

A Systematic Literature Review: Implementation of Local Wisdom-Based Educational Media in Science Learning to Strengthen Students' Characters

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Abstract— This study aims to examine the implementation of educational games based on local wisdom in science learning to strengthen students' character. The method used is to review the literature. Method review literature identifies, examines, evaluates, and interprets all existing research on an interesting phenomenon, with questions that study certain relevant ones. The number of articles analyzed in this research was nine articles. Implementation of educational media in learning in the form of teaching models and modules, games and traditional food. Based on the results of the analysis, several forms of local wisdom were obtained, which were integrated into educational media, such as the rumpe ritual, traditional Minangkabau food: Ampiang Dadiah, the traditional ball boy game, local wisdom Trikaya Prisudha, local wisdom of the coastal area Puger, traditional games of tug of war, making Madurese shrimp paste, and local wisdom of Manongkah shellfish. The character values that can be instilled by implementing educational media based on local wisdom in learning are twenty-four character values. The character values most often instilled in implementing.

Keywords— Educative Media Based on Local Wisdom; Science Learning; Character Strengthening.

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Introduction

Local wisdom is a critical context that makes it easier for students to learn according to their immediate environment [1]. Local wisdom is the ideas and values or life behaviour of local communities that are considered of good value and wise so that they can be accepted, followed, and serve as guidelines for community behaviour in everyday life [2]. However, the existence of local culture or wisdom is increasingly being marginalized by technological developments, so people tend to start abandoning the local wisdom they already have. Therefore, the integration of local culture in learning must be pursued in the design and implementation process to preserve local culture in learning activities [3].

Learning is a core activity between students and teachers to achieve common goals [4]. Local wisdom-based science learning integrates regional local wisdom characteristics into science learning [5]. Utilizing local wisdom in learning management is an excellent approach to instilling in students the values of love for the country [6]. Local wisdom values included in the teaching and learning process will make it easier for students to obtain knowledge and information. In addition, the integration of local wisdom can make learning more interesting and enjoyable [7,8]. Science learning based on local, regional wisdom can be used as a learning reference to foster and instil local wisdom and character values in students [9].

Character is a human personality related to the creator, the personal self, and the environment. Character education is a country's hope for its nation, where character education will produce students who are highly expected and where these students can balance their cognitive, affective, and psychomotor attitudes so that they can compete later when they grow up [10]. Character education also means conscious efforts planned and directed through a learning environment for the growth and development of all human potential who have good personality traits, morals, and character and have a constitutive positive effect on nature and society [11]. Character education can be implemented in all educational environments, both formal and non-formal.

The reality in the field shows that educational media based on local wisdom in science learning still needs to be carried out. Based on this, a study is required regarding implementing educational media based on local wisdom in science learning to strengthen students' character. Various forms of implementation in this research can allow teachers to integrate educational media into science learning.

Research Methods

This research is a literature study or literature review of the research results of various articles regarding implementing

educational media based on local wisdom in science learning. The method used is a literature review. The literature review method is used to identify, review, evaluate, and interpret all existing research on the topic area of a phenomenon of interest, with certain relevant research questions [12]. The articles reviewed are relevant to implementing educational media based on local wisdom in science learning. They were obtained from various national and international journals.

Results and Discussion

Discussion of research results includes literature studies that link one research to another according to the study topic. The key term used in this research is educational media based on local wisdom in science learning to strengthen students' character. Then search for literature relevant to the research according to key terms on Google Scholar. After that, evaluate the article's quality, summarize the literature, and write the study results in Table 1.

Table 1. Literature Review

NO	Researcher	Educational Media Based on Local Wisdom	Science Learning	Character Values	Character Category
1	Supandi et al. (2019)	Tumpe Ritual Media	Temperature and heat	Be devoted to your ancestors	1
				Environmental care	2
				Togetherness	3
2	Rokhmat (2006)	Educational Park	Physics	Not quite enough answer	4
				Work hard	5
				Discipline	6
				Diligent and independent	7
				Creative and innovative	8
3	Eliza et al. (2024)	Traditional Minangkabau food: Ampiang Dadiah	Skills in the scientific process of making food	Behave yourself	9
4	Mudjid et al. (2022)	Traditional Boy's Ball game	Physics: Impulse and Momentum	Emotional development	10
				Togetherness	3.1
				Cooperate	11
				Patience	12
				Responsibility	4.1
				Persistent	13
				Not easily give up	14
5	Mahardi et al. (2019)	The Games Tournament model is based on the local wisdom of Trikaya Prisudha	IPA	Not quite enough answer	4.3
				Cooperate	11.1
				Competition Healthy	15
				Think wise	16
				Said Honest	17
				Behave Good	9.1
6	Saputra et al. (2017)	Science module based on local wisdom of the Puger coastal area	Static Fluid concept transport system	Environmental care	18
				Cooperation	19
7	Agustini (2020)	Traditional game of tug of war	Movement and style	Togetherness	3.2
				Cooperate	11.2
				Patience	12.1
				Mutual respect	20
				Spirited big for accepting win/loss	21
				Care environment	18.1
				Development of social attitudes	22

NO	Researcher	Educational Media Based on Local Wisdom	Science Learning	Character Values	Character Category
8	Arifin (2019)	Making Madura Shrimp	Biotechnology, the concept of matter (atoms, ions, molecules), the concept of mixtures and single substances (elements and compounds), additives and addictive substances	Work hard	5.1
				Discipline	6.1
				Responsibility	4.4
				Diligent and independent	7.1
				Creative and innovative	8.1
				Cooperate	11.3
				Persistent	13.1
				Not easily give up	14.1
				Think wisely	16.1
				Tell the truth	17.1
				Environmental care	18.2
9	Ilhami et al. (2021)	Local wisdom of Manongkah shellfish	Interaction of living things with the environment	Conservation values natural	23
				Awareness For No Destroying Mangroves	24

Based on Table 1, the results show that educational media based on local wisdom can be implemented in science learning. Science learning will be more meaningful by using local wisdom contexts. Apart from that, learning science based on local wisdom can introduce local potential or wisdom to students so that it can be explored and developed local wisdom values as strengthening students' character values.

The analysis of nine articles found that educational media based on local wisdom in science learning can be used as an alternative creative and innovative learning media to strengthen students' character. The first research results stated that the rumpe ritual as a medium for learning science on temperature and heat material could strengthen students' characters such as devotion to ancestors, caring for the environment, and togetherness [13]. Furthermore, the results of the second research stated that local wisdom in the Puger coastal area could be used as a science learning medium in modules with static fluid concept transportation system material. Science learning based on local wisdom in the Puger coastal area can instil students' character values, such as caring for the environment and cooperation [14]. In line with the third research in Indragiri Hilir Regency, Riau, it was stated that the local wisdom of Manongkah Shellfish could be used as a source for ethnoscience-based science learning. This science learning is related to material on the interaction of living things with their environment, which can strengthen students' character values, such as nature conservation values and awareness of not damaging mangroves [15].

The results of the fourth research state that using game-based physics educational parks in kindergarten and elementary school can instil the character values of responsibility, hard work, discipline, perseverance and independence, creativity and innovation [16]. Educational media based on local wisdom implemented in science learning can also be in traditional games, including the boy ball game. The results of the fifth research state that science learning related to this game is about impulse and momentum. Besides being fun and attracting students' attention to learning, science learning by implementing the boy ball game can also strengthen character values such as togetherness, cooperation, patience, responsibility, persistence, and not giving up easily [17]. Based on the results of the sixth research, another traditional game that can be implemented into science learning is the traditional game of tug of war related to movement and force. Instilling character values in science learning uses the implementation of the traditional game of tug of war in the form of togetherness, cooperation, patience, mutual respect, having a big spirit to accept victory/defeat, caring for the environment, and developing social attitudes [18]. Furthermore, the results of the seventh research state that the local wisdom of Trikaya Prisudha can also be used as a science learning model in a team games tournament. Character values can be instilled through learning the team games tournament model based on Trikaya Prisudha local wisdom, such as responsibility, cooperation, healthy competition, thinking wisely, telling the truth, and behaving well [19].

The implementation of educational media in science learning, besides utilizing local wisdom in the form of ancestral culture in rituals and traditional games, can also use local wisdom in traditional food. According to the results of the eighth research, making Madura shrimp paste can be used as a source of science learning about biotechnology materials, material concepts (atoms, ions, molecules), concepts of mixtures and single substances (elements and compounds), as well as additives and addictive substances. This innovation is a unique attraction in the learning process, so it can increase students' learning motivation. Cultivating character in learning using learning resources based on local wisdom for making Madurese shrimp paste can include working hard,

disciplined, responsible, diligent and independent, creative and innovative, cooperative, persistent, not giving up easily, honest, caring about the environment, and wise in utilizing natural resources [20]. Apart from that, based on the results of the ninth research, local wisdom in the form of traditional food that can be used as a resource for learning science is traditional Minangkabau food: Ampiang Dadih. The science material related to local wisdom is biotechnology, which focuses on scientific process skills in making food. Strengthening character values in science learning based on local wisdom of traditional Minangkabau food: Ampiang Dadih in the form of developing good behaviour and emotional development [21].

Based on the analysis of the articles that have been carried out, from the nine articles, several local wisdoms have been obtained which have been integrated into educational media, such as the Rumpe ritual, traditional Minangkabau food: Ampiang Dadih, the traditional ball boy game, the local wisdom of Tri kaya Prisudha, the local wisdom of the Puger coastal area, the traditional game of tug of war, making Madura shrimp paste, and the local wisdom of Manongkah shellfish. Twenty-four character values can be instilled by implementing educational media based on local wisdom in learning, namely (1) filial piety to ancestors, (2) caring for the environment, (3) togetherness, (4) responsibility, (5) working hard, (6) discipline, (7) diligent and independent, (8) creative and innovative, (9) good behaviour, (10) emotional development, (11) cooperation, (12) patience, (13) persistent, (14) not easy surrender, (15) healthy competition, (16) think wisely, (17) tell the truth, (18) care about the environment, (19) work together, (20) respect each other, (21) have a big heart to accept victory/defeat, (22) development of social attitudes, (23) nature conservation values, and (24) awareness not to destroy mangroves. The character values most often instilled in implementing local wisdom in learning are the characters of responsibility and cooperation. Responsibilities are defined as the ability to do something earnestly [22]. Meanwhile, cooperation is one form of interaction and interrelation of social events between one individual and another [23].

Conclusion

The results of the article analysis show several implementations of educational media in learning, such as teaching models and modules, games, and traditional food. Forms of local wisdom that are integrated into educational media are the rumpe ritual, traditional Minangkabau food: Ampiang Dadih, the traditional ball boy game, the local wisdom of Tri kaya Prisudha, the local wisdom of the Puger coastal area, the traditional game of tug-of-war, making Madura shrimp paste, and the local wisdom of Manongkah shellfish. The character values that can be instilled by implementing educational media based on local wisdom in learning are twenty-four character values. The character values most often instilled in implementing local wisdom in learning are the characters of responsibility and cooperation.

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