

# Review of: "Development of Education for Sustainable Development Integrated Coastal Conservation Education Kit in Junior High Schools"

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Potential competing interests: No potential competing interests to declare.

## General comments

I would suggest a general revision of the text by a native English speaker.

## PAGE 1

### Abstract

Line 1: *Student knowledge regarding **abrasion** must be **instilled** as soon as possible.*

R: Throughout the text, I would suggest using “*erosion*” instead of “*abrasion*.” Furthermore, the use of the verb ‘*instil*’ does not seem appropriate to the educational context. I suggest rephrasing it more appropriately.

Line 2: .... *an interactive **medium*** .....

R: The term “*medium*” is not correct. I suggest the use of ‘*tool*’ instead.

*Lines 3-4: This study aims to develop an ESD-integrated coastal conservation education kit suitable for use in Indonesian ecological materials and biological habitats.*

R: The authors start by talking about “*abrasion*” and then about developing a kit that can be used ‘*in the ecological materials and biological habitats*.’ Please better explain the links and logical connections between the two topics throughout the manuscript.

*Lines 6-7: Expert lecturers' coastal conservation edukit validation results show an average of 98.5% and guidebooks 100% with very suitable criteria. The teacher and student readability test results regarding coastal coral edukit showed an average of 92.3% and guidebooks 93.3% with very decent criteria.*

R: This sentence is difficult for me to understand. What do these % represent, and what are they calculated against?

## Introduction

R: I suggest better linking one sentence with the other, creating a logical path easier to follow.

**PAGE 2**

Lines 1-3: *According to Hidayati & Isdianto (2017), the beach is a meeting point between land and sea, and the condition may change over time **due to sea tides**. Coastal changes can be in the absence of the land (wear) or changes in the coastline to the sea (accretion).*

R: This introductory part is somewhat reductive and incomplete. The authors could supplement it with more detailed information while remaining on the general characteristics of beaches (e.g., it is not only the tides that shape the beaches).

Lines 4-10: *One of the threats to people living around the coast is beach abrasion. Forty percent of Indonesia's 81,000 km coastline is damaged by abrasion (Siswanto, 2018). The damage to the coastline is caused by disturbances in the natural balance (Setiyarso & Muryani, 2016). Moreover, the cause of this beach abrasion is not only natural but also human (Isdianto et al., 2020). If coastal abrasion is left to continue, it will have an alarming impact on the communities in coastal areas (Damaywanti, 2013). Some of the impacts are the narrowing of the coastal area, the ecosystem will be disrupted, and if left unchecked, it will damage infrastructure such as roads, bridges, or even sink an island (Pinto, 2016).*

R: Same as above.

Lines 26-30: *From this knowledge, students will know and act on what should be done regarding how to protect coastal areas so that the abrasion disaster can be reduced. Students are expected to know about strategies for prevention, mitigation, and adaptation at different levels such as response to disasters and reducing the risk of disasters. Students are also expected to know that global climate protection is an important task for all people (UNESCO, 2017).*

R: I would suggest some more reasons on why the authors think students should or could do what adults do not or have not done yet.

Line 32: ....*Edukit **learning media***....

R: I would suggest the use of the term '*teaching aids*' instead of '*learning media*' here.

**PAGE 3****Research Method**

Lines 19-20: *This Edukit product was tested for its feasibility by experts.*

R: Could the authors specify what kind of experts?

Line 21: .....*as can be seen in Figure 1 and **Figure 2***.

R: The Figure 2 cited here has been placed on page 6 after Tables 1-3. I suggest either moving it to page 4 or removing the citation of this figure on page 3 because it is unnecessary, and leaving it only on page 6.

**PAGE 4**

*Table 1: Stages of the development conducted - 1. Analysis 1. Teacher interview questionnaire.*

R: The questionnaire that is mentioned in the table is not presented in the article. I suggest adding it as attached material in order to understand how it was structured and to give the reader the opportunity to better evaluate the results obtained and to possibly reuse it.

*Table 1: 3. Development - 2. Questionnaire to test the readability of teachers and students.*

R: Same as above.

**PAGE 5**

Lines 1-2: *The data analysis technique used in processing the validation data results is from calculating the average score of the validator's assessment and also the research subjects.*

R: please rephrase.

**PAGE 6**

Lines 12-13: *The second stage is designing. At this stage, the draft of the guidebook and ESD-integrated coastal conservation edukit design was produced. The design of the ESD-integrated coastal conservation edukit can be seen in Figure 2.*

R: I would have appreciated it if the authors had explained this part of the *concept design* more fully: how and why they chose this type of edukit (aquarium / dimension), this type of process to be represented (waves), and this specific example of a coastal environment (mangroves / sand) from the various ones they could have chosen.

**PAGE 7**

Lines 3-4: *The guidebook is printed in A5 size (14.8 cm x 21.0 cm) using art paper. The components in the guidebook consist of work safety, learning outcomes, experimental objectives, introduction, aspects of student skills, activity 1...*

R: I suggest showing the guidebook or some of its components as figures or attached/annex/complementary material in order to give the reader the opportunity to better evaluate the results obtained and to possibly reuse it.

Lines 8-10: *The results of the ESD-integrated coastal conservation edukit validation showed an average of 98.5% with very suitable criteria for use in Indonesian ecology and biodiversity studies. The validation results of the ESD-integrated coastal conservation edukit media can be seen in Table 4.*

R: please move the second sentence before the first one: *"The validation results of the ESD-integrated coastal conservation edukit media can be seen in Table 4. The results of the ESD-integrated coastal conservation edukit validation showed an average of 98.5% with very suitable criteria for use in Indonesian ecology and biodiversity studies."*

Lines 11-13: *The results of material validation of the ESD-integrated coastal conservation edukit guidebook showed an average result of 100% with very suitable criteria for use in Indonesian ecology and biodiversity studies. The results of material validation of the ESD-integrated coastal conservation edukit guidebook can be seen in Table 5.*

R: same as above.

## PAGE 8

Lines 1-3: *In the ESD-integrated coastal conservation edukit, in addition, to acquiring quantitative assessments, comments and suggestions from expert lecturers were also obtained. The suggestions given include presenting the display of the ESD-integrated coastal conservation edukit which can be seen in Table 6.*

R: same as above. As for the second sentence, it is not very clear to me what the authors meant with *presenting the display*". Please rephrase.

Lines 4-9: *The readability test was carried out by 1 science teacher and 22 seventh-grade students. The results of the ESD-integrated coastal conservation edukit readability test conducted by teachers and students showed an average of 92.3%. Based on the results of the coastal conservation edukit readability test, it was found that the students' readability test results were lower than the teacher's readability test. This is because, in the operational aspect of the edukit, additional tools are needed to make it easier to take the stones and sand. The results of the quantitative data on the readability test of the coastal conservation edukit by teachers and students can be seen in Table 7.*

R: The last sentence should be moved to the beginning of this section.

Lines 10-13 (+ Line 1 of PAGE 9): *The results of the guidebook readability test showed an average of 93.3%. Based on the results of the guidebook readability test, it was found that the results of the teacher's readability test were lower than the student's readability test. This is because there are several aspects that need to be maximized, such as the images displayed, the language used, and the experimental procedures that are presented so that they are more easily understood by students. The results of the quantitative data on the readability of the guidebook by teachers and students can be seen in Table 8.*

R: Same as above. Moreover, I found it difficult to understand the differences between the readability test and the guidebook readability because they are not presented.

## PAGE 9

### Discussion

R: Most of the discussion is based on the guidebook structure and contents that are not shown in the manuscript. I would suggest to present the guidebook somewhere in the manuscript.

Lines 19-22: *Some of the impacts arising from abrasion are the narrowing of the coastal area, the ecosystem will be disrupted, and if left unchecked, it will damage the infrastructure, such as roads, bridges, or even sink an island (Pinto,*

2016). *The impact arisen is causing unstable economic growth, which then results in a decrease in people's welfare. Therefore, it is necessary to contribute to maintaining ecosystems under the water and on land to avoid any extinction.*

R: Since this part of the discussion is very important to link the proposed edukit to its usefulness in the educational process, I would suggest extending it to include considerations related to the topic of integrated coastal zone management. It is also important to consider the aspect of unsustainable human exploitation of coastal areas in recent decades to provide students with additional topics for a critical discussion.

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## Conclusions

Lines 17-18: *The product developed in this research is the ESD-integrated coastal conservation edukit along with its guidebook which has been tested to be very, very suitable for use in learning about Indonesian ecology and biodiversity.*

R: I would suggest to rephrase this sentence as follows: *"The product developed in this research is the ESD-integrated coastal conservation edukit along with its guidebook which has been tested to be very suitable for use in learning about Indonesian coastal erosional processes and related impacts on ecology and biodiversity."*

Lines 21-22: *Suggestions for disseminating ESD-integrated coastal conservation edukit products on Indonesian ecology and biodiversity are necessary to test their effectiveness.*

R: I would suggest changing this sentence, as the edukit developed deals more with coastal erosion processes and their impact on coastal ecosystems than with ecology and biodiversity.