CHAPTER V
CONCLUSION, IMPLICATION, AND RECOMMENDATION

5.1 Conclusion

Based on the research findings, several conclusions can be drawn. The simulation game was developed through the five stages of the ADDIE model, resulting in a functional prototype suitable for testing in disaster mitigation learning. Expert judgment indicated that the game is generally valid as a learning medium, with an overall Aiken's V index score of 0.84. The game demonstrated adequate feasibility in terms of content and visual appeal, although technical aspects were noted as areas for potential improvement. Student responses showed a generally positive reception, with high engagement and learning enjoyment, supported by qualitative feedback describing the game as "fun" and "effective."

In terms of facilitating scientific literacy, students achieved relatively high scores on indicators of concept understanding and action awareness. The in-game scenarios appeared to encourage students to think critically and make decisions, reflecting key aspects of scientific literacy. Overall, the findings suggest that the game can serve as a practical tool for disaster mitigation learning while supporting the development of scientific literacy skills, providing both an interactive and educational experience for students..

5.2 Implication

The study demonstrates that well-designed simulation games can serve as powerful pedagogical tools in science education, particularly in disaster mitigation contexts. Integrating interactive and decision-based learning strategies allows students to explore scientific concepts in a meaningful and memorable way. The positive reception from both experts and students suggests that simulation games, when aligned with curriculum objectives, can significantly contribute to achieving educational goals such as enhancing preparedness and critical thinking.

The triangulation of methods, expert validation, student questionnaires, and interviews provides a holistic view of the media's impact and usability. These

findings support the inclusion of simulation-based learning within the broader framework of Kurikulum Merdeka, especially in fostering students' ability to connect science to societal issues and make informed decisions.

Furthermore, the study emphasizes the need for collaboration between instructional designers, teachers, and developers to ensure that educational games are not only scientifically accurate but also technically stable and instructionally sound.

5.3 Recommendation

Based on the findings and conclusions of this study, the author would like to offer the following recommendations to support further research and practical implementation.

1) For Future Researchers

Future researchers are encouraged to expand upon this study by exploring the effectiveness of simulation games across broader educational settings and student populations. While this research focused on eighth-grade students and a single type of natural disaster (earthquakes), future studies could examine other science topics or mitigation strategies, such as floods, tsunamis, or volcanic eruptions. Employing experimental or quasi-experimental designs, such as pre-test and post-test control group models, would provide deeper insights into how simulation games impact cognitive and behavioral learning outcomes.

Researchers may also consider longitudinal studies to evaluate the long-term retention of knowledge and the transferability of skills developed through simulation-based learning. Additionally, exploring students' emotional engagement, motivation, and behavioral changes such as preparedness actions during real disaster drills can enrich the understanding of how simulation games influence both affective and psychomotor learning domains.

2) For Teachers and Practitioners

Teachers are advised to incorporate simulation games as complementary tools in science learning, particularly for topics related to disaster preparedness and scientific literacy. These games offer interactive, student-centered learning experiences that can make complex scientific concepts more accessible and engaging. However, to maximize their educational value, teachers should first ensure that students are well-oriented through clear instructions or tutorials, especially if the game includes multiple stages or mechanics.

Teachers are also encouraged to use simulation games as a springboard for reflective discussion. Debriefing sessions after gameplay such as class discussions or guided questions can help students consolidate their learning, connect in-game scenarios to real-world contexts, and internalize scientific reasoning processes. Finally, teachers can consider collaborating with instructional designers or using open-source platforms like Construct 3 to adapt or co-create media tailored to their specific classroom needs.