

CHAPTER V

CONCLUSION

5.1. Conclusion

The conclusions reached in this study based on the research results and discussion described above are as follows:

1. The development of the Ethno-STEM-based module integrated with creative thinking on the topic of elements, compounds, and mixtures was carried out using the 4D model (Define, Design, Develop, and Disseminate). The development process produced a systematically structured module that integrates local cultural contexts with STEM concepts and is designed to develop students' creative thinking skills.
2. The results of the validity tests show that the Ethno-STEM-based module fulfills the "very valid" criteria in all aspects. The validation by material experts obtained an Aiken's V score of 0.85 (very valid), indicating that the content is accurate, relevant, and in accordance with the curriculum. The validation by learning experts obtained an Aiken's V score of 0.84 (very valid), confirming that the module's learning design and activities are coherent and support the achievement of learning objectives. The validation by media experts obtained an Aiken's V score of 0.81 (very valid), showing that the visual design, layout, and readability of the module are appropriate and attractive, although some improvements were suggested. The validation of the test instruments obtained an Aiken's V score of 0.83 (very valid), which means the assessment tools are aligned with the indicators of creative thinking and feasibility for measuring student learning outcomes. Furthermore, the validation by science teachers obtained an Aiken's V score of 0.89 (very valid), confirming that the module is practical, relevant, and feasible for classroom use.
3. The results of student responses to the Ethno-STEM-based module on the topic of elements, compounds, and mixtures showed an average percentage score of 89% with the category "very practical." This indicates that the module is attractive, easy to understand, relevant to students' learning context, successfully integrates local cultural elements, and effectively stimulates students' creative thinking potential.

5.2. Suggestion

Based on the results and conclusions of this research, the following suggestions are proposed:

1. For educators and instructional designers, the Ethno-STEM-based module can be utilized as an alternative learning resource in science education, particularly on elements, compounds, and mixtures. However, its implementation should be adapted to classroom conditions and time allocation. To address differences in students' understanding of Ethno-STEM integration, teachers are encouraged to provide scaffolding activities, introductory explanations, or contextual discussions before using the module to ensure equal comprehension among students.
2. For schools and educational institutions, institutional support is needed to facilitate the implementation of Ethno-STEM-based learning, such as providing sufficient learning time, flexible schedules, and opportunities for project-based activities. This support is important because several Ethno-STEM activities require extended discussion and hands-on practice, which may not be fully accommodated within regular lesson durations.
3. For students and independent learners, the module may serve as a self-learning resource to explore science concepts through local cultural contexts. Students are encouraged to engage actively with the activities and reflect on cultural and scientific connections to strengthen their creative thinking skills. Additional guidance or supplementary materials may be needed to support students who are less familiar with cultural integration in science learning.
4. For future researchers, further studies are recommended to conduct effectiveness testing to quantitatively measure improvements in students' creative thinking skills. Future research should also involve a broader and more diverse sample from different schools and cultural backgrounds to enhance generalizability. Moreover, long-term studies are suggested to examine the sustained impact of Ethno-STEM modules on students' motivation, scientific attitudes, and consistency of creative thinking development.