

# Development of Non-Text Book on Fungi Diversity in Palm Oil and Rubber Plantations Based on Research in Labuhanbatu

Rahmadani Putri<sup>1</sup>, Tri Harsono<sup>2</sup>, Idramsa Idramsa<sup>3</sup>

{[rahmadaniputri280197@gmail.com](mailto:rahmadaniputri280197@gmail.com)<sup>1</sup>, [triharsonounimed@gmail.com](mailto:triharsonounimed@gmail.com)<sup>2</sup>, [idramsa@unimed.ac.id](mailto:idramsa@unimed.ac.id)<sup>3</sup>}

The Educational Biology Study Program of Postgraduate School of Universitas Negeri Medan, Jl. Willeam Iskandar Medan Estate, Medan 20221, Indonesia<sup>1,2,3</sup>

**Abstract.** This research aims to produce a product in the form of a non-text book about Fungi Diversity In Palm Oil And Rubber Plantations Based On Research In Labuhanbatu appropriate for students, teachers, or the general public in enriching knowledge, recognition and understanding of fungi. This type of research is research and development (R&D), with the Thiagarajan (4D) development model. The results of product validation by material experts obtained score of 89%, linguists obtained score of 88%, layout design experts obtained score of 89.5%. Respondents of biology teachers at SMA Negeri 3 Rantau Utara with individual trials obtained score of 82%, small group trials obtained score of 85%, limited group trials obtained score of 87%. Respondents of students class X1 with individual trials obtained score of 83%, small group trials obtained score of 84%, limited group trials obtained score of 89%.

Keywords: Development, Non-text Book, Fungi, Labuhanbatu

## 1 Introduction

Learning resources are all sources in the form of data, people, tools, materials, and environments that can support the learning process. Learning resources have a very important role for teachers and students. For a teacher, learning resources play a role in improving the quality of learning. Learning resources consist of everything that can be used to assist a teacher in learning, teaching and displaying his competence (Nur, 2012). One of the most used and easiest to find learning resources is books. Books as a source of information, realize the importance of its role in the educational process (Rizki et al, 2016). Books that are often used to gain knowledge are textbooks. But not all science is contained in textbooks. This is because textbooks are arranged based on the curriculum so that the information or science in the textbooks is limited in biology subjects.

Non-text books are a type of knowledge enrichment books that can be used by the general public and schools, but this book is not the main handbook used by students in learning activities. Non-text books with the type of knowledge enrichment books have functions including knowledge enrichment, which can increase knowledge and increase readers' insight into science. For this reason, additional books are needed to add information and knowledge, in the form of non-text books on fungal diversity (Widyaningrum et al, 2015).

Based on the results of initial data analysis in the form of a needs questionnaire conducted on 31 students, a percentage of 74% of students had difficulty learning material about fungi. Supported by students' answers, a percentage of 52% said the information contained in the textbook regarding the material of fungi was not specific. Only a few students who have reference books to learn material about fungi get a percentage of 6%. Therefore, the percentage of students who agree if an interesting non-text book (reference book) is developed as additional material for learning material about fungi is 90%.

The use of innovative teaching materials helps students be more motivated in the learning process due to the new era of digital education (Riyanto, 2020). The surrounding natural environment is one of the local potentials that can be used as a learning resource. Local potential is everything that characterizes and excels of an area that can provide benefits to people's lives (Kahar & Damayanti, 2018). The use of the potential of the surrounding nature as a learning resource provides an opportunity for students to be able to learn to recognize nature so that it can provide more interest in students. In addition, students can also more easily understand the material because it can be found in their environment and can provide new experiences and insights for students.

Labuhanbatu regency is one of the centers of oil palm plantations in North Sumatra, both managed by state or private companies and community plantations. Labuhanbatu is a district in North Sumatra that is synonymous with a very large area of oil palm and rubber plantations so that it can be used as a learning resource that is relevant and close to the daily lives of students, and also no one has conducted research-based research for the development of non-text books. So it is necessary to conduct research on the development of non-text books, mushroom diversity, oil palm and rubber plantations in Labuhanbatu as a learning resource.

## **2 Research Methods**

This research began in April 2022 with research on fungal diversity observations carried out in October 2022. The trial and dissemination of research-based non-text mushroom diversity book development products was carried out at SMA Negeri 3 Rantau Utara. The type of research used in this research is Research and Development. Research and development (R&D) using 4-D models used to produce non-text books by testing the feasibility and use of the book. This type of research has 4 stages, namely, define, design, develop and disseminate. This method and model was chosen because it aims to produce products in the form of non-text books.

The instruments used in the research development of this book consist of validation sheet instruments by experts and questionnaires or questionnaires of responses from teachers and students. Validity test is a test carried out by expert experts by providing advice and input and then revision is carried out as the basis for making products. Validation is intended by asking experts who have experience in their fields to check and assess products (Sholihah et al, 2021).

The research subjects in the implementation of trials and dissemination of development products in the form of research-based non-text fungal diversity books were biology teachers and grade X<sub>1</sub> science students at SMA Negeri 3 Rantau Utara which were carried out individually by 1 biology teacher and 3 students, small group tests were carried out on 2 biology teachers 9 students and limited group tests were carried out on 3 biology teachers and 35 students.

The results of collecting non-text book feasibility data by various expert validators and also responses from the general public, namely material experts, linguists, layout design experts were then analyzed. The analysis was conducted to determine the feasibility category of non-text books by each expert validator as well as the responses of biology teachers and students. The eligibility category of non-text books is determined by calculating the eligibility value of each book assessment data by expert validators and the responses of biology teachers and students. The validation instrument to each expert validator is made in the form of Likert scale.

**Table 1.** Book Assesment Rubric

Score	Category
5	Excellent
4	Well
3	Pretty good
2	Not good
1	Not good

(Sugiyono, 2015)

The data obtained will be analyzed descriptively by calculating the score presentation for each criterion in the research-based book developed, so that the percentage of feasibility of the assessed aspects is obtained using the formula:

$$\text{Score percentage} = \frac{\text{Number of indicators per category}}{\text{Total number of indicators}} \times 100\% \quad (1)$$

Converting scores into scores and then analyzing the simplified data into a form that is easier to read and interpret in order to obtain conclusions about the book being developed is included in the category of very feasible, feasible or not yet feasible.

**Table 2.** Book Eligibility Criteria

Score (%)	Category
81-100	Very feasible
61-80	Proper
41-60	Not worth it yet
21-4	Not worth it yet
0-20	Not worth it yet

(Sugiyono, 2015)

### 3 Results And Discussion

The appearance of this non-text book contains subject matter about fungi and is supported by language that can make students more motivated to read so that the knowledge gained is wider and more useful. This non-text book can be read and understood by anyone because the language used is flexible and easy to read as good reference material. This non-text book contains a cover display, a table of contents, a list of images that support the key to understanding the shape and variety of these fungi so that it makes it easier for students to see pictures and shapes of these fungi.

Based on the validation of several validators of this non-text book product through a series of trials and revisions that have been carried out, this non-text book is declared feasible and valid. A series of trials were carried out systematically, namely: [1] Validation of media experts, material experts and linguists; and [2] Individual, small group, and limited group trials of the feasibility test of the development book for biology teachers and science students X<sub>1</sub> SMA Negeri 3 Rantau Utara. Validation of this non-text book product is to find out the opinions of material experts, linguists and layout design experts about the accuracy of the design and substance of the material as well as the determination of words and the preparation of appropriate sentences used to facilitate and understand the content of the material to students so that students are interesting to read the non-text development book. In terms of the use of interesting images as well as additional diagrams and so on are also seen and considered properly. This non-text book is presented in print and file.

Validation of material experts in the development of non-text books on fungi. The assessment on the feasibility aspect of the material consists of several sub-aspects, namely seen from the suitability of the description of the material with the reader, legal certainty in the material, the authenticity and truth of the material, the up-to-date of the material and the sources of the material. Assessment on the presentation aspect with several sub-aspects, namely presentation techniques, material utilization and feasibility of presentation. The validation results are in the form of assessment scores on sub-aspects in accordance with the material presented in the feasibility of the content of non-text books that are being developed.

**Table 3.** Material Expert Validator Assessment Score

<b>Aspect</b>	<b>Score</b>	<b>Category</b>
Appropriate description of the material with the reader	80%	Proper
Legal certainty in the material	100%	Very feasible
Authenticity and truth of the material	80%	Proper
Material update	80%	Proper
Material sources	100%	Very feasible
Presentation technique	100%	Very feasible
Material utilization	85%	Very feasible
Presentation eligibility	86,7%	Very feasible
<b>Average</b>	<b>89%</b>	<b>Very feasible</b>

Assessment of the language used in non-text books is carried out to make it easier for students to be more interactive in understanding the material presented in language that is easy to understand. The assessment of language aspects in non-text books is the use of language, writing of language and terms, coherence and integration of thought flow. The validation results are in the form of assessment scores on language aspects presented in the language assessment used in the non-textbook being developed.

**Table 4.** Language Expert Validator Assessment Score

<b>Aspect</b>	<b>Score</b>	<b>Category</b>
Language use	83%	Very feasible
Writing language and terms	90%	Very feasible
Consistency and coherence	90%	Very feasible
<b>Average</b>	<b>88%</b>	<b>Very feasible</b>

Validation of design experts in the development of non-text books on fungi. The assessment of the graphic aspect is carried out to improve the quality of the display of non-text book media which is developed in an attractive way. The validation results in the form of assessment scores on graphic aspects according to the mushroom material presented in the non-text book can be described by the validator.

**Table 5.** Layout Design Expert Validator Assessment Score

<b>Aspect</b>	<b>Score</b>	<b>Category</b>
Book cover design	85%	Very feasible
Book content design	89%	Very feasible
Illustrations (pictures, tables, graphs)	95%	Very feasible
<b>Average</b>	<b>89,5%</b>	<b>Very feasible</b>

Individual group tests were conducted on 1 Biology teacher and 3 grade X students of SMA Negeri 3 Rantau Utara. This group test aims to determine teacher and student responses to products from the development of non-text books on fungal diversity in research-based oil palm and rubber plantations in Labuhanbatu that have been developed. The assessment responses from this group test are a view to improve the product to be better and feasible as a non-text book as an enrichment in learning in class X. The results of responses from 1 Biology teacher in this individual test are in the form of assessment scores against non-text books.

**Table 6.** Individual Group Test

<b>Research subject</b>	<b>Aspect</b>	<b>Score</b>	<b>Category</b>
1 Biology Teacher	Material	80%	Proper
	Language	85%	Very feasible
	Presentation	80%	Proper
	Graphic	83%	Very feasible
<b>Average</b>		<b>82%</b>	<b>Very feasible</b>
3 Students	Material	80%	Proper
	Language	85%	Very feasible
	Presentation	83%	Very feasible
	Graphic	82%	Very feasible
<b>Average</b>		<b>83%</b>	<b>Very feasible</b>

Small group test conducted on 2 Biology teachers and 9 grade X students at SMA Negeri 3 Rantau Utara. This group trial aims to find out the responses of Biology teachers and students in identifying product deficiencies from the development of non-text books that have been developed in the previous stage of individual group testing. The assessment responses from this small group test are a view to improve the product to be better and more feasible as a non-text book or enrichment to increase knowledge for grade X students. The results of the responses from 2 Biology teachers in this small group test are in the form of assessment scores against non-text books.

**Table 7.** Small Group Test

<b>Research subject</b>	<b>Aspect</b>	<b>Score</b>	<b>Category</b>
2 Biology Teachers	Material	85%	Very feasible
	Language	85%	Very feasible
	Presentation	85%	Very feasible
	Graphic	83%	Very feasible
<b>Average</b>		<b>85%</b>	<b>Very feasible</b>
9 Students	Material	82%	Very feasible
	Language	87%	Very feasible
	Presentation	83%	Very feasible
	Graphic	84%	Very feasible
<b>Average</b>		<b>84%</b>	<b>Very feasible</b>

The limited group test was conducted on 3 Biology teachers and 35 grade X students at SMA Negeri 3 Rantau Utara. The determination of class X for the test in this study was determined from the needs of the students regarding fungal knowledge and the results of discussions with the supervisors. This limited group test aims to reassess the responses of Biology teachers and students and identify product deficiencies from the development of this non-text book. The assessment responses from this group test are a view to improve the product to be better and more feasible to be used as additional teaching material for students knowledge about fungi or fungi in grade X high school.

**Table 8.** Limited Group Test

<b>Research subject</b>	<b>Aspect</b>	<b>Score</b>	<b>Category</b>
3 Biology Teachers	Material	86%	Very feasible
	Language	87%	Very feasible
	Presentation	90%	Very feasible
	Graphic	86%	Very feasible
<b>Average</b>		<b>87%</b>	<b>Very feasible</b>
35 Students	Material	89%	Very feasible
	Language	87%	Very feasible
	Presentation	91%	Very feasible
	Graphic	88%	Very feasible
<b>Average</b>		<b>89%</b>	<b>Very feasible</b>

#### **4 Conclusion**

The feasibility level of the non-text book on fungi diversity on oil palm and rubber plantations in Labuhanbatu is based on research according to validators who are experts in material, language and layout design with successive scores 89%, 88% and 89,5% which was included in the very feasible category.

The results of the product feasibility trial from the response of the Biology teacher at SMA Negeri 3 Rantau Utara to the product in the form of a non-text book based on research on the diversity of fungi in oil palm and rubber plantations in Labuhanbatu that non-text books developed were obtained from three aspects individual trials, small group trials, limited group trials results obtained in the form of a percent score that is 82%, 85% and 87% with a very feasible category.

The results of the product feasibility trial from the responses of Class X1 Science students at SMA Negeri 3 Rantau Utara to the product in the form of a non-text book based on research on the diversity of fungi in oil palm and rubber plantations in Labuhanbatu that non-text books developed were obtained from three aspects individual trials, small group trials, limited group trials results obtained in the form of a percent score that is 83%, 84% and 89%.

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