



# Perception of Science Teacher Candidates Towards Cultural Literacy

M. Khairul Wazni<sup>1</sup>, Agus Muliadi<sup>2\*</sup>, Sarwati<sup>1</sup>

<sup>1</sup>Department of Biology Education, Universitas Hamzanwadi, Selong, Indonesia.

<sup>2</sup>Department of Biology Education, Universitas Pendidikan Mandalika, Mataram, Indonesia.

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Corresponding Author:  
Agus Muliadi  
[agusmuliadi@undikma.ac.id](mailto:agusmuliadi@undikma.ac.id)

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**Abstract:** This study aims to describing the perception of science teacher candidates toward cultural literacy. This study is an exploratory research with 61 biology education students as subjects, comprising 28 from the Biology Education program at Mandalika University of Education, 16 from Hamzanwadi University, and 17 from Mataram State Islamic University. The research instrument used was a closed questionnaire with degraded answers according to a Likert scale that had been declared valid. Analysis of research data used is descriptive statistics and inferential statistics with Anova test at a significance level of 5%. The results of the study show that (1) average score of student perceptions regarding cultural literacy, namely, students from Mandalika University of Education have an average score of 2.86 in the Good category, students from Hamzanwadi University have an average score of 2.58 in the Good category, and students from Mataram State Islamic University have an average score of 2.64 in the Good category.; (2) there is a significant difference in the perception of students at Mandalika University of Education, Hamzanwadi University, and Mataram State Islamic University regarding cultural literacy, as evidenced by a significance value of 0.030 is smaller than the alpha testing value of 0.05 (<0.05).

**Keywords:** Cultural literacy; Perception; Science teacher candidates

## Introduction

The advancement of information technology in the 21st century has brought about easy and rapid access to information for the entire society (Safitri & Ramadan, 2022). In the 21st century, millennials, including students, consider information and communication technology as a primary necessity (Pratiwi & Asyarotin, 2019). Cahya et al. (2022) explain that the global development of information and communication technology has forced people to adapt their social interaction patterns in their daily lives. This is supported by the viewpoint of Maimun et al (2020) that information and communication technology in the current era of globalization significantly influence the lifestyle and culture of people in various fields, as cultural exchanges are easily adopted by society (Safitri & Ramadan, 2022). Current social phenomena show that some Indonesian youth do not recognize their own ethnic cultures and

tend to idolize foreign cultures (Muniroh, Khasanah & Irsyad, 2020). This aligns with the findings of Bahrudin, Masrukhi & Atmaja (2017) that the local culture of Tengger youth has undergone significant changes due to the influence of Western-oriented youth lifestyles. Therefore, cultural literacy competence is needed to strengthen the ability to adapt, accept, and behave wisely in the face of foreign cultural diversity. This is in line with the opinion of Prasetya et al (2022) that cultural literacy is one of the competencies that students must master in the 21st century to balance the rapid development of science, technology, and the arts (Mardhiyah et al., 2021).

Cultural literacy skills are essential for students to understand their nation's culture and identity, fostering empathy, mutual respect, and tolerance (Yudin, 2019). Fujiono & Sahayu (2021) explain that cultural literacy is the key to success in establishing effective communication in the current millennial era, especially

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for students. Fundamentally, culture is closely tied to language because culture represents the language of its speakers (Lestari, Ratnasari & Usman, 2022; Fujiono & Sahayu, 2021). According to McLachlan & Arrow (2017), cultural literacy skills are not limited to cognitive abilities alone but are complex socio-psycholinguistic activities that influence the social aspects of students' lives. Understanding how culture works is essential for students, especially starting with their own culture (Rebekah, 2013). Pujiono & Sahayu (2021) emphasize that cultural literacy is the ability to understand and engage with Indonesian culture as the foundation of community life (Pujiono & Sahayu, 2021). Therefore, strengthening cultural literacy should be instilled as early as possible and should receive special attention from all parties, including family, education institutions, and the community (Cahya et al., 2022).

According to Sibarani (2004), cultural literacy skills are crucial for building cultural preservation among students in the current era of digitalization. Strengthening cultural literacy can facilitate students in understanding their own culture, leading them to develop a love for and a sense of responsibility toward local and national cultures (Sudarmin, et al., 2019). It can also foster tolerance (Akmal et al., 2020), protect students from foreign cultural acculturation (Sudarmin, et al., 2019), and prevent them from feeling alienated from their environment (Parmin, et al., 2017). Structured cultural literacy development is essential in higher education institutions as an effort to preserve the diversity of ethnicities, cultures, traditions, and local wisdom in Indonesia (Safitri & Ramadan, 2022). This is emphasized by Nudiati (2020), who argues that upholding the noble values and social life of the Indonesian nation should be instilled as an identity and defense to prevent the erosion of the nation's culture. Therefore, innovative learning approaches are needed to strengthen students' cultural literacy skills, enabling them to acquire knowledge about culture, develop a love for local and national cultures, and avoid losing their identity as Indonesians (Sari & Pujiono, 2017).

According to the World Economic Forum (WEF) in 2015, it is expected that everyone should possess three types of skills in the 21st century: basic literacy, competency, and character (Helaluddin, 2018). The Indonesian government has shown attention to literacy by issuing Minister of Education and Culture Regulation Number 23 of 2015 aimed at improving the literacy skills of the Indonesian population (Antoro, 2017). Subsequently, the National Literacy Movement emerged, focusing on nurturing reading interests and cultivating lifelong reading habits (Nudiati & Sudiapermana, 2020). Hasan et al. (2022) emphasize that literacy is closely related to an individual's ability to read, write, speak, and process information acquired to

solve everyday problems (Tunardi, 2018). Biology students, as future leaders of the nation or prospective educators, must possess and actively develop cultural literacy (Nudiati & Sudiapermana, 2020). The learning process in higher education plays a strategic role in developing students' cultural literacy in a structured and systematic manner (Safitri & Ramadan, 2022). According to Helaluddin (2018), the development of cultural literacy in higher education can be achieved through several aspects, including content integration, knowledge reconstruction, adjustment of teaching models, and strengthening campus culture (Rosmawaty, 2015).

The development of cultural literacy skills is not merely about understanding a culture but a structured effort to cultivate life skills that enable individuals to coexist in diversity (Safitri & Ramadan, 2022). According to Dewi (2019), literacy goes beyond reading and writing; it can also encompass technical literacy, political literacy, critical thinking, and environmental awareness (Pratiwi & Asyarotin, 2019). Cultural literacy skills can create individuals capable of acting wisely within their social environment as part of their culture and nation (Ahsani & Azizah, 2021). This is affirmed by Sari & Supriyadi (2021), who argue that cultural literacy not only protects and promotes national and local culture but also shapes the individuality of the Indonesian nation within society, ensuring the continued love and preservation of literary culture. According to Safitri & Ramadan (2022), students, as part of the millennial generation, have a low interest in cultural literacy due to a lack of understanding and knowledge about culture. This aligns with the findings of Arditama & Lestari (2020), who noted that teachers consider cultural literacy less important, and students do not understand the culture in their own environment.

The results of an exploratory study at Mandalika University of Education show that (1) 43.63% of biology education students admit to never using cultural attributes like the traditional Sasak woven fabric (*songket* cloth) in traditional activities; (2) 34.54% of biology education students claim not to be familiar with the various motifs of *songket* cloth. However, further exploration indicates that 90.90% of students agree that cultural values and local traditions should be integrated into science learning activities. Therefore, there is a need for a study to map the perceptions of prospective science teachers regarding cultural literacy.

## Method

This study is an ex post facto research with an exploratory descriptive approach (Cohen, Manion & Morrison, 2007; Muliadi, Mirawati & Prayogi, 2021) aimed at describing the perception of science teacher

candidates towards cultural literacy. Ex post facto research is employed because it involves examining and measuring existing student attitudes without manipulating or intervening in any way (Cooper & Schindler, 2001; Fraenkel, Wallen & Hyun, 2017).

The research included 61 prospective science teacher students, comprising 28 from the Biology Education program at Mandalika University of Education, 16 from Hamzanwadi University, and 17 from Mataram State Islamic University. Respondents for this study were selected using a convenience sampling technique, taking into consideration their accessibility and willingness to participate by completing online questionnaires (Fink, 2011; Creswell, 2012).

For data collection, this research utilized a closed questionnaire with responses measured on a Likert scale (Muliadi, et al., 2022; Creswell, 2014; Singarimbun, 2007). The questionnaire was administered online through Google Forms (Adha, et al., 2020) and was developed based on cultural literacy indicators, specifically focusing on diversity appreciation, cultural sensitivity, and cultural interaction, as defined by Mahmudah (2021). The questionnaire consisted of nine statements and underwent validation by experts, confirming its validity.

The research data were analyzed using both quantitative descriptive statistics and inferential statistics. Quantitative descriptive analysis was employed to portray the perceptions of science teacher candidates towards cultural literacy. The interpretation of average student perception data was categorized according to the criteria developed by Muliadi (2020), as presented in Table 1.

**Table 1.** Criteria for interpreting student perceptions

| Average score ( $\bar{p}$ ) | Interpretation |
|-----------------------------|----------------|
| 3.51 - 4.00                 | Excellent      |
| 2.51 - 3.50                 | Good           |
| 1.51 - 2.50                 | Fair           |
| 1.00 - 1.50                 | Less           |

Inferential statistical analysis involved the use of an Anova (Analysis of Variance) test at a significance level of 5% to determine differences in student perceptions among the universities. The statistical hypotheses were formulated as follows:  $H_0: \mu_1 = \mu_2$  (there is no significant difference in the perceptions of students at Mandalika University of Education, Hamzanwadi University, and Mataram State Islamic University towards cultural literacy) and  $H_1: \mu_1 \neq \mu_2$  (there is a significant difference in the perception of students at Mandalika University of Education, Hamzanwadi University, and Mataram State Islamic University towards cultural literacy). If the results of the Anova test yield a p-value smaller than the

alpha test value of 0.05, then  $H_0$  is rejected, and  $H_1$  is accepted, or vice versa.

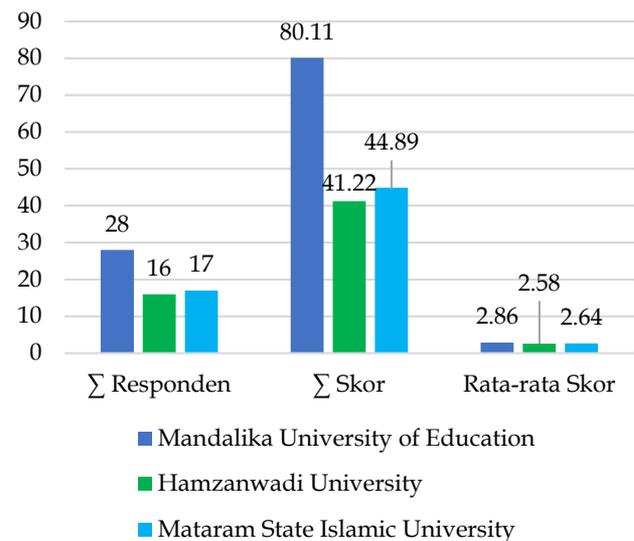
**Result and Discussion**

Description of perceptions of science teacher candidates towards cultural literacy is presented in Table 2.

**Table 2.** Data on perceptions of biology education students towards cultural literacy

| University                        | N  | $\Sigma$ Score | $\bar{p}$ | Category |
|-----------------------------------|----|----------------|-----------|----------|
| Mandalika University of Education | 28 | 80.11          | 2.86      | Good     |
| Hamzanwadi University             | 16 | 41.22          | 2.58      | Good     |
| Mataram State Islamic University  | 17 | 44.89          | 2.64      | Good     |

Based on Table 2, it is known that the average score of student perceptions towards cultural literacy, namely, students from Mandalika University of Education have an average score of 2.86 in the Good category, students from Hamzanwadi University have an average score of 2.58 in the Good category, and students from Mataram State Islamic University have an average score of 2.64 in the Good category. The description of the data is highlighted in Figure 1.



**Figure 1.** Average perceptions of biology education students towards cultural literacy

The inferential statistical analysis used was the Anova test, but first the prerequisite tests were carried out, namely the normality and homogeneity tests. The results of the homogeneity test (Levenes test) and normality (Kolmogorov-Smirnov's test) are presented in Table 3.

**Table 3.** Homogeneity and normality test results

| N  | Homogeneity                    |       | Normality                       |       |
|----|--------------------------------|-------|---------------------------------|-------|
|    | Levenes Statistical test score | Sig.  | Kolmogorov-Smirnov's test score | Sig.  |
| 61 | 0.277                          | 0.759 | 1.046                           | 0.244 |

The results of the homogeneity test (Levenes test) and normality (Kolmogorov-Smirnov's test) showed a significance value of 0.759 and 0.244, respectively, both of which were greater than the alpha testing value of 0.05, so it was concluded that the variance of the data was homogeneous and normally distributed.

Differences in perceptions of biology education students towards cultural literacy on universities were analyzed using the Anova test (Analysis of Variance) with the results as presented in Table 4.

**Table 4.** Anova test results

|                | Sum of Squares | df | Mean Square | F     | Sig.  |
|----------------|----------------|----|-------------|-------|-------|
| Between Groups | 0.986          | 2  | 0.493       | 3.741 | 0.030 |
| Within Groups  | 7.646          | 58 | 0.132       |       |       |
| Total          | 8.633          | 60 |             |       |       |

Based on the results of the Anova test in table 4, it shows that the significance value of 0.030 is smaller than the alpha testing value of 0.05 (<0.05), so that  $H_0$  is rejected and  $H_1$  is accepted, which means that there is a significant difference in the perception of students at Mandalika University of Education, Hamzanwadi University, and Mataram State Islamic University towards cultural literacy.

The results of this study explain that: (1) Biology education students from Mandalika University of Education, Hamzanwadi University, and Mataram State Islamic University have perceptions towards cultural literacy in the "Good" category; (2) There is a significant difference in the perception of students at Mandalika University of Education, Hamzanwadi University, and Mataram State Islamic University towards cultural literacy. The findings of this study indicate that all biology education students believe that cultural literacy is an important competency. This aligns with the opinion of Prasetya et al (2022), who assert that cultural literacy is one of the competencies that students must master in the 21st century. The ability to understand cultural literacy is crucial for biology students to get to know the culture and identity of the nation, thus fostering attitudes of care for others, mutual respect, and tolerance (Yudin, 2019). This opinion is reinforced by Pujiono & Sahayu (2021), who emphasize the importance of cultural literacy for students because it can build students' understanding and attitude toward

Indonesian culture as a foundation for community life (Pujiono & Sahayu, 2021).

The positive perception of biology students towards cultural literacy affirms that millennials still have a positive attitude toward local and national culture. This is important because cultural literacy skills are essential for students as a key to success in establishing effective communication in the millennial era, where culture represents the language of its speakers (Lestari, Ratnasari & Usman, 2022). The results of this study confirm that the cultural literacy skills of biology students can strengthen cultural preservation in the 21st century. This is reiterated by Sibarani (2004), who states that cultural literacy skills are crucial for building the cultural preservation character of students in the current era of digitization. This opinion is further supported by McLachlan & Arrow (2017), who argue that cultural literacy skills are not limited to cognitive abilities alone but are a complex socio-psycholinguistic activity that influences the social aspects of students' lives.

This research also emphasizes that there is a difference in perception among biology students at Mandalika University of Education, Hamzanwadi University, and Mataram State Islamic University. This finding explains the variation in students' knowledge about culture and underscores the absence of a structured cultural literacy reinforcement system in each university. This is affirmed by Cahya et al (2022), who argue that the strengthening of cultural literacy should be instilled as early as possible within the family, educational environment, and society. According to Sudarmin et al (2019), strengthening cultural literacy can facilitate students in understanding their own culture, leading to a love for and care about local and national culture, as well as the avoidance of foreign cultural assimilation. One of the policies that universities can implement to strengthen cultural literacy in a structured manner is the integration of cultural values into education. According to Helaluddin (2018), the development of cultural literacy in universities can be achieved through several aspects, including content integration, knowledge reconstruction, adjusting teaching models, and strengthening campus culture (Rosmawaty, 2015).

The development of culturally integrated learning is one of the strategic and structured efforts to enhance the cultural literacy skills of students and to promote the preservation of traditional customs, culture, and local wisdom in Indonesia (Safitri & Ramadan, 2022). Therefore, strengthening cultural literacy through the integration of cultural values into the learning process becomes an alternative solution to enhance the cultural literacy of future teacher students at Mandalika University of Education, Hamzanwadi University, and

Mataram State Islamic University. This is affirmed by Nudiati & Sudiapermana (2020), who argue that biology education students, as future teachers in the education field, must possess and actively develop cultural literacy both on campus and in schools when they become teachers. The reinforcement of cultural literacy for future teacher students is supported by government policies in Indonesia, as established in the Ministry of Education and Culture Regulation No. 23 of 2015, which aims to improve the literacy skills of the Indonesian population (Antoro, 2017). Additionally, there is a National Literacy Movement oriented toward cultivating reading interests and fostering lifelong reading habits (Nudiati & Sudiapermana, 2020).

## Conclusion

Based on the results of the research and discussion above, it can be concluded that (1) average score of student perceptions towards cultural literacy, namely, students from Mandalika University of Education have an average score of 2.86 in the Good category, students from Hamzanwadi University have an average score of 2.58 in the Good category, and students from Mataram State Islamic University have an average score of 2.64 in the Good category.; (2) there is a significant difference in the perception of students at Mandalika University of Education, Hamzanwadi University, and Mataram State Islamic University towards cultural literacy, as evidenced by a significance value of 0.030 is smaller than the alpha testing value of 0.05 ( $>0.05$ ).

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## Author Contributions

M. Khairul Wazni: develop research topics and establish research procedures.

Agus Muliadi: analyzing literature related to research topics, writing articles, and revising articles.

Sarwati: searching for literacy related to research topics and analyze research data.

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## Conflicts of Interest

The authors declare no conflict of interest.

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