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EVALUATION OF SCIENCE LEARNING IN MIDDLE SCHOOLS: LITERATURE REVIEW

Riska Fitriani^{1,*}, Sendi Okta Saputra², Muhammad Ahmad Javed³

- ¹ Institut Agama Islam Muhammad Azim, Jambi, Indonesia
- ² Magister Pendidikan Ilmu Pengetahuan Alam, Pascasarjana, Universitas Jambi, Jambi, Indonesia
- ³ Abasyn University, Islamabad, Pakistan

Corresponding author email: riskafitriani04.rf@email.com

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Abstract:

Learning evaluation is an activity to collect data and information about students' learning abilities, to assess the extent to which the learning program has been running, and also as a tool to determine whether educational goals and learning processes in developing knowledge have progressed as they are. Science assessments can be carried out in the cognitive, affective and psychomotor domains. This assessment provides space for students who tend to have non-academic weaknesses in science subject skills. This research was used to obtain information regarding the scope of evaluation of junior high school students' science learning. The review method was chosen to obtain research journals with the keywords scope of evaluation of junior high school science learning on reference sources Google Scholar, Elsevier, Science Direct, research gate, and publish or parish. 25 journals were reviewed based on author (year), research design, scope of evaluation, and findings. The results of the review show that the scope of learning evaluation can be carried out based on the context that wants to be assessed, such as the scope of the cognitive domain, affective domain and psychomotor domain. The scope of learning evaluation in the cognitive domain can be in the form of observation and understanding, the affective domain can be in the form of responses given by students as long as the teacher provides knowledge and the psychomotor domain in the form of skills assessment rubrics such as doing practical work after being given theory by the teacher.

Keywords: Evaluation, Learning, Natural Sciences

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INTRODUCTION

A very important component in education is efficient and quality human resources (Rini et al., 2021; Tahir, 2017; Tanti et al, 2022). Efficient and quality human resources can be formed through the learning process. The learning process is an activity to educate students in a better direction (Adeniji et al., 2018; Astalini et al., 2022; Zorluoğlu et al., 2019). A good teaching and learning process is based on the existence of good interpersonal relationships between students and teachers, students and students, and students and teachers occupy an important position for the formation of socio-emotional

conditions (Nugraha, 2018). The aim of learning, especially in science learning, is not only to provide opportunities for students to learn about facts and theories, but also to develop scientific habits and attitudes to discover and renew their practice and reasoning abilities in order to construct their knowledge and understanding (Purnawijaya, 2019; Tiara et al. al., 2022). To facilitate the development of student potential, a learning process is needed that emphasizes student activities and learning responsibilities given to students (Aprilini et al., 2022; Aswara et al., 2022; Pratiwi et al., 2021). Whether learning is successful or not in achieving its goals can be seen after evaluating the output or graduates it produces, so learning evaluation is needed.

Learning evaluation is an activity to collect data and information about students' learning abilities, to assess the extent to which the learning program has been running, and also as a tool to determine whether educational goals and learning processes in developing knowledge have progressed as they are. (Ratnawulan & Rusdiana, 2014; Phafiandita et al., 2022). Apart from that, evaluation also aims to measure the level of student achievement in a learning process, as well as to understand the extent to which students can provide assistance for student deficiencies, by placing students in learning situations that are more appropriate to their level of ability (JH & Baderiah, 2020; Phafiandita et al., 2022). The function of learning evaluation is to assist the process, progress and development of student learning outcomes on an ongoing basis, as well as being able to determine students' abilities and weaknesses in certain fields of study, apart from that, it is also able to provide information to students' parents/guardians regarding the ranking or determination of the student's graduating class. If student learning outcomes are in accordance with the stated educational objectives, then education is considered successful; but if not, it is considered a failure (Anattri et al., 2023; Fitriani et al., 2023). Therefore, the importance of learning evaluation in the educational process is in accordance with the scope of the evaluation.

Sudijono (2008) notes that in general the scope of educational evaluation in schools includes three main components, namely: First, evaluation of educational programs. Second, evaluation of the education implementation process. Third, evaluation of educational results. Meanwhile, Arifin (2012) reported that overall, the scope of learning evaluation includes: First, the learning outcome domains include the cognitive, affective and psychomotor domains. Second, the learning system includes learning programs, learning implementation processes, and learning outcomes. Third, learning processes and outcomes include attitudes, knowledge, understanding, intelligence, physical development and skills. Fourth, class-based assessments include basic subject competencies, subject group competencies, cross-curriculum competencies, graduate competencies, and life skills.

Based on the description above, it can be understood that the scope of educational evaluation includes educational programs, educational implementation, and educational outcomes. As for learning, the scope of evaluation includes cognitive, affective and psychomotor domains. Then the learning system, learning processes and outcomes as well as class-based assessments (Hidayat & Asyafah, 2019). Therefore, in learning there needs to be an evaluation. The urgency of this research lies in the need for a better understanding of the evaluation of science learning at the junior high school level. Learning evaluation is an important tool for measuring the effectiveness and efficiency of the learning process and for identifying student needs and potential. With a deeper understanding of this evaluation, we can develop more effective and relevant learning strategies, so that we can improve the quality of science education at the junior high school level in accordance with student needs and the demands of current developments. In this case, the researcher aims to evaluate, especially in the evaluation of the learning outcomes learning domain of junior high school students in science learning by reviewing based on literature. The evaluation process is carried out by studying the literature first, followed by a review process of the scientific articles that have been collected to draw conclusions according to the research theme (Firmansyah et al., 2021). Based on this, the researcher conducted an article review process by discussing the evaluation of science learning in middle schools: literature review.

RESEARCH METHOD

The method used is System Literature Reviews. This method is used with the intention of identifying, reviewing, and evaluating, as well as interpreting all existing research related to a particular topic (Wahyudin & Rahayu, 2020). The researcher then looks for several scientific articles on experimental research, descriptive, or development research, based on literature studies, for further

review and conclusions drawn on the research topic being studied. The article review process in this study discusses the scope of learning evaluation in science subjects for junior high school students.

Scientific articles that have been collected by researchers come from Google Scholar, Elsevier, Science Direct, research gate, and publish or parish. The selected articles come from references from the last 10 years totaling 25 articles and focus on the topic studied. The journal analysis technique uses a synthesis matrix. A synthesis matrix is a table/diagram that allows researchers to group and classify different arguments from several articles and combine various different elements to get an impression or conclusion about the overall article in general. (Nida, 2021; Nabila et al., 2021). The synthesis matrix is used to manage literature sources and integrate them with unique interpretations (Fitriani et al., 2023; Herlambang et al., 2021). In this research, the researcher created a table consisting of the author column (year), research design, scope of evaluation, and findings.

RESULTS AND DISCUSSION

The review process is carried out on selected reputable scientific articles based on the topics studied related to learning evaluation from the scope of the junior high school science perspective. The number of articles reviewed was 25. The following are the results of a review of articles in this research.

Table 2. Article Review Results

Author (Years)	Research Design	Scope Evaluation	Findings
Haryadi & Nurmala (2023)	This type of research is qualitative descriptive research with literature study or methods literature review	Evaluation Cognitive domain learning	The research results show that the use of the application quizizz as a physics learning evaluation tool has an effect on the results student learning. The research results show that students are very enthusiastic in working on
Zakaria et al., (2023)	The type of research used is descriptive qualitative research	Evaluation Cognitive domain learning	questions and are able to train students' cognitive and concentration in answering questions, improving learning outcomes.
Rahma et al., (2023)	The research method used was interviews with the deputy principal for curriculum and science subject teachers who focused on the implementation and impact of project-based learning programs on student learning outcomes, student involvement and innovation carried out by	Evaluation Psychomotor domain learning	This program also has a positive impact on student achievement by increasing their skill scores and understanding through science lessons. Science teachers responded positively to this innovation and felt that project-based learning provides better opportunities for students to

Author (Years)	Research Design	Scope Evaluation	Findings
	science subject teachers.	•	develop creativity, problem-solving skills and teamwork, so that it can be used as a guide for other schools that want to develop learning through project-based learning in their curriculum.
Rosmana et al., (2023)	The research method used is Classroom Action Research which is designed in 2 cycles, each cycle consisting of 4 stages	Evaluation Cognitive domain learning	Using Wordwall as a learning medium in the form of evaluation can increase enthusiasm and improve student learning outcomes.
Mahfud & Rohmania (2022)	Researchers use Research and development (R&D) research. The development model chosen by researchers is using the ADDIE model (Analysis, Design, Development, Implementation, Evaluation)	Evaluation Cognitive domain learning	The evaluation instrument developed has a positive effect on learning outcomes The cognitive abilities of class
Huda (2022)	This research is classroom action research which consists of two research cycles. Each cycle consists of planning, implementation, observation and research reflection. Each cycle consists of two meetings.	Evaluation Cognitive domain learning	The results of the two cycle research can be concluded that there has been an increase in student learning outcomes using Quizzizz media as an application for learning evaluation activities. The increase in student learning outcomes shows that students' understanding of the learning material has increased. Average learning
Amin & Hadiwinarto (2022)	The method used is quantitative descriptive	Evaluation Affective domain learning	independence for class VII.5 students at SMP Negeri 3 Lubuklinggau is in the good category with a score of 78.

Author (Years)	Research Design	Scope Evaluation	Findings
Fadlilah, Sabtiawan, & Widodo (2021)	type study descriptive quantitative with descriptive analytical method	Evaluation Cognitive domain learning	Conclusion, class students VII SMPN 3 Lubuklinggau has high learning independence in the eyes science lessons. Evaluation scores for online and offline distance learning on heat and transfer materials were obtained by students in class VII H and VII I getting scores above the KKM From the results of student learning evaluations, the reliability test of online learning assessment instruments with offline learning did not provide consistent results because there were obstacles in online learning. Evaluation results Participants' scientific literacy
Hidayani, Jamaluddin, & Ramdani (2021)	This type of study is a descriptive quantitative study using survey method	Evaluation Cognitive domain learning	SMPN 2 students are categorized tall that is with an average score for 75.95 class VII and an average score of 73.01 for class VIII Results research on 3 basic
Ulfah & Suryantoro (2021)	Experimental method with his type of research using the selected pre-experimental design is one group pretest-posttest (OneGroup Pretest-Posttest Design).	Evaluation Cognitive domain learning	competencies, namely Inheritance of Characteristics, Electricity Static and Dynamic Electricity show the N-Gain score obtained effective enough so it can be concluded that there is

Author (Voors)	Dagaarah Dagian	Scope Evaluation	Findings
Author (Years)	Research Design	Scope Evaluation	increased learning
			outcomes and
			students experience
			cognitive
			development in
			understanding the
			material.
			The results of the
			research show that
			the science learning
	The method used in		material at SMPN 18
D ' II 1' .'	this study is a	E 1	Bengkulu City is in
Prasani, Herdiyanti,	qualitative method.	Evaluation	the above average
Puspita, & Walid,	The data analysis	Cognitive domain	category with 27
(2021)	technique used is	learning	students getting
	descriptive		scores between 80-
	qualitative technique.		85 and 5 students
			getting scores
			between 86-90.
	Study		Evaluation on
	development this		science process
Ramadhani, Utama,	conducted at SMPN	Evaluation	ability of participants
Khotimah, Hakiem,	5 Ponorogo with use	Psychomotor	studied at SMPN 5
& Cahyani (2021)	4D methods include	domain learning	Ponorogo belongs
•	define, design,	_	tall
	development, and disseminate		
	disseminate		Connection
			Increased learning
			outcomes Middle
		T 1 .:	school students with
g 1: (2020)	Quantitative	Evaluation	Application of
Sunardi (2020)	approach with	Cognitive domain	Evaluation Media
	correlational type	learning	Learning Innovative
			Quizizz shows very
			strong correlation of
			0.805.
			Evaluation online
			learning for class VII
			students at SMP
			Negeri 1 Tlanakan is
	A	Essalas et a s	more dominant
Wachidah et al.,	Approach	Evaluation	effective use test
(2020)	qualitative with	Cognitive domain	description because
	descriptive method	learning	students answer
			more easily and develop their
			knowledge with
			reason
			alone.
	Teacher	Evaluation	Research results
Kusumawati (2020)	eye science class VII	Cognitive domain	show strong concern
. ,	lesson. And students	learning	Among quality
		-	- ·

Author (Years)	Research Design	Scope Evaluation	Findings
	from 6 junior high	*	preparation,
	schools in Bantul		implementation and
	Regency with each		outcomes of study
	school took 2 or 3 classes with		students. Student
	proportional random		study results were categorized as good
	sampling technique.		(t-score = 50.59).
	sampling teeningue.		Implementation
			valuation
			learning at SMPN 3
			Tanjung Sakti Pumi
			Lahat School, South
	qualitative approach		Sumatra based on initial observation
Widiyawati, Putri, &	method,	Evaluation	obtained by 75% of
Walid (2020)	with type study	Cognitive domain	students already
,	descriptive	learning	capable of reaching
			average learning
			standards and there
			are also some students who haven't
			reached average
			standard _
			Implementation of
			categorical science
			learning
			very well (93%) indicated from
	Type of study		suitability Among
	evaluation learning		implementation
	Knowledge	Evaluation	learning with
Utami & Wardani	Knowledge Natural	Affective and	implementation
(2019)	use	cognitive domain	process standards
	the CIPP model is study	learning	learning, (3) results study participant
	with a qualitative		educate has Fulfilled
	approach		Criteria Minimum
			completeness
			(KKM) with actual
			categorical achievement of 91%.
			very good
	Type study		Evaluation results
	development this		study
	refers	Evaluation of	cognitive student
Setyowati, Zaini, & Putra (2019)	procedural model	cognitive,	already reached
	consists of 6 phases namely a) identify	affective, and	KKM value . Assessment results
1 uu (2017)	problem, b)	psychomotor	performance
	formulate	domain learning	psychomotor already
	purpose, c) design		reach very category
	and develop		

Author (Years)	Research Design	Scope Evaluation	Findings
	model, d) conducting tests, e) evaluating results, and f)		OK. Assessment results spiritual attitude (taste
	communicate test		thanks) included
	results		very good category . Results
			evaluation behavior character (discipline,
			and not quite enough
			answer) incl category
			Evaluation results
			process on implementation
			science learning in SMP Negeri 4
	This study is a type of study	Evaluation of	Mempawah Downstream already
Amalia, Mering, &	evaluation (evaluation research).	cognitive, affective, and	including in very good category
Astuti (2019)	Approach used is qualitative	psychomotor domain learning	Activity introductory and core
	approach	domain learning	activities included in
			very good category, meanwhile for
			activity Closing including in
	study development		category good results analysis
	that uses a 4-D development model		response participant educate
Periadi, Yahya, &	consisting of on stage (definition),	Evaluation	is 91% of participant students totally agree
Erfan (2018)	design stage	Affective domain learning	to evaluate media-
	(design), develop stage (development),	-	based e-portfolio
	and stage disseminate (spread)		
			Evaluation activity study VIII G students
	Study class action		of SMP Negeri 1 Banjarmasin on the
Purnamasari,	with the Hopkins model, consisting on	Evaluation	material light and tools optical
Arifuddin, & Hartini (2018)	two cycles with each cycle two	Affective domain learning	increase moment applied learning
	meeting		model cooperative
			type group investigation
			(GI)

Author (Years)	Research Design	Scope Evaluation	Findings
Nurwahyuningsih & Ishartiwi (2017)	Type of study R & D (Research and Development) with models development of Alessi and Trollip.	Evaluation Cognitive domain learning	product effectiveness proven through enhancement results study reached number average pretest score of 65.46 and posttest of 79.53. Profiles
Salamah, & Sarwi (2017)	Research design using R&D (Research and Development) and engineering Simple Random Sampling analysis	Evaluation Cognitive domain learning	ability literacy science state junior high school students in Semarang on aspects of science as stem body knowledge belongs quite well, meanwhile other aspects are in categories less.
Hapsari, & Nurcahyanto (2016)	Study Evaluation with the model used is Countenance Stake	Evaluation Psychomotor domain learning	Evaluation sufficient ICT application support Scientific skills, but must permanently need improvement
Luke (2015)	This study is an evaluation study with the Counter Stake model. The analysis technique used is descriptive qualitative	Evaluation Cognitive domain learning	results study participants educate not yet Fulfill Criteria Minimum completeness (KKM) with actual achievement of 65% category enough.

Kindly overall, Arifin (2012), limits room scope evaluation learning in four components large, among others; (1) result domain learning, (2) learning system, (3) process and results learning, (4) assessment based class. And in this article Compiler limit room scope Evaluation such, and only focused on room scope in the result domain study with sample special students School Intermediate First (Junior High School), Special in Science (Physics and Biology) subjects general. Based on Analysis Results of the 25 articles, then the results of the discussion Analysis his are.

Cognitive Domains

Cognitive Domain: From the results of the analysis of 25 articles, 19 articles with a cognitive domain were obtained, while the Cognitive Domain demands the ability of students to be able to recognize or know existing concepts, principles and facts. So what this means is that the cognitive domain that is more demanded is the ability regarding the knowledge that students have. The cognitive domain is very important in the scope of learning evaluation because with the cognitive domain a teacher can evaluate students using test or test methods. non-test. From the 19 articles analyzed regarding the cognitive domain, it can be seen that the cognitive domain is very important for teachers to use, this domain has succeeded in improving student learning outcomes compared to other domains, because this

domain of course demands brain performance in understanding knowledge, for example from one the article above is from the article by Zarkasi et al. (2023) using a sample of class VIII MTs NW 2 Kembang Kerang. In class VIII, educators use the quizizz application as a learning medium. It turns out that the use of the Quizizz application in class VIII has been used during distance learning. In the field of education, Indonesia should be more advanced following technological developments or the industrial revolution 4.0. In this research, the problem that will be discussed is the use of the Quizizz application in evaluation learning in class VIII. From the research results, students are very enthusiastic in working on questions and are able to train students' cognitive and concentration in answering questions, improving learning outcomes. Apart from that, Hizbullah Huda (2022) using a sample of 32 class VIII B students, used Classroom Action Research, with findings in the cognitive domain, there was an increase in student learning outcomes by using quiz media as an application for evaluating learning activities. The results of increasing student learning outcomes show that students' understanding of learning has increased. This has proven that the cognitive domain certainly has a very big influence on learning evaluation, and this domain is always used by teachers in evaluating students' learning.

Affective Domains

Affective Domain from the results of the analysis of 20 articles 6 articles were obtained with the affective domain, As for the Affective Domain his that is internalization pointing attitude to direction growth heart and it happens when participant educate Becomes aware about received value, then take attitude so that Becomes part of himself in the form of value and defines Act behavior. So, the point is in the affective domain which is more evaluated is attitude and behavior in demand students, this domain relates to interest and motivation possessed by students in receive, respond and respond about received knowledge from his teacher, because that is, the affective domain it is also very important inside room scope evaluation Learning, because besides the teacher wants to know cognitive abilities (knowledge) held by students, teachers also want to know abilities will attitudes held by students after receiving various knowledge given by the teacher. For example from one above article from article Yudi Sofyan Periadi, et al (2018) with sample class VIII students of SMP Negeri 3 Lopok, with use study 4D development with findings in the affective domain that is, yield analysis response participant educate is 91% ie participant students totally agree to evaluation based on e-portfolio media, of this has proven that the affective domain also carries enormous impact and influence within. To do evaluation learning, because teachers cannot only see from a cognitive corner view only, but also must be equipped with the affective domain it's inside to do evaluation learning.

Psychomotor Domain

As for the Psychomotor Domain, from the results of the analysis of 20 articles, 5 articles were obtained with the psychomotor domain. The psychomotor domain emphasizes the skills possessed by students in learning. Apart from that, the psychomotor domain is related to students' physical activity when carrying out activities such as counting, reading, writing and practicing. Therefore, the psychomotor domain is also very important in carrying out learning evaluation, because apart from teachers carrying out evaluations in the cognitive domain and affective domain, teachers also carry out evaluations in the psychomotor domain in looking at the skills possessed by students. For example, from one of the articles above from Rahma et al. (2023) with the research sample being students at At-Taqwa Islamic Middle School, Surabaya. The research method used was interviews with the deputy principal for curriculum and science subject teachers who focused on the implementation and impact of projectbased learning programs on student learning outcomes, student involvement and innovation carried out by science subject teachers. The research results show that the project-based learning program at the At Taqwa Integrated Islamic Middle School in Surabaya was successful in generating student interest and involvement in the learning process. This program also has a positive impact on student achievement by increasing their skill scores and understanding through science lessons. Science teachers responded positively to this innovation and felt that project-based learning provides better opportunities for students to develop creativity, problem-solving skills and teamwork, so that it can be used as a guide for other schools that want to develop learning through project-based learning in their curriculum.. From this it has been proven that the psychomotor domain also has a very significant impact where teachers evaluate students' learning, because teachers not only look at the cognitive domain and affective domain, but teachers also look at the psychomotor domain in evaluating learning, because students have different abilities. varies in learning, there are students whose scores are higher in the cognitive domain, but lower in the affective and psychomotor domains, likewise there are students whose scores are low in the cognitive domain, but their scores are high in the affective and psychomotor domains, therefore, teachers are required to carry out learning evaluations through the 3 scopes of learning evaluation, namely the cognitive domain, affective domain and psychomotor domain.

The education sector requires assessment instruments. Because assessment is a very important part of educational practice and is carried out through assessment to improve the quality of learning and to improve the quality of teaching (Utin et al., 2021). Teachers are one of the main factors that really determine students' success in learning which has an impact on the quality of the learning process (Chen et al., 2022; Wati, 2021). The quality of the learning process carried out by teachers at school is influenced by the learning plans prepared by the teacher. Learning that is not well designed can result in malpractice in learning. Learning evaluation is the process of collecting data and information in making decisions about learning activities, including programs, curriculum, learning methods and other school activities (Gage & Berliner, 1998). Learning evaluation aims to determine the effectiveness and efficiency of the learning system which includes objectives, materials, methods, media, learning resources, learning environment and assessment systems in learning, as well as knowing the level of knowledge, skills, attitudes and values of students for certain types of education (Arifin, 2012). In carrying out learning evaluation activities, teachers need good and targeted evaluation so that they are right on target. There needs to be a good concept in learning evaluation. This concept consists of the objectives of evaluating the learning process and the stages of implementing the evaluation. To be able to measure students' learning success well, good measuring tools are needed. Otherwise, the information received cannot be trusted and may not provide a true and fair picture of learning outcomes. Assessing student learning outcomes is one of the routine tasks that educators must carry out in the world of education. Assessment of learning outcomes is carried out, among other things, to diagnose students' strengths and weaknesses, monitor students' learning progress, and assess the achievement of curriculum goals, especially those related to skills.

Currently, there are many modern or technology-based assessment tools that teachers can use to provide assessments or evaluations to students. This can certainly make teacher assessments more effective and efficient. The use of competency-based assessment tools is also expected to make tests more comfortable for students (Ulfah et al., 2021). Another study by Chotimah (2018) found that using e-learning based learning will make the learning assessment process more efficient, because students can access it from anywhere. Some modern technology-based evaluation tools that can be used by teachers to create quizzes or record students' opinions include kahoot, quizizz, socrative, polldaddy, verso, poll everywhere, google form, classmaker, and so on (Chaiyo & Nokham, 2017). Teachers can use these tools to welcome modern assessments that are more interesting compared to making quizzes using conventional paper or blackboards. Of course, in implementing this technology-based modern assessment, teachers must also pay attention to 4C skills in 21st century learning. Tools This assessment can also be developed to provide formative assessments to students.

CONCLUSION

Based on the results and discussion above, it can be concluded that the scope of learning evaluation is divided into 3, namely the cognitive domain, affective domain and psychomotor domain, each of these scopes cannot be separated from one another because they are interconnected and related to each other. For example, there are students whose scores are high in the cognitive domain, but whose scores are low in the affective and psychomotor domains, and vice versa, students whose scores are high in the affective and psychomotor domains but whose scores are low in the cognitive domain, as are students whose scores are high in the cognitive domain. psychomotor domain but the scores in the cognitive and affective domains are still low, of course one of these domains can help the student's scores because the teacher does not only look at one domain, but must look at all three domains of the scope of learning evaluation, because of the abilities they have students are different from each other and not all students have the same abilities in the cognitive, affective and psychomotor domains. Therefore, the authors provide the right solution to readers, especially for teachers, in conducting

learning evaluations they should use and use all domain is the scope of this learning evaluation and does not only use one domain in evaluating learning for students.

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