' moral sensitivity and cognitive learning outcomes through the application of the Meaning Learning Model. The research employed a pre-experimental design with a one-group pretest–posttest approach. The population consisted of 70 seventh-grade students from two classes at SMP Negeri 1 Sidoarjo. A purposive sampling technique was used to select classes with below-average academic performance. Data were collected using pretests and posttests for both moral sensitivity and cognitive learning outcomes. The research instruments consisted of a moral sensitivity test and a cognitive learning outcomes test. Data were analyzed descriptively using the N-Gain formula to determine the improvement levels in moral sensitivity and cognitive learning outcomes. The analysis results showed that students' moral sensitivity improvement was categorized as medium (39%) and low (61%), while cognitive learning outcomes were classified as high (7%), medium (54%), and low (38%). The overall moral sensitivity level was in the "sensitive" category (46%), and students' cognitive performance predominantly reached the C4 domain (70%). In conclusion, the Meaning Learning Model contributed to an increase in students' moral sensitivity within the low category and in cognitive learning outcomes within the medium category. Moreover, students' moral sensitivity was classified as sensitive, and their cognitive achievements were primarily at the C4 level.

Keywords: *cognitive learning outcomes, meaningful learning model, moral sensitivity.*

INTRODUCTION

Moral sensitivity refers to an individual's awareness of the moral implications present in surrounding phenomena. For junior high school students, the indicators of moral sensitivity have been described within the framework of moral education, which is developed through three stages of character formation: knowledge (knowing), implementation (acting), and habit formation (habit) (Fauzia & Sartika, 2020). Moral sensitivity is regarded as a measure to determine the extent to which an individual is able to act morally (Reynolds & Miller, 2015). In the educational process, students' learning activities and outcomes are considered essential components, as learning outcomes provide significant information for decision-making regarding future instructional practices. Cognitive learning outcomes are defined as students' abilities to comprehend lesson concepts, which are reflected through test scores that indicate the level of success in achieving learning objectives (Naimnule et al., 2016).

In the current era, learning processes are highly influenced by technological development. The rapid advancement of information and communication technology has accelerated scientific progress but has also led to shifts in social values, attitudes, morals, and character. Education, as the primary foundation of human development, serves as a bridge for the transfer and construction of knowledge (Gonibala et al., 2019). Character education has therefore been considered a crucial and strategic effort to build national identity and shape the moral foundation of the younger generation. It is based on fundamental human values derived from universal and absolute moral principles (Abidin, 2021). Through character education, students are expected to internalize moral knowledge and values that guide moral reasoning and moral behavior. The internalization process of moral values, which later manifests as moral behavior, begins with the emergence of moral sensitivity.

The presence of moral values among students plays a vital role in maintaining harmony within families and communities. Poor moral behavior among students often leads to social disharmony and unrest. Hughes & Nurjaman (2022) emphasized that moral degradation has become a growing concern in today's society. In relation to moral degradation and education, Sudiyono et al. (2015) identified two major issues in schools: (1) learning outcomes that include positive attitudes, noble character, and life skills have not been intentionally taught but rather occur as side effects of academic instruction, and (2) the learning process remains predominantly teacher-centered, passive, and lacking in student motivation.

Students' attitudes, norms, and morals are categorized as affective learning outcomes. Although these belong to the affective domain, they can be enhanced through structured cognitive learning. Moral sensitivity, as an affective outcome, has been reported to correlate closely with cognitive learning outcomes. The higher the students' cognitive capacity, the more predictable their behavioral changes become (Wibowo, 2022). Similarly, Yaqin (2019) argued that cognitive learning outcomes influence affective learning outcomes since the development of the cognitive domain contributes to both cognitive and affective educational goals. According to Piaget's theory of cognitive development, a child's cognitive growth is positively associated with moral understanding the higher the level of cognitive development, the higher the level of moral comprehension (Wijayanti, 2015).

However, various forms of moral deviation have been frequently observed among students and even university learners. Such deviant behaviors include student brawls, bullying, substance abuse, plagiarism, cheating, and other social misconducts (Maryam, 2020). Preliminary observations conducted at SMP Negeri 1 Sidoarjo revealed several forms of moral indiscipline among seventh-grade students during science learning activities. These included inattentiveness during lessons, neglect of teachers' questions, frequent side conversations, and excessive use of mobile phones during class. Such behaviors are believed to negatively affect both students' moral sensitivity and cognitive development.

Given the various problems described above, the idea has emerged that positive attitudes, manners, and noble morals can be taught through integration with science learning. Science education inherently involves a wide range of natural phenomena that are engaging and possess strong potential to serve as contexts for developing students' moral sensitivity (Putra et al., 2014). In line with this, the present study was motivated by an interest in teaching science concepts while simultaneously internalizing moral values through the Meaning Learning Model. The instructional tools employed in this approach consist of science learning instruments designed based on the Meaning Learning framework, which serves as an essential component supporting the learning process (Nabilah, 2018).

The Meaning Learning Model represents an innovative approach to science instruction that emphasizes the cultivation of positive attitudes, moral values, and character development by linking scientific phenomena with students' academic and experiential contexts (Saidah et al., 2015). This model facilitates the creation of meaningful learning experiences that allow students to better comprehend, retain, and apply lesson concepts. By providing meaningfulness in both content and process, the model contributes to improved learning outcomes, as students are more likely to engage deeply and achieve comprehensive understanding. The more effective the learning process and the clearer the conceptual meaning conveyed, the more optimal the resulting learning achievements become (Permana et al., 2020). Moreover, Meaning Learning has been reported to positively influence the development of students' honesty, discipline, and cooperative behavior (Yuliani et al., 2012).

Empirical evidence has supported the effectiveness of the Meaning Learning Model in science education. Research by Markiah et al. (2015) demonstrated that the application of this model in the topic of "Organization of Life" among junior high school students enhanced their discipline, responsibility, and learning skills. Similarly, Syamsudin (2018) found that science learning tools developed based on the Meaning Learning Model were valid, practical, and effective in increasing students' motivation and learning outcomes. Furthermore, the study by Fauziah & Ambarwati (2020) reported that meaning-based textbooks successfully trained students' learning outcomes and moral sensitivity. Sartika (2011) also concluded that the implementation of the Meaning Learning Model improved students' learning processes, as well as their psychomotor, cognitive, and moral sensitivity levels.

Based on these findings, the present research was designed to implement the Meaning Learning Model in order to describe improvements in moral sensitivity and cognitive learning outcomes among junior high school students in science subjects. Although numerous previous studies have utilized cognitive-oriented learning models such as Discovery Learning, Inquiry-Based Learning, and Problem-Based Learning to enhance learning outcomes, few have attempted to integrate moral aspects within a meaningful learning framework. The Meaning Learning Model is believed to facilitate connections between new knowledge, personal experiences, and students' moral valuesthereby fostering both cognitive understanding and moral sensitivity. Andrews et al. (2023) emphasized that meaningful learning occurs when learners actively relate new information to prior knowledge, leading to greater engagement and deeper comprehension. Consequently, the Meaning Learning Model can serve as an innovative instructional alternative for teachers to design science learning experiences that are contextually relevant to students' real lives while simultaneously nurturing moral awareness within a scientific context.

METHODOLOGY

This research was conducted using a pre-experimental design aimed at determining the improvement of junior high school students' moral sensitivity and cognitive learning outcomes through the application of the Meaning Learning Model. The research design employed was the one-group pretest–posttest design, in which a single group of participants was observed before and after treatment to measure the effect of the intervention. In this design, students were given a pretest to assess their initial levels of moral sensitivity and cognitive learning outcomes prior to the implementation of the Meaning Learning Model. Following the intervention, a posttest was administered to evaluate changes or improvements resulting from the learning process. The difference between pretest and posttest scores was used to determine the extent of improvement. The experimental design applied in this study is illustrated as follows (Abdillah & Fajar, 2020):

$$O_1 \; X \; O_2 \qquad (1)$$

Description:

O_1 = The Initial test (*pretest*), use to obtained data on the initial abilities possessed by students

before being given the meaning learning model.
X = Given a treatment using the meaning learning model
O_2 = The final test (*posttest*), used to obtain data on the final abilities possessed by students after participating in learning activities using the meaning learning model.

The research was initiated with the administration of a pretest to measure students' initial levels of moral sensitivity and cognitive learning outcomes. Following the pretest, students received treatment through the implementation of the Meaning Learning Model over five instructional meetings. The learning material was focused on the topic of the Organization of Life System, which consisted of five subtopics: cells (meeting 1), tissues (meeting 2), organs (meeting 3), organ systems (meeting 4), and organisms (meeting 5). The population in this study comprised all seventh-grade students of SMP Negeri 1 Sidoarjo. The sample represented a portion of this population possessing similar characteristics (Malik & Chusni, 2018). A total of 70 students from two different classes were selected using a purposive sampling technique, based on the criterion that the selected classes exhibited below-average academic performance.

Data collection was conducted through the administration of pretests and posttests, aligned with the research objectives and indicators established by the researcher. The instruments employed consisted of 10 items designed to assess moral sensitivity and 40 items to evaluate cognitive learning outcomes. Each instrument was developed according to the relevant content and learning objectives of the science curriculum. The data obtained from both tests were analyzed using descriptive statistical techniques, with the level of improvement expressed as a percentage of completeness. The analysis employed the following formula (Mahsul, 2018):

$$\text{Score} = \frac{Number\ of\ Score\ Obtained}{Maximum\ Score} \text{ x } 100 \quad (2)$$

The data obtained from the pretest and posttest of students' moral sensitivity and cognitive learning outcomes were analyzed using N-Gain analysis. This analysis was employed to determine the difference between students' performance before and after the implementation of the Meaning Learning Model, thereby indicating the extent of improvement resulting from the applied instructional treatment.

$$g = \frac{Spost - Spre}{Smax - Spre} \quad (3)$$

Description:
g : N-Gain Score
S_{pre} : *Pretest* Score
S_{post} : *Posttest* Score
S_{max} : Maximum Score

The results of the N-Gain calculation will be converted using the following criteria:

Tabel 1. Normalized N-Gain Criteria

N-Gain Score	Normalized Gain Criteria
0.70 < N-Gain	High
0.30 ≤ N-Gain ≤ 0.70	Medium
N-Gain < 0.30	Low

Reference: (Oktavia et al., 2019)

RESULT AND DISCUSSION

The trial of the developed learning instruments was conducted with seventh-grade students of SMP Negeri 1 Sidoarjo, involving a total of 70 participants from two different classes. During the implementation, the researcher served as an observer to monitor classroom activities and student engagement throughout the learning process. The data obtained from this trial were analyzed using descriptive statistical techniques, which included the calculation of mean scores and percentages to describe the overall trends in students' performance. The outcomes of these analyses are presented in Table 1, which provides a detailed description of the results of the study and their implications for the improvement of moral sensitivity and cognitive learning outcomes through the Meaning Learning Model.

Table 1. Moral Sensitivity

N-Gain Category	Percentage (%)
Medium	39
Low	61

Based on Table 1, it can be observed that the N-Gain results for moral sensitivity fall into the medium category for 39% of students and into the low category for 61%. The N-Gain analysis indicates that the improvement in students' moral sensitivity before and after the implementation of the Meaning Learning Model tends to be relatively low. Moral sensitivity encompasses both moral knowledge and moral awareness possessed by students. The moral sensitivity test used in this study consisted of several alternative responses, each with different scoring weights, allowing the classification of students into specific categories of moral sensitivity (Sudiyono et al., 2015). The test, which measures affective learning outcomes, was designed to assess junior high school students' moral understanding of the phenomena presented in the concept of the life organization system.

The data in Table 1 further suggest that students had limited ability to internalize and experience the moral meaning embedded within the lesson content. Consequently, students tended to experience difficulties in understanding the material conceptually, as the meaning-making process was not fully achieved. This finding is consistent with the study conducted by Fauzia & Sartika (2020), which reported that students' moral sensitivity scores were generally low and showed minimal improvement from pretest to posttest. The limited increase implies that significant changes in students' character or moral awareness are unlikely to occur within a short period of time.

This interpretation aligns with the findings of Markiah et al. (2015), who emphasized that the development of disciplinary and moral character requires a continuous educational process rather than incidental or short-term exposure. Moreover, Fahmy et al. (2020) argued that individuals with high moral sensitivity are capable of perceiving and responding to moral values embedded in everyday experiences, whereas individuals with low sensitivity tend to respond only to extraordinary or directly observable moral events. The varying levels of moral sensitivity observed among students indicate that the Meaning Learning Model facilitated some degree of improvement, although the results remained within the low-to-medium range. The distribution of students' moral sensitivity levels following the implementation of the Meaning Learning Model is presented in Table 2.

Table 2. Moral Sensitivity Level Categories

Level of Moral Sensitivity	Percentage (%)
Sensitive	46
Egocentric	17
Rational	18
Not Sensitive	19

Based on Table 2, it can be observed that after the implementation of the Meaning Learning Model, 46% of students were categorized as being at the sensitive level, 17% at the egocentric level, 18% at the rational level, and 19% at the insensitive level of moral sensitivity. Moral sensitivity varies among individuals and can be classified into four distinct levels sensitive, egocentric, rational, and insensitive (Fauzia & Sartika, 2020). The sensitive level represents the highest degree of moral sensitivity, indicating that an individual is capable of perceiving and responding to the moral values embedded in a given phenomenon. The egocentric level reflects a condition in which moral awareness is present but limited to actions or judgments that primarily serve one's own benefit. The rational level describes an individual's understanding of phenomena from a logical or scientific perspective, with limited concern for moral meaning. Finally, the insensitive level indicates the absence of moral awareness, wherein an individual perceives phenomena as ordinary events that do not require ethical consideration.

These findings correspond to Jean Piaget's theory of moral development, which posits that children's moral growth occurs progressively through autonomous activities and real experiences. In a similar manner, moral sensitivity develops through one's engagement and reflection on lived experiences. A student who has previously encountered certain moral situations may exhibit higher sensitivity compared to situations or fields that are new to them. Furthermore, each student's interpretation of a scientific phenomenon may differ, resulting in varied levels of moral impact (Habibi, 2021). To respond to a phenomenon with moral implications, students must first engage in a process of meaning-making that allows them to recognize and internalize moral values (Habibi, 2021). The degree of this sensitivity determines the extent to which students are able to perceive and appreciate the moral dimensions inherent in scientific contexts. High sensitivity reflects the ability to grasp the moral meaning embedded within a phenomenon, while low sensitivity suggests that students may struggle to interpret the underlying moral significance. In addition to moral sensitivity data, findings related to students' cognitive learning outcomes were also obtained, as presented in Table 3 below.

Table 3. Cognitive Leaning Outcomes

N-Gain Category	Percentage (%)
High	7
Medium	54
Low	39

Based on Table 3, it can be observed that the N-Gain scores for students' cognitive learning outcomes using pretest and posttest instruments fall into three categories: 10% in the high category, 26% in the medium category, and 65% in the low category. The N-Gain analysis indicates that there was no significant increase in students' cognitive learning outcomes after the implementation of the Meaning Learning Model. Most students were categorized at the medium level, suggesting a moderate improvement in cognitive achievement following the treatment.

Learning outcomes represent the abilities acquired by students after undergoing a learning process (Rahmawati et al., 2019). They reflect students' achievement of educational goals and can be measured through evaluation activities designed to assess the extent to which learning objectives have been met (Utami, 2018). Among the domains of learning outcomes, the cognitive domain is a crucial component as it encompasses intellectual functions such as memory, reasoning, and critical thinking (Muawannah, 2020). Cognitive learning outcomes are therefore an essential reference point for evaluating the overall effectiveness of instruction.

Cognitive learning outcomes are closely related to students' intellectual capacities, which strongly influence the success of the learning process (Febriani, 2017). However, low levels of cognitive performance remain a common challenge in educational settings (Ningsih & Jayanti, 2022). Several factors are believed to contribute to this issue. Students may not be accustomed to completing pretests and posttests, or they may struggle to associate learning materials with real-life

values, leading to superficial understanding. Difficulties may also arise from a lack of engagement during instruction, limited use of provided electronic learning materials, and hesitation to ask questions when encountering unfamiliar content.

Furthermore, the short duration of the intervention limited to five consecutive meetingsmay have been insufficient to produce a significant improvement in learning outcomes through the Meaning Learning Model. This is supported by the low N-Gain results observed in this study. A lack of learning motivation also appears to be a contributing factor. According to Bahri and Corebima (2015), motivated students tend to pay closer attention during lessons and actively read the provided learning materials to comprehend their content more effectively.

Rijal and Bachtiar (2015) further explain that cognitive learning outcomes are influenced by both internal and external factors, including motivation, interest, intelligence, learning strategies, environmental conditions, and teaching approaches. The dominance of teacher-centered learning observed in many classrooms has limited students' autonomy, reducing their engagement and willingness to explore materials independently. Such practices contrast with the student-centered principles emphasized in the Meaning Learning Model (Putra et al., 2014).

Empirical evidence from previous studies supports these findings. Research by Nabilah (2018) revealed that the moderate increase in cognitive knowledge can be attributed to limited instructional media, inadequate learning resources, and students' lack of experience in constructing meaning based on real-life contexts. Similarly, Markiah et al. (2015) reported that incomplete mastery of the material after applying the Meaning Learning Model may occur because students are not yet accustomed to applying learned concepts to solve contextual problems.

To enhance learning effectiveness, systematic instructional management is required to encourage more active and meaningful participation from students (Nurrita, 2018). Such efforts can lead to more efficient learning processes and improved cognitive performance. The cognitive learning outcomes analyzed in this study are further categorized according to Bloom's Taxonomy, which classifies educational objectives into three domains cognitive, affective, and psychomotor. The cognitive domain, in particular, emphasizes intellectual capabilities and higher-order thinking skills. The distribution of students' cognitive abilities based on Bloom's levels is presented in Table 4 below.

Table 4. Ability Level of Cognitive Learning Outcomes

Bloom's Taxonomy Domains	Question Number	Percentage (%)
C1	3, 10, 12, 13, 16, 17, 34	59
C2	1, 11, 20, 24, 27, 29, 35, 40	60
C3	2, 4, 7, 14, 15, 18, 19, 21, 25, 26, 30, 31, 33, 36, 38	55
C4	5, 6, 8, 9, 22, 23, 28, 32, 37, 39	70

Based on Table 4, it can be observed that within Bloom's Taxonomy, the percentage distribution across the cognitive domains is as follows: C1 (Remembering) at 59% (items 3, 10, 12, 13, 16, 17, 34), C2 (Understanding) at 60% (items 1, 11, 20, 24, 27, 29, 35, 40), C3 (Applying) at 55% (items 2, 4, 7, 14, 15, 18, 19, 21, 25, 26, 30, 31, 33, 36, 38), and C4 (Analyzing) at 70% (items 5, 6, 8, 9, 22, 23, 28, 32, 37, 39). The cognitive domain represents mental activities related to knowledge acquisition, comprehension, and the development of thinking skills (Lestari, 2016). According to Bloom's Taxonomy, the hierarchy of cognitive processes includes C1 (Remembering), C2 (Understanding), C3 (Applying), C4 (Analyzing), C5 (Evaluating), and C6 (Creating) (Yuberti, 2015). Each learner possesses different cognitive abilities and levels of mastery depending on their learning experiences and engagement.

Based on the findings, students achieved the lowest percentage (55%) in the C3 (Applying) domain. This indicates that students experienced difficulties in comprehending and selecting the correct responses, suggesting limitations in their ability to apply conceptual understanding to practical or situational problems. This finding is consistent with the study of Sopian et al. (2021), which reported that students' performance in the C3 domain was generally deficient because they struggled to carry out procedural tasks accurately and tended to make computational or conceptual errors. Similarly, Sari and Wulandari (2020) found that low performance at the C3 level occurred because students could only answer recall-based questions, indicating limited higher-order application skills.

In contrast, the highest percentage (70%) was observed in the C4 (Analyzing) domain. This suggests that students were relatively more proficient in analyzing problems, possibly due to frequent engagement with analytical tasks during regular classroom activities. Students may also have developed familiarity with higher-order thinking skills (HOTS), which are often emphasized in the junior high school science curriculum. This aligns with Wiranata et al. (2017), who stated that cognitive conflict can enhance students' analytical abilities, questioning skills, and capacity to formulate conclusions, thereby fostering superior academic performance.

The implementation of the Meaning Learning Model in this study represents an innovative pedagogical approach within the context of junior high school science education, as it integrates moral and cognitive dimensions simultaneously. Traditionally, meaning-oriented models have been applied primarily in the field of character education; however, their adaptation to science learning provides a new interdisciplinary perspective. The findings of this study support the argument that meaningful learning not only facilitates connections between new and prior knowledge but also bridges scientific concepts with moral values and students' real-life experiences, thereby promoting holistic learning.

CONCLUSION

Based on the research conducted on the improvement of moral sensitivity and cognitive learning outcomes through the implementation of the Meaning Learning Model in seventh-grade students at SMP Negeri Sidoarjo, followed by data analysis and interpretation, several conclusions were drawn. The application of the Meaning Learning Model was found to result in an overall increase in students' moral sensitivity, categorized as low. However, when analyzed by sensitivity level, 46% of students were classified under the sensitive category, indicating that nearly half of the participants demonstrated awareness of moral values embedded in learning phenomena. In terms of cognitive learning outcomes, a moderate improvement was observed. When categorized according to Bloom's cognitive domains (C1–C4), the highest level of achievement was found in the C4 (Analyzing) domain, with a percentage of 70%, suggesting that students were relatively more capable of analytical thinking compared to lower-order domains. These findings indicate that the Meaning Learning Model has the potential to foster both moral awareness and cognitive development, although the observed improvement remains modest. Further research using qualitative or mixed-method approaches is recommended to explore in greater depth the factors influencing these outcomes particularly whether the limited improvement is attributable to the instructional process or to other contextual variables affecting student learning.

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REFERENCES

Abdillah, A., & Fajar, D. M. (2020). Peningkatan Motivasi Belajar Siswa di Kelas VIII SMP Negeri 1 Ajung Melalui Praktikum GLB dan GLBB. *EKSAKTA:Jurnal Penelitian Dan Pembelajaran*, *5*(1), 48–54.

Abidin, Z. (2021). Manajemen Peningkatan Mutu Pendidikan Karakter Berbasis Agama, Budaya, dan Sosiologi. *Al-Afkar, Journal For Islamic Studies*, *4*(1). https://doi.org/10.31943/AFKARJOURNAL.V4I1.167

Andrews, D., van Lieshout, E., & Kaudal, B. B. (2023). How, Where, And When Do Students Experience Meaningful Learning? *International Journal of Innovation in Science and Mathematics Education*, *31*(3), 28–45. https://doi.org/10.30722/IJISME.31.03.003

Bahri, A., & Corebima, A. D. (2015). The Contribution of Learning Motivation and Metacognitive Skill on Cognitive Learning Outcome of Students within Different Learning Strategies. *Journal of Baltic Science Education*, *14*(4), 487–500. https://doi.org/10.33225/JBSE/15.14.487

Fahmy, Z., Surahmat, S., & Karina, A. Z. D. (2020). Fabel Penumbuh Sensitivitas Moral. *JP-BSI (Jurnal Pendidikan Bahasa Dan Sastra Indonesia)*, *5*(2), 102–106. https://journal.stkipsingkawang.ac.id/index.php/JP-BSI/article/view/1898

Fauzia, N. L., & Sartika, S. B. (2020). The Moral Sensitivity of Students Through The Meaningfull Learning Model on Natural Science Subjects in Secondary School. *Proceedings of The ICECRS*, *8*, 1–5. https://doi.org/10.21070/icecrs2020488

Fauziah, O., & Ambarwati, R. (2020). Penerapan Buku Ajar berbasis Pemaknaan Materi Invertebrata Kelas X untuk Meningkatkan Hasil Belajar dan Melatihkan Kepekaan Sikap Peserta Didik . *BioEdu*, *9*(1), 41–48.

Febriani, C. (2017). Pengaruh Media Video terhadap Motivasi Belajar dan Hasil Belajar Kognitif Pembelajaran IPA Kelas V Sekolah Dasar. *Jurnal Prima Edukasia*, *5*(1), 11–21. https://doi.org/10.21831/jpe.v5i1.8461

Gonibala, A., Pikoli, M., & Kilo, A. La. (2019). Validitas Perangkat Pembelajaran Materi Ikatan Kimia Berbasis Model Pembelajaran Pemaknaan Untuk Melatihkan Sensitivitas Moral Siswa Sma. *Jambura Journal of Educational Chemistry*, *1*(1), 1–6. https://doi.org/10.34312/jjec.v1i1.2067

Habibi. (2021). Pengembangan Pembelajaran Biologi Beorientasi Model Pemaknaan untuk Mengajarkan Kemampuan Akademik dan Sensitivitas Moral. *Jurnal Pendidikan IPA*, *1*(2), 9–17.

Huges, & Nurjaman, U. (2022). Pendidikan Moral Berbasis Agama Filsafat Psikologi dan Sosiologi. *Al Qalam: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan*, *16*(1), 193. https://doi.org/10.35931/aq.v16i1.817

Lestari, N. T. (2016). Analisis Kemampuan Kognitif, Menalar dan Sikap Siswa SMP pada Materi Ekosistem Dikaitkan dengan Gender. *Prosiding Seminar Nasional Dan Saintek*, *2016:Prosiding SNPBS (Seminar Nasional Pendidikan Biologi dan Saintek*, 814–824.

Mahsul, A. (2018). Pengembangan Perangkat Pembelajaran Mata Kuliah IPA MI Berbasis Nilai

Moral. *Biota*, *9*(1), 128–146. https://doi.org/10.20414/jb.v9i1.43

Malik, A., & Chusni, M. (2018). *Pengantar Statistika Pendidikan Teori dan Aplikasi* (Cetakan Pe). Penerbit Deepublish (Grup Penerbit CV Budi Utama).

Markiah, D., Agustini, R., & Koestiari, T. (2015). Model Pembelajaran Pemaknaan pada Mataeri Sistem Organisasi Kehidupan untuk Meningkatkan Hasil Belajar dan Menumbuhkan Karakter Siswa AMP. *JPPS (Jurnal Penelitian Pendidikan Sains)*, *4*(2), 591–605. https://doi.org/10.26740/JPPS.V4N2.P591-605

Maryam. (2020). *Analisis Perilaku Menyimpang Penyalahgunaan Lem pada Remaja (Studi Kasus pada SMP Negeri 4 Palopo)*.

Muawannah. (2020). Deskripsi Teori Belajar Kognitif. *Repository.Iainkudus.Ac.Id*, *1*(69), 5–24. http://repository.iainkudus.ac.id/3814/5/5. BAB II.pdf

Nabilah, I. D. R. (2018). Kefektifan Perangkat Model Pembelajaran Pemaknaan pada Materi Sistem Pencernaan di SMPN 28 Surabaya. *Pensa E-Jurnal*, *6*(1), 38–42. https://ejournal.unesa.ac.id/index.php/pensa/article/view/22802

Naimnule, L., Oetpah, V., & Ulia, V. (2016). Peningkatan Aktivitas dan Hasil Belajar Kognitif Siswa Melalui Penerapan Model Pembelajaran Think Talk Write (TTW) di SMUK. *Juenal Pendidikan*, *1*(10), 2050–2053.

Ningsih, E. L. C., & Jayanti, U. N. A. D. (2022). Discovery Blended Learning in Biology: Its Effectiveness on Self-Efficacy and Student Learning Outcomes in the New Normal Era. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, *12*(2), 147–160. https://doi.org/10.30998/formatif.v12i2.13748

Nurrita, T. (2018). Pengembangan Media Pembelajaran untuk Meningkatan Hasil Belajar Siswa. *MISYKAT: Jurnal Imu-Ilmu Al-Quran, Hadist, Syari'ah Dan Tarbiyah*, *03*(1), 171.

Oktavia, M., Prasasty, A. T., & Isroyati. (2019). Uji Normalitas Gain untuk Pemantapan dan Modul dengan One Group Pre and Post Test. *Simposium Nasional Ilmiah Dengan Tema: (Peningkatan Kualitas Publikasi Ilmiah Melalui Hasil Riset Dan Pengabdian Kepada Masyarakat)*, *November*, 596–601. https://doi.org/10.30998/simponi.v0i0.439

Permana, A. N., Surahman, E., & Fitriani, R. (2020). Model Pembalajaran Pemaknaan untuk Meningkatkan Hasil Belajar Peserta Didik Kelas X MIPA pada Konsep Keanekaragaman Hayati. *BIODIDAKTIKA: JURNAL BIOLOGI DAN PEMBELAJARANNYA*, *15*(1). https://doi.org/10.30870/BIODIDAKTIKA.V15I1.7824

Putra, I., Ibrahim, M., & Supardi, Z. A. I. (2014). *Pengembangan Perangkat Pembelajaran IPA Biologi Berbasis Model Pembelajaran Pemaknaan dalam Pembelajaran IPA dan Penumbuhan Sensitivitas Moral*. *3*(2), 340–345.

Rahmawati, T. D., Wahyuningsih, W., & Getan, M. A. D. (2019). Pengaruh Model Pembelajaran Contextual Teaching And LearningTerhadap Hasil Belajar Matematika Siswa. *JINoP (Jurnal Inovasi Pembelajaran)*, *5*(1), 83–92. https://doi.org/10.22219/JINOP.V5I1.8021

Reynolds, S. J., & Miller, J. A. (2015). The recognition of moral issues: moral awareness, moral sensitivity and moral attentiveness. *Current Opinion in Psychology*, *6*, 114–117. https://doi.org/10.1016/J.COPSYC.2015.07.007

Rijal, S., & Bachtiar, S. (2015). Hubungan antara Sikap, Kemandirian Belajar, dan Gaya Belajar dengan Hasil Belajar Kognitif Siswa. *BIOEDUKATIKA*, *3*(2).

Saidah, M., Gayatri, Y., & Anjisman. (2015). *Penerapan Model Pembelajaran Pemaknaan Biologi Berbasis Al Quran Untuk Melatih Memampuan Menganalisis dan Mengemabangkan Karakter Siswa SMA Muhammadiyah 2 Surabaya*.

Sari, I. K. W., & Wulandari, R. (2020). Analisis kemampuan kognitif dalam pembelajan IPA SMP. *Jurnal Pendidikan Dan Pembelajaran Sains Indonesia (JPPSI)*, *3*(2), 145–152.

Sartika, S. B. (2011). Pengembangan Perangkat Pembelajaran Fisika Berorientasi Model Pembelajaran Pemaknaan untuk Meningkatkan Hasil Belajar Siswa. *Pedagogia : Jurnal Pendidikan*, *1*(1), 65–84. https://doi.org/10.21070/pedagogia.v1i1.33

Sopian, D., Jiran Dores, O., Studi Pendidikan Matematika, P., & Persada Khatulistiwa, S. (2021). *Analisis Hasil Belajar Siswa Matematika Siswa Berdasarkan Taksonomi Bloom*. *3*(2).

Sudiyono, A. H., Widodo, W., & Susantini, E. (2015). Pengembangan Perangkat Pembelajaran Model Pemaknaan pada Materi Gelombang dan Bunyi Untuk Melatihkan Sensitivitas Moral Siswa SMP. *JPPS (Jurnal Penelitian Pendidikan Sains)*, *5*(1), 811–821. https://doi.org/10.26740/JPPS.V5N1.P811-821

Syamsudin. (2018). Pengembangan Perangkat Pembelajaran IPA Berorientasi Model Pembelajaran Pemaknaan untuk Meingkatkan Motivasi dan Hasil Belajar Siswa PDF Wustha. *Jurnal Penelitian Pendidikan IPA*, *3*(2), 50–57. https://doi.org/10.26740/JPPIPA.V3N2.P50-57

Utami. (2018). Kajian Pustaka Hasil Belajar Kognitif SKI. *Repositiri IAN Kudus*, 9–49.

Wibowo, F. (2022). *Ringkasan Teori-Teori Dasar Pembelajaran*. Guepedia.

Wijayanti, D. (2015). Analisis Pengaruh Kognitif Jean Piaget Terhadap Perkembangan Moral Siswa Sekolah Dasar Melalui Pembelajaran IPS. *Trihayu: Jurnal Pendidikan Ke-SD-An*, *1*(2), 83–92.

Wiranata, A., Tandililing, E., & Oktavianty, E. (2016). Pengaruh Strategi Pembelajaran Konflik Kognitif Terhadap Peningkatan Pemahaman Konsep Siswa Pada Materi Gerak Parabola. *Jurnal Pendidikan FIsika Untan Pontianak*, 13.

Yaqin, A. (2019). Pengaruh Model Pembelajaran Akhlak Berbasis Kognitif Terhadap Moral Reasoning Siswa. *IMTIYAZ: Jurnal Ilmu Keislaman*, *3*(1), 57–85. https://doi.org/10.46773/IMTIYAZ.V3I1.29

Yuberti. (2015). Ketidakseimbangan Instrumen Penilaian Pada Domain Pembelajaran. *Jurnal Ilmiah Pendidikan Fisika Al-Biruni*, *4*(1), 1–11. https://doi.org/10.24042/jipfalbiruni.v4i1.76

Yuliani, N. Y., Tukiran, T., & Yuanita, L. (2012). Penerapan Model Pembelajaran Pemaknaan pada Pembelajaran Kimia Terhadap Pengembangan Karakter Pada Siswa SMK. *JPPS (Jurnal Penelitian Pendidikan Sains)*, *1*(2), 80–84. https://doi.org/10.26740/JPPS.V1N2.P80-84