

Development of A Non-Text Book of Characterization of Sitapak Variety of Shallots in Samosir Regency, North Sumatera

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Abstract. Books used to gain knowledge are textbooks. Textbooks are not enough to obtain information, so non-text books are needed. One of the important materials to be included in non-text books is biodiversity because diversity in Indonesia is very high, one of which is the Sitapak variety of shallots. The purpose of this study was to determine the feasibility and responses of students to non-text books based on research on the Sitapak variety of shallots. This type of research is R & D (Research And Development) with a 4D model, carried out in February 2021-February 2022 at Medan State University. The data collection technique used is the documentation technique of the book's feasibility data by a team of experts. The data analysis technique is done by changing the score into a value and then interpreting it. The instruments in this study are validation sheets for validators and student responses to books. The results showed that the non-text book characterizing the Sitapak Shallots was declared feasible and could be used based on the material expert validator with an average score of 94.2% (very good), learning design expert with an average rating of 89.9% (very good). . Based on linguists with an average rating of 86.6% (very good), and based on layout experts with an average rating of 81.75% (very good). Thus, the Sitapak variety of shallot non-text book was declared feasible to be produced and used.

Keywords: Book development, non-text books, characterization, Sitapak shallots

1 Introduction

Books used to gain knowledge are textbooks. However, not all science is contained in textbooks. This is because the textbooks are arranged based on the curriculum so that the information or knowledge in the textbooks is limited, so additional books are needed to add information and knowledge in the form of non-text books. An important material that needs to be included in non-text books is biodiversity. Biodiversity is important to study because biodiversity has economic and consumptive values that can be used for humans and the environment. In addition,

by studying biodiversity, it is hoped that attitudes will emerge to protect, avoid extinction, and can preserve the existing diversity.

One of the important types of flora included in non-text books is the Sitapak variety of shallot (*Allium ascalonicum* L. var. Sitapak) because it is very rarely published in books and its existence is already threatened with extinction. The literature review was carried out in 3 locations in the city of Medan, namely the Unimed Digital Library, bookstores, as well as the Medan City Library and Archives. This has an impact on the lack of knowledge of Unimed Biology students about the Sitapak variety of shallots.

Based on the results of the Unimed Biology Student needs analysis conducted in February 2021, only 40.25% of students familiar with the Sitapak variety of shallots were in the low category. The low knowledge of Unimed Biology students about the Sitapak variety of shallots cannot be separated from the limited learning resources they have. It is necessary to develop a non-text book about the Sitapak variety of shallots. Apart from the lack of books about the Sitapak variety of shallots, shallots also have good health benefits. Indonesia has many local varieties of shallots as an important source of germplasm for the purpose of breeding high-yielding varieties. In North Sumatra, the Samosir area is known for its shallot production as the prima donna of agricultural products. This is because the agroecology in this area is very friendly and supports shallot farming (Sunaryono and Soedomo, 1989). Samosir has long been famous for its local shallots.

Apart from being a rich source of germplasm, the Sitapak variety of shallots is almost extinct due to imported shallots and seeds that the government has started to import into the Samosir region (Purwantoro and Fitri, 2005). This variety has the advantages of a very distinctive aroma, fragrant and pungent, redder and shiny color, spicier taste, less water content even though its size is smaller than other varieties. Shallots are very potential to be developed in Samosir Regency, North Sumatra, because the suitability of the land owned by the area is sufficient to support the growth of horticultural crops with high economic value.

Students of the Biology Department of Unimed stated that it was necessary to develop a book on the Sitapak variety of shallots in accordance with the average score obtained, which was 97.8%. The results of the analysis support research on the development of non-text books about the Sitapak variety shallot which can later be used to increase the insight or cognitive of Unimed Biology Students about the Sitapak variety shallot. Based on this background, the researchers conducted a study on "Development of a Non-Text Book Based on Research on the Characterization of Sitapak Varieties of Shallots (*Allium ascalonicum* L. var. Sitapak) in Samosir Regency, North Sumatra". The results of this study are in the form of non-text books with the type of knowledge enrichment that can be used as alternative media or sources of supporting knowledge about the Sitapak variety of shallots.

2 Research Methods

Observational research on the Sitapak variety of shallots has been carried out from February 2021 to October 2021 for students of the Biology Department of UNIMED in Medan. This type of research is R & D (Research And Development) using a modified 4-D model until the Development stage. The instrument used in this development research consisted of a validation sheet instrument for expert validators (material experts, learning design, language, and layout

design), questionnaires or questionnaires for the needs of UNIMED Biology students. The development of the validation sheet was carried out based on Puskurbuk (2014).

The procedure in this study refers to the 4D development model consisting of 4 stages, namely the definition stage, the design stage, the development stage, and the deployment stage. However, in this study only up to the development stage. The techniques used in this case are documentation techniques from book feasibility data by material experts, learning design experts, linguists, layout design experts and individual product testing 3 people, small groups of 15 people, and a limited group of 30 Unimed Biology students. The feasibility data test and book trial from both experts and Unimed Biology students were carried out by scoring the indicators in each aspect. The scoring rubric uses a Likert scale with a score range of 5 (as Table 1). Then add up the overall score of each indicator and each existing aspect and look for the average of each aspect and sub-aspect.

Table 1. Book Assesment Rubric

Answer	Score
Very good	5
Well	4
Pretty good	3
Not good	2
Not good	1

Source : Sugiyono (2015)

The analysis technique is to calculate the feasibility value (from experts and UNIMED Biology students) and product trials. The data that was originally in the form of a score was converted into a value form by using a formula. $P = (\sum Q) / (\sum R) \times 100$

Information :

P = the value obtained for each aspect or each sub-aspect observed.

Q = score obtained by each aspect or each sub-aspect observed.

R = the maximum score for each aspect or each sub-aspect observed.

After the data is converted into values, the data analysis is simplified and interpreted in order to obtain conclusions regarding the feasibility of the developed book. The book eligibility criteria are categorized into Table 2.

Table 2. Book Eligibility Criteria

Level Achievement	Predicate	Category
81 -100	Very Good	Decent
61 – 81	Well	Fairly decent
41 – 61	Enough	Not worth it
21 – 40	Less	Not worth it
0 – 20	Very poor	Not worth it

Source : Sugiyono (2013)

3 Research Result

3.1 Results of the defining stage

The basic problem found is that there is no book containing shallots. The results of the literature review in that place have not found any non-textual books about the Sitapak variety of shallots, both in general and in particular. Then an analysis of the needs of students in the Department of Biology at the State University of Medan was carried out, it was found that Unimed Biology students did not know or knew the Sitapak variety red onion with an average of 59.75% and who knew about the onion an average of 40.25%.

Another problem found is the existence of Sitapak shallots are almost extinct. Likewise, sources regarding the Sitapak variety of shallots owned by Biology Students with an average score of 38.73 were still relatively low. Meanwhile, for the needs of Biology students regarding the development of books on the Sitapak variety of shallots, the average score of 97.8 is very high.

3.2 Design Phase Results

The design stage, the goal is to design media that can increase the knowledge of UNIMED Biology students regarding the Sitapak variety of shallots and the preparation of the instrument. The selected media is a non-text book in the form of a knowledge enrichment book, then an initial design is made in the form of a non-text book outline that will be developed. The elements contained in the developed research-based book are: 1) Book Cover; 2) Book Identity; 3) Preface; 4) Table of Contents; 5) Image List; 6) List of Tables; 7) Chapter I. Introduction; 8) Chapter 2. Sitapak Variety of Shallots; 9) Chapter 3. Distribution of Sitapak Variety of Shallots; (10) Chapter 4. Characterization and kinship of Sitapak Variety of Shallots Based on Accession; 11) Chapter 5. Genetics and Biology of Sitapak Shallots; 12) Chapter 6. Content and Benefits of Sitapak Shallots; 13) Chapter 7. Research related to the Sitapak Variety of Shallots; 14) Bibliography ; 15) Glossary ; 16) Index; 17) Author Biography.

3.3 Development Stage Results

At the development stage, a validation process is carried out on the books that have been developed. The validation process was carried out to several expert validators consisting of material experts, learning design experts and layout design experts to obtain suggestions, input, comments, and improvements to the developed book. Then the initial revision is carried out according to the suggestions, input, comments, and improvements from each validator. After the book is declared valid by the validator, the next step is to conduct development trials by looking at the responses of lecturers and students to the developed book. Test book developed for students majoring in biology. The data obtained from the research results of the questionnaire assessment sheet were then analyzed and then interpreted in the form of qualitative sentences.

3.4 Eligibility of the Expert Team

Material Expert Validation Eligibility. Based on **Table 3** then obtained the average assessment of the material expert is 94.2% with a very good category. These results indicate that the research-based introduction to the Sitapak variety of shallot (*Allium ascalonicum* L. Var. Sitapak) in the material section is feasible to produce. This is because the books that have been made have met the indicators in the assessment components as follows: (1) the feasibility of the material (completeness of the material, the authenticity and truth of the material, the up-to-date material, sources of material), (2) the feasibility of the presentation (presentation

techniques, utilization of materials and material suitability). Before this book is feasible for production, there are several revisions suggested by the validator.

Table 3. Material Expert Validation Eligibility

No	Aspect	Average (%)	Criteria
1	Material Eligibility	95	Very good
2	Serving eligibility	93,33	Very good
	Average	94,2	Very good

Eligibility of Learning Design Expert Validation. Based on **Table 4.** then the average assessment of the two learning design experts is 89.9% with a very good category. These results indicate that the research-based introduction to the Sitapak variety of shallots in the learning design section is feasible to produce. This is because the books that have been made have met the indicators in the assessment components as follows: (1) suitability of the material (completeness of material, breadth of material, and depth of material), (2) systematic delivery of material, (3) book efficiency, (4) linguistics (conformity with the rules of the Indonesian language and the use of terms and symbols).

Table 4. Percentage of Learning Design Expert Assessment

No	Aspect	Average (%)	Criteria
1	Material depth	90%	Very Good
2	Material accuracy	93,3%	Very Good
3	Presebtation technique	83,3%	Very Good
4	Material clarity	80%	Very Good
5	Presentation equipment	100%	Very Good
6	Language	90%	Very Good
7	Book efficiency in learning	93,3%	Very Good
	Average	89,9	Very Good

Layout Expert Validation Eligibility Table. Based on the results of Table 5. then the average assessment of the layout design expert is 81.75% with a very good category. These results indicate that the book developed in the layout design section is feasible to be produced. This is because the books that have been made have met the indicators in the assessment components as follows: (1) the book cover design is appropriate; (2) book layout design; (3) typography; and (4) illustrations. Before this book was worthy of production, there were several revisions suggested by layout design experts.

Table 5. Layout Design Expert Rating

No	Aspect	Average (%)	Criteria
1	Book cover design	80	Good
2	Book layout	84	Very Good
3	Typography	83	Very Good
4	Illustration	80	Good
	Average	81,75	Very Good

Eligibility of Linguist Validation. Based on the results of Table 6. then the average assessment of linguists is 86.66% with a very good category. These results indicate that the book developed in the language section is feasible to be produced. This is because the books that have been made have met the indicators in the assessment components as follows: (1) use of language, (2) writing of language and terms, (3) coherence and coherence. Before this book is feasible for production, there are several revisions suggested by linguists.

Table 6. Percentage of Language Expert Rating

No	Aspect	Average (%)	Criteria
1	Language Usage	80	Good
2	Writing Language and Term	80	Good
3	Coherence and Cohesiveness	100	Very Good
Average		86,66	Very Good

3.5 Product Rating Trial

Individual Product Trial. Individual assessment is carried out by 3 students by assessing 4 components, namely material, language, presentation, and graphics. Individual test graphs can be seen in **Figure 1**.

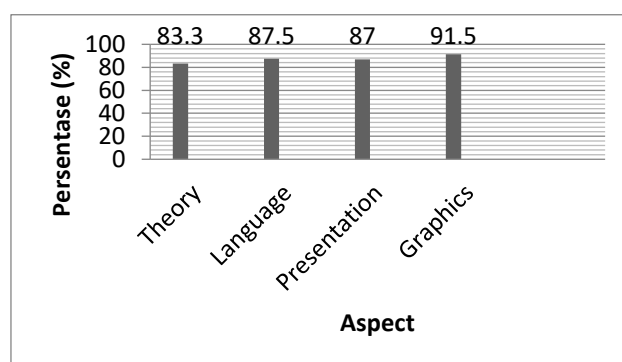


Fig.1. Results of Research-Based Book Assessment in Small Group Trials (N= 3)

In collecting responses through google forms, students also commented on books, including: interesting book covers, book contents supported by other research results. The average student response assessment based on the components of material, language, presentation, and graphics is 87.2% and is classified as very good.

Small Group Product Trial. Individual assessment is carried out by 3 students by assessing 4 components, namely material, language, presentation, and graphics. Individual test graphs can be seen in **Figure 2**.

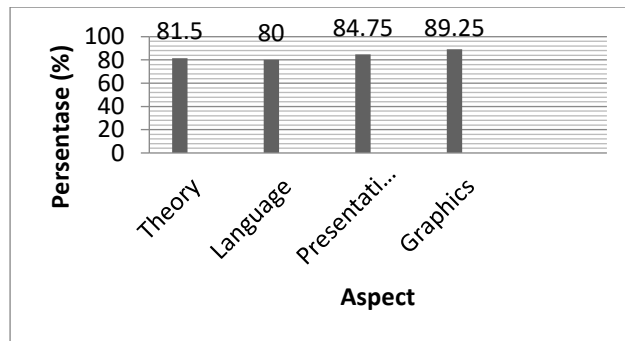


Fig.2. Results of Research-Based Book Assessment in Small Group Trials (N=15)

In collecting responses through google forms, students also commented on books, including: clarifying the pictures in the book, good and interesting book covers. Revision is done by reviewing again according to the suggestions in the comments column provided and revising the parts that can be improved. The average assessment result in the small group trial was 83.88% which was included in the very good category.

Limited Group Product Trial. Limited group trials were carried out in 1 class consisting of 30 students as shown in **Figure 3**.

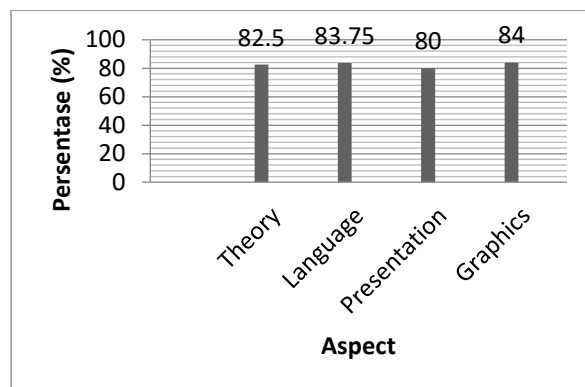


Fig.3 Book Assessment in Limited Group Product Trials (N=30).

Respondents in product trials with an average of 86.5% which are included in the very good category. Respondents gave positive and good comments such as this book has a good and attractive appearance and stated that the presentation of the book was good and clear. No revision suggestions were found in the comments column.

4 Discussion

The development of a research-based non-text book on the Sitapak variety of shallots uses the modified Thiagarajan (4D) model at the development stage. At the definition stage, it is analyzed and found problems, weaknesses and the need for a condition that is the root driving

force for the development of a product. The product that has been developed in this research is a research-based non-text book of knowledge enrichment about the Sitapak variety of shallots. The first stage carried out in this development research was to analyze the needs of 40 students majoring in Biology Unimed and the results of the needs analysis were 40.25% who knew information about the Sitapak variety of shallots. Meanwhile, 59.75% of Biology students did not know information about the Sitapak variety of shallots. The results of the initial analysis also showed that 72% of students said that there was a lack of information about the Sitapak variety of shallots. The results of the analysis also showed that 97.8% of students really needed the development of the Sitapak variety of shallot books and 2.2% stated that they needed the development of non-text books on the Sitapak variety of shallots.

Apart from the results of the analysis carried out for the development of the book based on the needs analysis carried out, another thing that underlies the development of the book is that the red onion variety is a local Samosir onion which is a natural wealth that really needs to be preserved. Currently, the existence of the Sitapak variety of shallots is in danger of extinction due to the large number of farmers who shift the function of agricultural land to other crops, and also because of a government program that introduces other varieties of shallot seeds from the island of Java. This causes many farmers to plant shallots from the island of Java because in terms of planting and maintenance, it is easier and the yield is higher because the shallots from the island of Java have larger bulb sizes than the shallots of the Sitapak variety.

Next is the product design stage and the design of the assessment validation sheet. The selection of presentation forms or formats that already exist and are adapted from close library sources (Widyaningrum et al, 2015). The main aspects that need to be considered are the selection of formats and print media for materials and initial production (Prasetyo, 2015 in Panggabean, 2021). After reviewing, a simple layout, presentation and format were selected, namely A5 size, full color, and the material presented was coherent and clear, and the language used was logical, systematic, and used standard but not rigid language, so that it was easy to understand. by students majoring in biology. The design of the validation sheet was developed based on Puskurbuk (2008), presented in the form of a questionnaire consisting of material aspects, presentation aspects, language aspects, and graphic aspects. The book validation sheet is intended for expert validators, students majoring in biology to assess the feasibility of the non-text books made.

The next stage is the development stage, where field research is carried out, namely characterizing and looking for kinship relationships of the Sitapak variety of shallots in Samosir district. From this study, it was found that there were similarities in the characteristics of the observed leaf shape, flower color, flower shape, and tuber color, the color of the inside of the tuber. The farthest kinship is in accessions A5 (Sarimarrhit Village) with other accessions with a value of 0.71 and the closest kinship is in accessions A4 (Sarimarrhit Village) and A6 (Ambarita) with a value of 0.93.

The Sitapak variety of shallot non-text book was then tested for validation by 4 expert validators, namely lecturers who are experts in the fields of material, learning design, language, and layout. The non-text book product developed must be intended for students majoring in biology to enrich their knowledge and understanding of the Sitapak variety of shallots. Research-based non-text books on Sitapak variety shallots were assessed by validators of material, learning design, language, and layout experts with average scores of 94.2%, 89.9%, 86.6%, and 81.75%, respectively. which is included in the very good category and deserves to be produced and can be used by students, researchers, and readers in general. The results of developing a non-text

book on Sitapak variety shallots have been revised according to the suggestions of each validator. The Regulation of the Minister of National Education of the Republic of Indonesia Number 2 of 2008 explains that books that are eligible to be used as reading sources have standard criteria, namely the feasibility of the content/material, the feasibility of presentation, the appropriateness of the language, and the feasibility of the graphic/layout.

The pattern of presentation of a material will be considered good if the material is presented in a consistent, systematic, and sequential manner so that it can assist in understanding the content of the material. The placement of images in the book must be in accordance with the material discussed. Pictures must also have captions so that readers can observe the pictures without turning the pages of the book (Martin, 2012). According to Kurniasari (2014) books must describe material that is adapted to the development of science and technology. Accordingly, this research-based book includes research procedures accompanied by tools and materials used that can involve students to conduct experiments/mini research independently. According to Oktaviana (2015), research-based books have a good influence on strengthening students' understanding of abstract concepts in books for a more contextual understanding (Rofi, 2014). In line with the results of Yahya's research (2010), it shows that the increase in the development and application of research-based curricula has led to a strengthening in the quality of learning, and has triggered changes in increasing the space for student involvement. This is an indicator that learning can be combined and matched with the research domain. Research-based books can be chosen as a means of developing research results and are flexible.

According to Kurniasari (2014), the provisions in making books are relevant to the goals of national education and in accordance with the abilities to be achieved. The book development process then collects various information from various library sources, such as textbooks, scientific articles, journals, mass media, then packaged according to student needs and written with a systematic framework (Husamah, 2015 in Aspahani, 2019). According to Pangastuti (2016), books must be presented in a sequential, straightforward manner, the material develops knowledge, fosters motivation to think further, the presentation of material develops physical activity, is good enough in motivating students to be creative, innovate, and apply based on tools, materials, stages. work, and presentation content. Sentences are presented simply with a maximum of 30 words per sentence to make it easier for readers to understand sentences (Wallwork, 2013 in Aspahani, 2019).

The validation of linguists aims to see the order of language, effectiveness, communicativeness, consistency and use of language in accordance with good and correct Indonesian and appropriately used in the preparation of research-based non-text books about the Sitapak variety of shallots. Grammar improvement aims to make it easier for students to understand when reading research-based books about the Sitapak variety of shallots. After the revision of the validator, the book was declared good and suitable for use. According to Prastowo (2012), language standards include; use good and correct Indonesian, terminology adheres to enhanced spelling, clarity of language used, language suitability, ease of reading. Do not use the same grammatical structure with multiple meanings (Wallwork, 2013). The readability of a reading for the reader is based on the level of difficulty or maturity of the discourse (Kusuma, 2018). The same thing was said by Dewi and Arini (2018) in Harahap (2020) that a reading with a good level of readability will affect the reader in increasing interest in learning and memory.

Validation of the feasibility of graphics is assessed by layout design, the purpose of this validation is to assess the quality of the size of the book, the appearance of the book, illustration images and layout of writing that makes the reader interested. The average validation results

from layout experts is 86.5% which is included in the very good category. This shows that this book has included the criteria that a book should have. According to Putra (2011) in Harahap (2020) that books should contain illustrations that attract readers and pictures that do not cause reader misunderstanding. In line with Suswina (2011) in Harahap (2020) that learning biology has the condition that there must be pictures in order to explain the processes in it.

Improvements to the graphic aspect of the book were carried out by changing the type of writing on the cover of the book with clearer and more consistent writing. Then improve the layout of the cover with a more attractive and brighter and describe the contents of the book. Thus the cover of the book is in accordance with the contents of the book so that it can attract interest in reading and make it easier for readers to know the contents of the book as reflected in the cover of the book according to the research conducted (Kurniasari, 2014). Improvements to the graphic aspect of the book were also carried out by changing the numbering of each image in the book according to the hierarchy and making a list of the images. In accordance with the characteristics of the presentation of non-text books, which are loose, creative, and innovative so that they are not subject to the provisions of the learning process and systematics that are determined based on the science of education and teaching (Puskurbuk, 2008).

Based on individual, small group, and limited group trials conducted with scores of 87.2%, 83.88, and 82.56%, respectively, that students are interested in reading research-based non-text books. Students are interested in the book, especially based on the content and images presented, which are considered interesting and able to increase their curiosity and motivation to read. Picture textbooks perform well in teaching, when text and pictures are combined, reading performance and retention is improved compared to text-only books. This is in accordance with the opinion of Wibowo (2016) that a good book is attractive, easy to understand, motivates the reader, and is clear.

Research-based non-text books about the Sitapak variety shallots, overall from the average number of each validator material expert, learning design expert, linguist, and book layout expert are included in the valid criteria with a very good category so that they can be used as additional reading material for students. Although according to each validator the book has been valid, improvements must still be made based on suggestions, input, corrective comments submitted by the validator. In accordance with the opinion of Lepiyanto and Pratiwi (2015) a product that has been declared good by the validator, still needs to be improved because the book has suggestions from several experts.

5 Conclusion

The non-text book characterizing the Sitapak Shallot variety was declared feasible and could be used based on the results of validation by material expert validators, learning design experts, layout experts, and linguists with successive scores of 94.2%; 89.9%; 81.75%; and 86.6% which fall into the very good category.

The non-text book on the characterization of the Sitapak Variety of Shallots was also declared feasible based on student responses with an average individual, small group, and limited group assessment of 87.2%, respectively; 83.88; 82.56% which fall into the very good category.

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