LET'S PLAY WASTEMATH!

Waste Less, Learn More: Mathemagic!

TEAM ONE

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Preface

All praise and gratitude are due to God Almighty for His mercy and grace so that this project entitled "Wastemath: Mathematics Educational Mobile Game for Estimation and Measurement of Nonstandard Units with STEM-based Environmental Care Approach" can be completed properly. This project was prepared as a form of accountability for the Final Project Math Games as well as fulfilling the assignments in the Visual Programming course.

In the process of preparing this project, we have received a lot of help and support from various parties. Therefore, with great respect, we would like to express our gratitude to Mrs. Evangelista Lus Windyana Palupi, S.Pd., M.Sc. and Nurus Saadah, S.Pd., M.Pd. as the lecturer in the Visual Learning course for her direction and guidance during the process of preparing this report.

We realize that this project is far from perfect. Therefore, we really hope for criticism and suggestions from readers to improve this report in the future.

Finally, we hope that this project can provide benefits to the readers, especially in efforts to develop and improve Math Games for Learning.

Surabaya, December 15, 2024

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Background

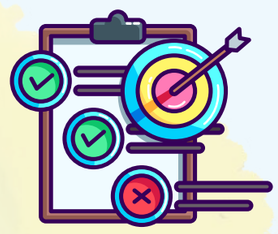
Basic mathematics education plays an important role in shaping children's skills from an early age. However, in Indonesia, it is still a challenge, especially because many elementary school students do not understand basic mathematical concepts. This lack of understanding can hinder the development of critical thinking skills needed to solve problems in everyday life. One of the basic concepts that needs special attention is the measurement of length, mass, and capacity using non-standard units, although this material is part of the Merdeka Curriculum implemented in elementary schools.

In addition, awareness of environmental issues, such as waste management and its impact on climate change, needs to be instilled in elementary school students. Innovative, interactive, and relevant education with the concept of sustainability is essential to create a generation that cares about the environment. By integrating STEM (Science, Technology, Engineering, and Mathematics) education and the Sustainable Development Goals (SDGs), especially SDG 4: Quality Education and SDG 13: Addressing Climate Change. That way, children will be equipped with a deep understanding to practice good waste management to become environmentally responsible citizens.'

The application of interactive learning media, such as Unity-based game development, is able to provide a fun and educational learning experience. This media not only improves the understanding of basic mathematical concepts but also forms better environmental awareness through an understanding of waste management and its impact on climate change. With a relevant and innovative approach, this learning media has great potential to be used by educators and families in supporting STEM-based and sustainable education.

WASTEMATH

Game Objective



This application is designed as a practical, effective, and engaging solution to help students develop basic math skills, while supporting the development of STEM (Science, Technology, Engineering and Mathematics)-based learning media in Indonesia. In addition, this application is also made by combining math learning with environmental awareness. Wastemath is a simple first step but has the potential to have a big impact in preparing a smart and resilient generation to face the challenges of the world.

Game Target

Wastemath is a game aimed at elementary school students, namely students who are in regular and international schools. Where in regular schools students can study mathematics and English.

Game Description

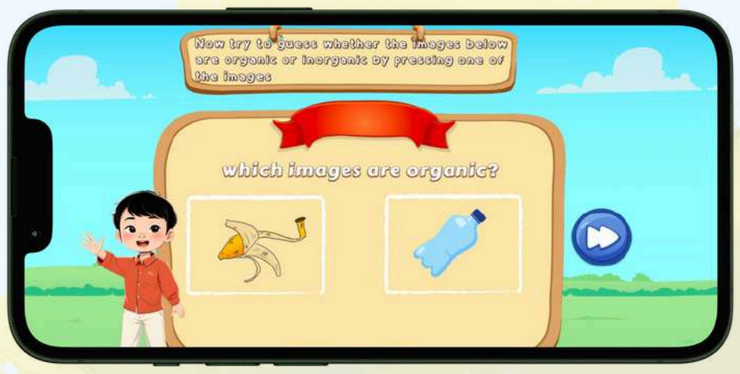
Wastemath (Mathematics and Waste Processing) is a game-based learning application designed to improve elementary school students' basic math skills, especially in the results of estimating and measuring length, mass, and capacity using non-standard units. This application provides an interactive, fun, and relevant learning experience, while instilling values of environmental concern. Through this approach, students not only learn math skills, but they can also understand the importance of preserving the environment through various learning contexts.

Game Features

FEATURES

INTERACTIVE CONVERSATION

WASTE SORTING QUIZ



MAIN PAGE

PRACTICE PAGE

CHALLENGE PAGE

Game Features

FEATURES

SAMPLE QUESTION

ALL IN ONE

PROGRESS TRACKING

WASTEMATH

How to Play

First one, after student install and open the application, student will read and listening interactive conversation. After that student have answer the waste sorting quiz. And then main page will be open, student can choose practice mode if they're first play or student can choose challenge mode or quit if they're finishing the game. When they're choosing practice, they can choose level of difficulty, from easy, average(medium), and hard. But when they're choosing challenge mode, student must be finishing length level easy, medium, and hard before student try the mass, capacity and all in one mode. Student can see their progress on progress tracking (score).

How to Play

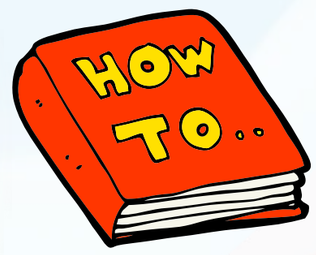
FIRST

SECOND

THIRD

FOURTH

How to Play



FIFTH

LAST

Suggestion

1. Implementation of Artificial Intelligence, on the storage of progress recap of each student
2. Adding a login and register page, so that assessment data can be stored for each student account
3. Provide additional variations of basic maths games with challenging levels
4. Flexible in the use of language by doing a language flip on each question

Conclusion

The Wastemath game presents an innovative educational tool designed to enhance primary school students' mathematical skills while promoting environmental awareness. By integrating STEM education with practical applications related to waste management, the application aims to improve students' understanding of basic mathematics, particularly in estimation and measurement using non-standard units. Additionally, it fosters critical thinking and problem-solving skills, preparing students to face global challenges. The user-friendly design and interactive features make learning engaging, while the incorporation of English elements ensures that students develop essential communication skills. Overall, Wastemath aligns with the Sustainable Development Goals and represents a valuable resource for fostering both academic and environmental literacy among young learners.

THANKS FOR PLAYING!

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Success is no accident. It is hard work, perseverance, learning, studying, sacrifice and most of all, love of what you are doing or learning to do.

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