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Analysis of The Need for Chemistry Learning Media Based on Local Wisdom in Sitaro Islands

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Abstract: *In the era of technology that continues to develop rapidly, students' needs for technology-based chemistry learning media are increasingly urgent. However, it cannot be denied that local wisdom also plays an important role in education. This research aims to analyze the needs of SMA MIPA students in Sitaro Regency for chemistry learning media based on technology and local wisdom. The research method used is quantitative descriptive. The results of data analysis show that the average score for all statement items is 3.99 on a Likert scale (maximum score 5), meaning that students generally agree with the use of learning media based on local wisdom. Further analysis shows that there is a significant difference (sig 0.05) in the perceptions of female and male students. Female students have a higher perception regarding the importance of using learning media based on local wisdom in learning chemistry. Likewise, students in classes X, XI, and XII showed differences in student perceptions (sig 0.05). Class XII students (4.01) have a higher perception than class XI students (3.98) and class X (3.97). Based on this research, it was concluded that SMA MIPA students in Sitaro Regency need chemistry learning media based on local wisdom.*

Keywords: *Chemistry; Instructional Media; Learning; Local Wisdom*

INTRODUCTION

Indonesia, with its strong local wisdom, has the potential to support the implementation of the independent curriculum in achieving national learning goals. Local wisdom plays an important role in education, especially in science learning ((Yampap & Haryanto, 2023); (Nawas et al., 2022)). In the context of chemistry learning, the use of learning media that integrates local wisdom can provide a more meaningful and relevant learning experience for students (Rahmatin et al., 2022) The current problem is that students' needs for chemistry learning media based on local wisdom have not yet become the focus of attention of educators in Indonesia (Tahya et al., 2022) Curriculum developers ensure that chemistry education can provide a deeper and more applicable understanding for students (Ginting et al., 2021).

Problems related to students' need for chemistry learning media based on local wisdom can be caused by several factors. First, lack of access and understanding of

technology to obtain information is the main obstacle (Sawitri et al., 2019). Students may not have adequate access to technological devices or lack an understanding of how to use technology in chemistry learning (Zubaidah, 2019). Second, a curriculum that does not emphasize the integration of technology with local wisdom is also a factor causing this problem ((Papilaya & Tuapattinaya, 2022); (Wahyudiati & Qurniati, 2023)) If the existing curriculum does not pay attention to the importance of integration between technology and local wisdom in chemistry learning, then students will have difficulty developing relevant and applicable understanding (Deviana & Sulistyani, 2021). Third, the teacher's inability to integrate technology and local wisdom also contributes to this problem. If teachers do not have the knowledge, skills, or opportunities to integrate technology and local wisdom in chemistry learning, then students' needs will not be met.

Another problem in chemistry learning is related to adequate resources such as technological devices (Sartika, 2019), teaching materials (Widiastuti, 2020) and relevant local resources (Ejidike & Oyelana, 2015) which are also obstacles in meeting students' needs for learning media. chemistry based on technology and local wisdom (Surata & Arjaya, 2018) Lack of understanding of the importance of local wisdom in learning is also a factor causing this problem. Sometimes, local wisdom is considered irrelevant or ignored in the context of chemistry learning. In fact, integrating local wisdom can provide a more real context and application for students (Zuhaida et al., 2023). In overcoming this problem, it is important to adopt a holistic approach that pays attention to access to technology, integration of local wisdom in the curriculum, development of teacher skills, adequate resource allocation, and understanding of the importance of local wisdom in chemistry learning.

To answer students' needs for chemistry learning media based on technology and local wisdom, several steps are needed that can be taken. First, educators and curriculum developers can enrich and integrate chemistry content with relevant technology, such as the use of interactive simulations, learning videos, or mobile applications. The use of technology-based learning media can increase students' interest and understanding of chemistry. Apart from that, it is also important to incorporate local wisdom into the context of chemistry learning (Hanum, 2020). Integrating local wisdom in chemistry learning can provide real and relevant context for students, increasing the connection between chemical concepts and their environment and culture (Wahyudiati & Qurniati, 2023).

An important step in learning chemistry, involving students actively in the learning process. Technology-based learning media, such as online learning platforms or interactive tools, can encourage active participation and case-based problem solving. The use of technology-based learning media encourages student involvement in virtual chemistry experiments and increases understanding of concepts (Permana et al., 2021). Furthermore, educators can utilize local resources in developing learning media. For example, the use of local natural materials or traditional knowledge in chemistry experiments or demonstrations can enrich students' learning experiences. Based on Suryana's research in 2022, the use of local natural materials in chemistry learning can increase students' interest and motivation and strengthen the connection between chemistry and their environment.

The final step involves training and professional development for educators. This training can include the use of technology in chemistry learning, integration of local wisdom, and active learning strategies. Research by shows that educators who are skilled in using technology-based learning media and local wisdom can provide a more meaningful learning experience for students. (Nabila et al., 2021). By following these steps, it is hoped that students' needs for chemistry learning media based on technology (Silaban et al., 2022). and local wisdom can be met.

Through a holistic and innovative approach, chemistry learning can become more interesting, relevant and applicable for students.

Learning media that integrates technology with local wisdom can provide a more meaningful, relevant and applicable learning experience for students. However, to meet this need, it is necessary to carry out an in-depth analysis of the factors that influence student needs, the challenges they face, and the steps that can be taken to overcome these problems. In this research, we will analyze students' needs for chemistry learning media based on technology and local wisdom with the aim of providing a deeper understanding of the challenges and potential solutions in chemistry education. Through a better understanding of student needs, it is hoped that effective and innovative learning strategies can be developed to increase students' understanding, interest and motivation in studying chemistry and maintain valuable local wisdom heritage.

LITERATURE REVIEW

Chemistry Learning Media

Good learning media will improve student learning achievement (Nadrah, 2023) The characteristics of good learning media are that they fulfill fixative characteristics which explains the capabilities of the media record, store, preserve and reconstruct an event as well object (Andriani et al., 2022) manipulative characteristics that can transform something event or object (Supriadi et al., 2022) and distributive characteristics which describes about distribution of media to a large number of students by giving an experiential stimulus that is almost the same as an event(Nasution & Jahro, 2023).

The chemistry learning media that are widely used are technology-based ((Chan et al., 2021); (Saputra et al., 2021)) , based on environmentally friendly used goods (Nuswowati et al., 2023) based on local wisdom to promote local culture (Mulatsih et al., 2023). Learning media helps teachers convey material in textbooks such as modules, student worksheets and other textbooks ((Purba & Sembiring, 2023); (Nainggolan et al., 2019)). Each type of learning media has advantages and disadvantages, so before developing and implementing it a needs analysis is needed (Dewi, 2022).

Indonesian Local Wisdom

Local wisdom is the view of life of a community in a certain area regarding the natural environment in which they live, which is often referred to as local culture that has been passed down from generation to generation ((Pasaribu et al., 2022); (Yusuf, 2023)). Indonesia has thousands of local-wisdom spread across 38 provinces. One of the provinces in Indonesia is North Sulawesi with a total of 11 districts, which has cultural diversity which is known as local wisdom.

One of the districts in North Sulawesi is the Sitaro Islands District. This district has a lot of local wisdom which has been preserved until now. One of the many local wisdoms in this area is the "Palose" (mutual cooperation) tradition, which is local community wisdom which is believed to be a culture of cooperation between residents in carrying out work.

This local wisdom has never been utilized in the learning process, so its effectiveness in the learning process has never been studied. In fact, research results show that learning based on local wisdom can improve learning achievement and interest in learning (Bulkani et al., 2022). The advantage of learning chemistry based on local wisdom is that it increases students' interest, motivation and activeness in understanding chemical material related to everyday life so that learning becomes more meaningful.

METHODS

The research carried out aimed to analyze the needs of SMA MIPA students in the Island Region in Sitaro Regency for chemistry learning media based on technology and local wisdom. This research

is quantitative descriptive. In this research, an analysis of the needs of SMA MIPA students in the archipelagic region in Sitaro Regency was carried out regarding chemistry learning media based on technology and local wisdom.

This research was conducted in June-July 2023. The population of this study was all high school students in the Island Region in Sitaro Regency. The research location was sampling from 1 school in Siau Tagulandang Biaro district, namely SMA N 1 Tagulandang and Sangihe Talaud Regency, namely SMA N 1 Tabukan Utara. The two schools were selected using purposive sampling on the grounds that they were superior and favorite schools in the area.

The research was carried out first by identifying needs through collecting initial information about student needs through literature studies and discussions with chemistry lecturers to be able to design questionnaires, next was Instrument Development by designing and testing questionnaires to ensure the validity and reliability of the instrument. Data will be collected through questionnaires filled out by students themselves. Next is data collection. Data was taken using Purposive Sampling Technique (DeCoito & Estaiteyeh, 2022) states that the Purposive Sampling Technique is a technique for sampling data sources by making certain considerations that involve active participation of students in conveying their needs and preferences for chemistry learning media. The samples were taken from two representative schools in the district. Questionnaires were distributed by asking questions about the use of technology-based chemistry learning media and local wisdom in the schools. Questionnaires will be used to collect data about students' needs for chemistry learning media based on technology and local wisdom. The questions in the questionnaire will be designed to explore student preferences regarding the desired features, content and format of learning media. The collected data will be analyzed qualitatively and quantitatively. Quantitative data from the questionnaire will be analyzed using statistical techniques such as frequencies and percentages. Finally, the results of the analysis will be interpreted to identify students' needs and preferences for chemistry learning media based on technology and local wisdom.

The instrument was created by taking into account 3 aspects of needs consisting of (1) Types of learning media that are suitable and commonly used; (2) Understanding and experience of using the type of learning media used and (3) The advantages and disadvantages of the learning media commonly used. (used. These three aspects are used because they are considered the main aspects that need to be observed in implementing the use of environmental chemistry learning media in schools. Observations were carried out at school levels purposive sampling. The analysis was directed at the needs of SMA MIPA students in the two districts. The results of data analysis were in the form of opinions from each SMA MIPA student.

RESULT AND DISCUSSION

This research aims to analyze the needs of SMA MIPA students in the Island Region in Sitaro Regency for chemistry learning media based on technology and local wisdom. This research uses a quantitative descriptive approach by collecting data through a questionnaire consisting of 17 questions. The questionnaire was designed to explore students' perceptions of suitable types of learning media, understanding and experience of using the types of learning media used, as well as the advantages and disadvantages of learning media commonly used. Apart from that, these questions were given based on their experience in studying chemistry and the state of the school environment at their respective high schools.

Data obtained through a questionnaire with a Likert scale, namely a minimum score of 1 in the strongly disagree category to a maximum score of 5 in the strongly agree category regarding the use of local wisdom-

based chemistry learning media, is presented descriptively in table 1 below.

Table 1. Average score of student perceptions of local wisdom-based learning media

Class / Gender	X	XI	XII
Male	3.87	4.01	4.03
Female	4.07	3.94	3.99

Based on the table above, the most positive response to the use of local wisdom-based learning media in chemistry learning was class X students with female gender. This is in line with the results of previous research which shows that female students' interest in studying chemistry is higher than that of male students (Tripp & Munson, 2022) And based on class level, class X students tend to be more interested in contextual learning than class XI and XII (Djou et al., 2022).

Further analysis was carried out to find out in more detail the characteristics of students who responded more positively to the use of local wisdom-based learning media in the chemistry learning process. The first analysis discussed is the difference in male and female students' responses to local wisdom-based learning in the chemistry learning process, with the results presented in Figure 1 below.

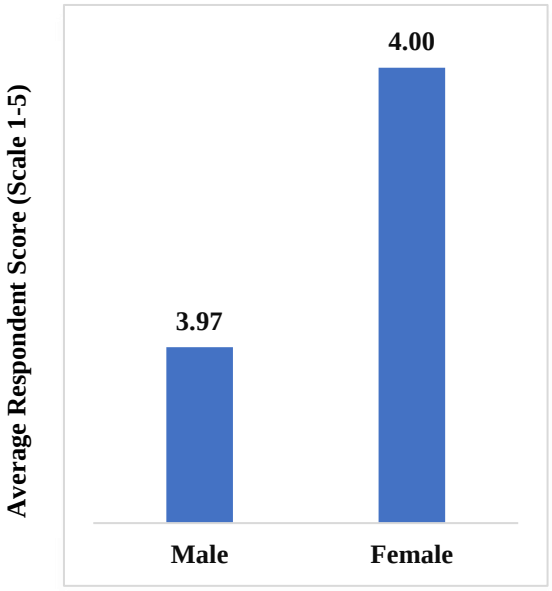

Figure 1. Differences in student perceptions in view of gender regarding chemistry learning media Based on local wisdom

In Figure 1, based on the data obtained, female students have a total score of 4891 with an average score of 4.00, while male students have a total score of 2,777 with an average score of 3.97. The results of data analysis show that there are significant differences in the perceptions of female and male students regarding their needs in learning chemistry using technology-based learning media and local wisdom. Female students had a higher average score (4.00) than male students (3.97). This shows that female students are more aware and appreciate the importance of using technology-based learning media and local wisdom in learning chemistry. This is in line with the results of female students' higher interest in learning chemistry than male students (Musengimana et al., 2021).

The second analysis discussed is the difference in class X, XI and XII student responses to local wisdom-based learning in the chemistry learning process, with the results described in Figure 2 below.

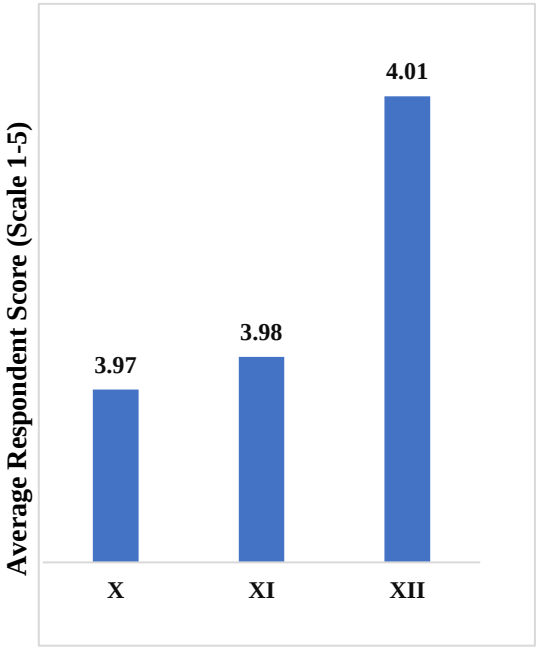

Figure 2. Differences in student perceptions in view of class level regarding chemistry learning media based on local wisdom

In Figure 2, data is taken based on differences in class perceptions. There are three classes consisting of class X (28 people), class XI (45 people), and class XII (40 people). The data shows that class X has a total score of 1,908 with an average score of 4.01, class The analysis results show that

Class XII has the highest average score (4.01), followed by Class XI (3.98), and Class X (3.97). This shows that students in class X have a higher perception regarding the need for chemistry learning media based on technology and local wisdom compared to students in class XI. However, there is no significant difference between students' perceptions in classes X and XII.

This research highlights the importance of paying attention to gender and class differences in designing and implementing chemistry learning media that suit students' needs. The results of the research show that female students and students in class XII tend to have a higher perception regarding the need to use technology-based chemistry learning media and local wisdom. The implication is that there is a need to develop effective and relevant learning strategies by utilizing technology and local wisdom in the context of chemistry learning at SMA MIPA. In designing learning media, it is important for educators to pay attention to these differences to ensure that students from various backgrounds and characteristics can experience maximum benefits from the use of technology and the integration of local wisdom.

However, it should be remembered that this study has several limitations. One of them is that the sample size is limited to MIPA high school students in Sitaro Regency and Sangihe Talaud Regency, which reduces the ability to generalize these findings to the entire MIPA high school student population in general. Apart from that, this research also did not consider other factors that might influence students' perceptions of chemistry learning media, such as previous learning experiences or the learning environment at school. For future research, it is recommended to involve a more representative sample and consider additional factors that may influence students' overall perceptions, in order to provide a more holistic understanding of students' needs regarding technology-based chemistry learning media and local wisdom.

CONCLUSION

Based on the results and discussion in this research, it was concluded that the response of female students was more positive (4.00) than male students (3.97) towards local wisdom-based learning media. Class XII student responses had the highest average score (4.01), followed by Class XI (3.98), and Class X (3.97). Overall, student responses agreed with the use of chemistry learning media based on local wisdom in the chemistry learning process.

Sitaro Islands should try to design chemistry learning based on local wisdom. More broadly, chemistry teachers in each region in Indonesia can conduct a study of the needs for using learning media based on the local wisdom of their respective regions.

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