Students' Cultural Expertise and Scientific Attitudes in Higher Education Learning

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***Abstract*-**The paper explores university students' cultural expertise (CE) and scientific attitudes (SA) based on gender. The participants in this study were 100 university students, consisting of 30 male and 70 female. This is quantitative research which collects the data through a cross-sectional survey. The author analyzed the data by using the MANOVA test. The findings revealed that there was no difference in the students' cultural expertise (CE) and scientific attitudes (SA) based on gender. The interview results strengthened the survey findings, which also discovered no differences in the cultural expertise (CE) and scientific attitudes (SA) of female and male students. It was because the same learning experience influenced students' learning activities in higher education.

***Index Terms*-**Cultural expertise, scientific attitudes, university students

I. INTRODUCTION

The 21st century demands and prioritizes students' cognitive aspects and soft skills development to help them compete in the job market. Those include the students' problem-solving skills, self-efficacy, scientific attitudes, and collaboration and communication skills (Wahyudiati & Louise, 2020; Singh, 2016). However, these urgencies are not in line with the reality; the development of soft skills in learning at the higher education level tends to be neglected and affects students' scientific attitudes (Fadli & Irwanto, 2020; Fadli, 2022).

Students' scientific attitudes (SA) development is fundamental in their career growth and facing life problems. It is because problem-solving skills and scientific attitudes greatly determine a person's success at school and work (Wahyudiati, 2022). Accordingly, it is necessary to start transforming primary, secondary, and tertiary learning practices. The transformation must be based on developing 21st-century skills to generate graduates ready to face the challenges of globalization. Yet, current learning practices only highlight the students' academic achievement development and desert their social skills and scientific attitudes (SA) development. These happen in both natural science and social science learning, especially in Islamic studies (Sumardi & Wahyudiati, 2021; Zeidan and Jayosi, 2014).

The success learning in higher education could develop students' scientific attitudes by applying active and innovative learning approaches or models based on local wisdom (cultural expertise). Developing learning tools, approaches, and learning models based on local culture would help evolve students' attitudes, soft skills, and psychomotor as provisions in future careers (Ador & Said, 2017; Singh, 2016). However, students' affective, cognitive, and psychomotor aspects are low due to minimal involvement of local wisdom-based approach in their learning. These problems are also influenced by globalization, which harms students' personalities, as well as the moral destruction, spiritual and cultural values which can threaten their national identity and Indonesian nationalism. Moreover, another reason is the integration of local wisdom in the curriculum, learning tools, and learning practices is inadequate (Alkusaeri, 2017; Rakhmawati, 2018). Thus, it is necessary to apply a culture-based learning model equipped with relevant learning tools to enhance students' soft skills.

Referring to the urgency of the research, it is expected to describe and map the factual conditions of students' cultural expertise (CE) and scientific attitudes (SA) based on gender. In addition, the previous research proved that there is a relationship between cultural-based learning experiences (implementation of a constructivist approach) on the development of students' soft skills (Wahyudiati & Fitriani, 2021, Wahyudiati et al. al., 2020; Fadli & Masnun, 2020; Sumardi & Wahyudiati, 2021; Fadli & Acim, 2022). Thus, this research aims to draw the factual conditions of students' cultural expertise (CE) at the tertiary level based on gender.

II. METHOD

The research approach used a quantitative approach with survey methods. This study used a cross-sectional survey design to obtain quantitative data, and focus group interviews were conducted to confirm quantitative data. The purpose of using a cross-sectional survey design was to measure the relationship between two or more variables in describing factual conditions (Creswell, 2000; Cohen, Manion & Morrison, 2007). The research sample was determined through a cluster random sampling technique at the State Islamic University of Mataram. The sample consisted of 100 chemistry students (70 women and 30 men). Data analysis of the results of the questionnaire research was analyzed using the Manova test. The Manova prerequisite test was supported by the results of Levene's test with a p-value of > 0.05

(data is homogeneous) so it met the assumptions of the Manova test (Bernard, 2000).

III. FINDINGS

Conducting the quantitative method, the data were analyzed by using the Manova test after fulfilling the prerequisite test with a p-value > 0.05 (multicollinearity test with VIF value = 0.45 (no multicollinearity). Additionally, the scatter plot matrix for the linearity test showed a positive correlation for each pair of variables. The analysis results of Levene's test for CE and SA obtained a p-value > 0.05 (Table 1), which means that there was no difference in variance so that it fulfilled the Manova prerequisite test.

Table 1. Levene's test result (Homogeneity test)

	F	df1	df2	Sig.
cultural expertise (CE)	.612	5	294	.867
Scientific attitudes (SA)	.603	5	294	.876
Overall	.695	5	294	.807

After completing the Manova prerequisite test, it was continued with hypothesis testing. The Manova test results showed no difference between CE and SA based on gender with p>0.05 (Table 2), meaning that the null hypothesis was rejected and the alternative hypothesis was accepted.

Table 2. Manova test result of PSS and SA based on Gender dan Grades Level

Effect		Sig.
Gender	Pillai's Trace	.060
	Wilks' Lambda	.060
	Hotelling's Trace	.060
	Roy's Largest Root	.060

IV. DISCUSSION

Results of the research showed no difference in cultural expertise (CE) and scientific attitudes (SA) based on gender. These align with comments that students' scientific attitude was not influenced by gender (Bui & Alfaro, 2011). The no differences in scientific attitudes based on gender are due to the existence of learning experiences that tend to be monotonous from the beginning to the next year. It is influenced by the application of learning strategies, learning models, and the lack of students' daily lives-integrated learning experiences (Wahyudiati, 2022). The interview results reported:

Aj (Lecturer) stated, "There is no difference in the ability of scientific attitudes between male and female students because both have high motivation in doing lecture assignments and practical activities so that academic achievement between them tends to be evenly distributed".

Ja (Male) stated, "The learning experience, which refers to experiences often found in everyday life, is exciting because it makes me very motivated in learning activities so that it has a positive impact on improving my scientific attitude".

Furthermore, Ri (Female) revealed, "I am very motivated in completing lecture assignments given by the lecturer because I need experience in doing these tasks for my future career development, and it has a significant impact on my scientific attitude".

The results of other studies also prove that students' responses to the application of a culture-based learning approach or model do not experience any difference between male and female students. The advantage of culture-based learning is that it could make learning practices active, collaborative, and communicative to enhance their scientific attitudes (Wahyudiati, 2020). In addition, culture-based learning will help to appreciate more of their local culture, which has shifted since globalization. Implementing culture-based learning makes learning a vehicle for exploring cultural practices that can be realized in relevant learning practices in everyday life (Singh, 2016). In addition, the advantages of culture-based learning focus on creating an active and collaborative learning atmosphere that is integrated with the students' characteristics, cultural backgrounds, experiences and prior knowledge as a form of implementing contextual teaching and learning (Ador & Said, 2017; Singh, 2016). Other interview responses serve as results finding reinforcement:

If (Male) stated, "The experience of doing assignments given by lecturers tends to be monotonous and abstract because it is not relevant to experience in everyday life, making learning less meaningful."

Kr (Female) revealed, "Learning experiences emphasized by lecturers tend to prioritize cognitive aspects and understanding concepts only, but ignore giving examples that often found in everyday lives, so it becomes less interesting."

Scientific attitudes and student learning experiences are positively correlated with academic achievement. This condition is backed up by various research results revealing scientific attitudes, and cultural-based learning experiences could affect student achievement because they make learning more significant (Patonah et al., 2021; Wahyudiati, 2022). Therefore, the development of scientific attitude skills and cultural-based learning experiences are essential factors to consider in its implementation, starting from primary, secondary, and tertiary education levels. Furthermore, higher education institutions must facilitate educators to design and implement cultural-based learning programs to optimize learning processes and outcomes (hard skills and soft skills) at the tertiary level.

V. CONCLUSION

The research findings found an interesting fact: there was no difference in the cultural expertise (CE) and scientific attitudes (SA) of chemistry students based on gender. The survey results were strengthened by the results of interviews, which revealed no differences in the cultural expertise (CE) and scientific attitudes (SA) of female and male students because the same learning experience influenced them in learning activities in higher education. As a follow-up, it is necessary to investigate how the strategy for developing learning tools focusing on increasing CE and SA at the university level. In addition, the findings of this study are very important to bridge further research on how to improve soft and hard skills in culture-based lectures, which are still rarely investigated.

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