

Development of algebraic structure teaching materials to overcome learning difficulties for students

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Abstrak

Riset ini bertujuan untuk mengidentifikasi kelayakan produk bahan ajar Struktur Aljabar I dalam menanggulangi kesulitan belajar mahasiswa pendidikan matematika disalah satu universitas kota Medan. Tipe riset ini ialah riset pengembangan (*development research*) dengan memakai model 4-D Thiagarajan yang dimodifikasi jadi 4 sesi yakni *define, design, develop*, serta *disseminate*. Sampel dalam riset ini berjumlah 242 mahasiswa. Hasil dalam riset ini yaitu produk bahan ajar Struktur Aljabar I dikatakan layak digunakan dalam menanggulangi kesulitan belajar mahasiswa pendidikan matematika karena memenuhi 3 kriteria, yakni: valid, praktis, serta efektif. Sehingga bahan ajar dapat digunakan untuk perkuliahan Struktur Aljabar I berikutnya.

Kata Kunci: Bahan Ajar, Stuktur Aljabar, Kesulitan belajar

Abstract:

This study aims to identify the feasibility of Algebra Structure-I teaching material products in overcoming learning difficulties for mathematics education students in one of university in Medan. This type of research is a development research using the Thiagarajan 4-D model which was modified into four stages namely define, design, develop, and disseminate. The sample in this study was 242 students. The results in this study are the teaching material products of Algebra Structure-I said to be feasible to be used in overcoming learning difficulties of mathematics education students in because it meets 3 criteria, namely: valid, practical, and effective. So, the teaching material is able to be used for next Algebra Structure-I learning.

Keywords: Development of Teaching Materials, Algebra Structure, learning difficulty

1. INTRODUCTION

Mathematics has many scientific branches, each of which has a relationship with a variety of other disciplines. Learning mathematics is very important because mathematics has many roles in everyday life, one of which is the scientific branch of Algebra Structure. Algebraic structure has a relationship with other disciplines, such as sets, mappings, number theory, and the properties of the structures in it.

In the department of mathematics education in one of university, the Algebra Structure course is divided into two, namely the Algebra Structure I (discussing about groups) and the Algebra Structure II (discussing about ring). Algebra structure is a compulsory subject that must be present in every curriculum in Department of Mathematics/Mathematics Education at both undergraduate and postgraduate levels. Fadillah & Jamilah (2016:106) said that through the Algebra Structure course students get a deeper understanding related to mathematical concepts such as identity and inverse.

Algebraic Structures course is not enough to simply read, but must understand and be able to analyze (known as proof). This is in accordance with Waluyo & Sari (2017:116) which says that mathematics is not only related to algebraic calculations and manipulation, but abstract mathematics leads to the proof of theorems and lemmas. Proof is a very important part in studying the structure of algebra because this course is dominated by definitions, axioms, and theorems. Students are required to be able to understand every definition, axiom, or theorem that exists in the discussion of Algebraic Structure.

Based on the result of observations made by researchers at mathematics education in one of university, it shows that there are still many students who have difficulty in studying the structure of Algebra. There are still a lot of Algebraic Structure values for students of department of mathematics education which are low, so that among them must repeat in the lower semester. It is based Card Study Results

(KHS) students in one of mathematics education department on the courses of Algebra Structure I, amounting to 201 people, found that: there are still many students in one of mathematics education department have low value on the course Algebra Structure I. The number of students who get A grade in the Algebra Structure I course is 45 people or around 22,39% of the total students and classified as very good. While the number of students who get B grade in the Algebra Structure I course is 93 people, or around 46,27% of the total students and is classified as good. The number of students who got C grade as many as 57 people or about 28,36% of the total student population and got quite enough. The number of students who get D grade in the Algebra Structure I course is 5 people or around 2,49% of the total students and is classified as less. Meanwhile, the number of students who received E grade in the Algebra Structure I course was 1 person or around 0,50% of the total students and classified as very less.

According to Usman (2010:64), a student is called complete in learning when it reached a score of 65% or 6,5 and a class is called complete in learning if there are 65% who have achieved a score of 65% in the class. Based on these opinions with regard to the outcome students in one of mathematics education department at one of university on the Algebra structure I course, it can be said that there are still many students who have not completed the study because there are many students who got C grade. This certainly illustrates that there are still many students who have difficulty in learning Algebra structure course.

This is in line with the opinion of Arnawa in Setyaningsih et al. (2015:2) said that the Algebraic Structure is one of the subjects that is difficult to study and to work on. This statement corresponds with what was stated by Keith (2002), Stavros (2014), and Elif et al (2015) in Waluyo & Sari (2017:116) regarding difficulties in abstract algebra that students often make mistakes in solving math problems. Based on the result of research conducted by Maysarah (2018:59) said: "The difficulties experienced by students of Mathematics Education at One of university in solving problems algebraic

structures are: (1) the difficulty of students in interpreting symbols in algebraic structure, (2) the difficulty of students in using the arguments or axioms contained in the algebraic structure material, (3) the difficulty of students in explaining the procedure of working on problems because the material has not mastered yet, and (4) the difficulty of students in conducting deductive proof."

To overcome this problem, it is necessary to compile an instructional material for Algebra Structure I that is easily understood by students of Department of mathematics education. This corresponds with what was stated by Fadillah & Jamilah (2016:61) that efforts to improve the ability of mathematical proof, one of which can be done by using teaching materials that can support the formation of mathematical proof capabilities. The instructional material contains material such as sets, functions, binary operations, groups, basic theorems about groups, subgroups, permutation groups, cosets, normal subgroups, and factor groups. Each of these materials is presented in the form of definitions, theorems, problem examples, and exercises with a view to making it easier for students to understand this lecture material. Based on the explanation that has been stated, the researcher is interested in conducting a study with the title "Development of Algebraic Structure Teaching Materials to Overcome Learning Difficulties for Students."

The purpose of this study was to determine: (1) The stages of the development of instructional materials in the Structure of Algebra I in overcoming learning difficulties of students in one of mathematics education department. (2) The feasibility of the Algebra Structure I teaching material product in overcoming learning difficulties.

Jamaris (2014:17) argued that learning difficulties are conditions that showed a number of abnormalities that affects the outcome of the use of information, both verbally and non-verbally. According to Hakim (2005:22), learning difficulties are conditions of students in receiving lessons that will cause an obstacle in a person's learning process. Where the existence

of these obstacles can cause a person to experience failure or less success in achieving his goals in learning. Dalyono in Utami (2019:92) added that learning difficulty will create a situation that causes students unable to learn properly. It can be concluded that learning difficulties are one of the difficulties that have a serious impact on students' ability to accept lessons, and are usually characterized by low learning outcomes, an imbalance between effort and learning outcomes, being late in completing assignments, giving attitudes and behaviors that are not reasonable.

Amin (2005:69) said that student learning outcomes are influenced by two factors, namely: internal factors (within students) and external factors (outside of students). Internal factors consist of two aspects, known as physiological aspects (students' health) and psychological aspects (students' intelligence and mental level). Meanwhile, external factors also consist of two aspects, namely: aspects of the social environment (the influence of friends and socio-economic conditions) and the non-social environment (the state of educational institutions, educational facilities and infrastructure).

Indicators of learning difficulties that used in this study, include: (1) the difficulty of students in interpreting symbols in algebraic structures, (2) the difficulty of students in using postulates or axioms that are contained in the material structure of algebra, (3) the difficulty of students in explaining the procedure of solving the questions because the material is not mastered yet, and (4) the difficulty of students in conducting deductive proof.

Types of teaching materials used in this study is the book of Algebra Structure I. Good teaching materials and suitable for use, must meet the valid, practical, and effective nature as described in the following description:

Valid is the accuracy of a measuring instrument in carrying out the function that is measured. The validity test used in this study is the content validity regarding the validity and suitability of the test prepared with the material and

indicators being tested. This validity test is carried out through consideration of various parties who have adequate capabilities in the field of Mathematics Education, namely 8 permanent lecturers.

Practical means easy to use and meaningful. Whereas practical definition according to Nieven in Siagian (2015:88), "Practicality refers to the extent that users (teachers and pupils) and other experts consider the intervention as appealing and useable in normal conditions." The practicality of a teaching material can be seen with the ease of instructors and students and trainees can use teaching materials. Effective means having positive effects and influences. While Nieven in Siagian (2015:88), said that: "Effectiveness relates to the extent that the experiences and outcomes from the intervention are consistent with the intended aims." An instructional material for Algebra Structure I is said to be effective if the instructional material has a positive impact in overcoming the difficulties experienced by students in learning the Structure of Algebra.

Yuniati (2013:130) said that algebraic structure is a branch of mathematics that studies a set with one or more binary operations that apply to it. Algebra structure is also often known as Abstract Algebra which discusses binary, group, ring, integral domain, field operations, and so on. This study is limited to the group material (Algebra Structure I). The material will be discussed on teaching materials Algebra Structure I as follows: the set, the function (mapping), a binary operation, group, basic theorems about groups, subgroups, permutation groups, cosets, normal subgroup, and group factors.

2. METHOD

This research is a development research (development research) modified by the Thiagarajan 4-D model, which consists: define, design, develop, and disseminate. (Sugiyono, 2011:407) said that research development method is a research method used to produce certain products, and to test the effectiveness of those products. This research is oriented to

product development in the form of Algebra Structure I book. Each development process is described in as much detail as possible and the final product is evaluated. The development process is related to activities at each stage of development.

This research was conducted on September 3, 2018 until October 23, 2019 in one of mathematics education department. The sample in this study were all mathematics education students who take Algebra Structure I course, amounting to 242 people. The instrument used in this study was the validation sheet of the expert's assessment of the feasibility of the Algebra Structure I teaching material; and student response questionnaire.

From the data that has been found, the researcher analyzes and adjusts the research question, namely whether the Algebra Structure I teaching material developed has met the valid, practical, and effective criteria or not. The data obtained from a team of experts/practitioners are used to determine the level of validity of teaching materials Algebra I. While the structure of the data obtained from field trial to mathematics education students used to determine the level of practicality and effectiveness of teaching materials Structure Algebra I.

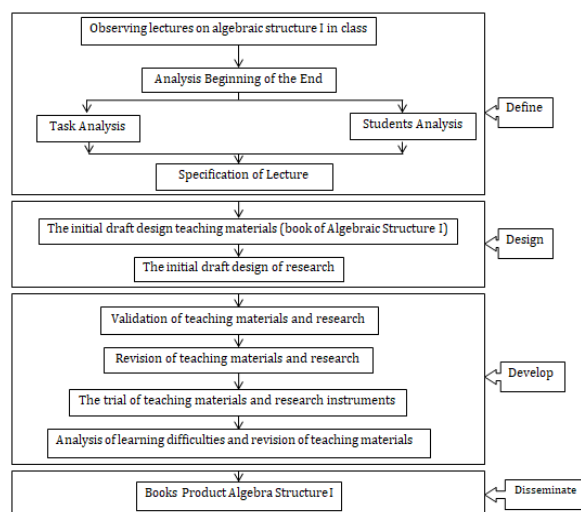


Figure I. Research Design

3. RESULT AND DISCUSSION

This study developed a book Algebraic Structure I. This study used 4-D model of development, which consists: define, design, develop, and disseminate. In each of these stages there are some activities to do.

a. Description of Results of Stage Define

The definition stage serves to set the objectives and limits of learning material. The defining stage consists of five stages, namely: initial analysis, student analysis, concept analysis, task analysis and learning objective specifications.

1) *Analysis Beginning of the End*

After making direct observations and having discussions both with students and lecturers in one of mathematics education department, the researchers obtained information including: there are still many Mathematics Education students who have not mastered the Algebra Structure I material. This can be seen from many students who obtained a grade of C, D, and E on the course structure of Algebra I. The structure of Algebra I has the next course continued, namely the Structure of Algebra II (Ring). So it does not allow students to continue studying the material in Algebra Structure II if the material in Algebra I Structure is not mastered yet. In addition, if students want to continue their studies to the post-graduate level with the same department, they will definitely get an Algebra Structure course. Therefore, a thorough understanding of the Algebra Structure I material is very much needed. Thus, researchers feel the need to develop the book Structure of Algebra I. This textbook aims to overcome the learning difficulties of students in the Algebra Structure I course.

2) *Students Analysis*

Student analysis aims to analyze the characteristics of students which include background knowledge and cognitive (intellectual) development of students. Incomprehension students will be some of the material structure of Algebra I, became the foundation and benchmark for researchers to make the book Algebraic Structure I. Weakness of students in conducting deductive proof of some theorems in Algebraic Structure I become the basis for an explanation of each material.

3) *Concept Analysis*

This analysis aims to identify and arrange systematically some relevant concepts that will be taught based on analysis from the beginning to the end. The material that will be discussed in the book Algebra Structure I, namely: set, function (mapping), binary operations, groups, basic theorems about groups, subgroups, permutation groups, cosets, normal subgroups, factor groups, kernels, group homomorphisms, and group isomorphism. This material will be the basis for studying the Structure of Algebra II course.

4) *Task Analysis*

Based on the analysis of students and analysis of the concept in the material structure of Algebra I, the task performed by students is by answering a series of exercises that are presented at the end of each chapter in this book.

5) *Formulation of Learning Objectives*

This stage is useful to summarize the result of the analysis of the concept, as the basis for formulating and designing learning tools (book Algebra Structure I) which is a product of this research. With the book Algebra Structure I is expected to overcome the learning difficulties of students in studying this course which results in an increase in learning outcomes.

b. Description Results of Stage Design

This stage aims to produce the design of each trial activity before production begins. The results of this stage in the form of an initial draft in the form of a book draft and the necessary research instruments.

The following exposition will explain the initial design of the learning tool in the form of an Algebra I Structure book complete with a description of the material along with examples and non-examples in each chapter, and also presented exercises at the end of each chapter.

1) *Format Selection*

In compiling the book Algebra Structure I, researchers chose the material tailored to the curriculum of the Indonesian National Qualification Framework (KKNI) and the competencies of graduates. As for setting the format and style of writing, the authors develop it themselves. The type of font used is Times New Roman with size 12 and 1.5 spaces. While the top margin is 3 cm, bottom 3 cm, left 4 cm, and right 3 cm. The book is printed in paper size B5.

2) *The initial design of the book Algebra Structure I*

In accordance with the predetermined format, researchers developed the book Algebra Structure I. The contents of the Algebra Structure I book contain the algebra structure material whose discussion is related to the group. In addition, this book examines all the material related to the group that is presented with many examples of questions and discussion in it. The cover appearance in this book is presented in the following figure.

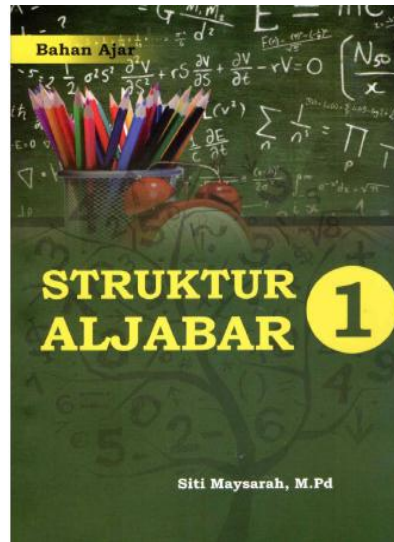


Figure 2. Initial Design Cover Book Algebra Structure I

c. Results Description of Development Stage

This stage aims to produce a draft of the revised Algebra Structure I book based on the input of experts (lecturers) and students as users of this book. Activities at this stage are the assessment of experts (lecturers) and trials on the use of the Algebra Structure I book for one semester.

1) *Expert Assessment*

Before the book Algebra Structure I is used in learning activities, then the book should have the status of "valid". Validation is done by 8 lecturers which are competent to assess the feasibility of the learning device. Revisions were made based on advice/guidance from the validator to be used as material for revising the draft book Algebraic Structure I. The validator assessing the accuracy of the product with attention, learning materials, conformity with the purpose of learning, physical design, and so forth.

After validation, the draft Algebra Structure I book was revised in

accordance with input and suggestions from the validators. As for the comments and suggestions of the validator of the draft book Algebraic

Structure I. In general, experts validator revision can be presented in the following table.

Table 1. Draft Revision of the Algebra Structure I Book by Validator Expert

Validator	Comments and Suggestions for Improvement
Validator I	a) Image numbering should be followed by the chapter numbers b) The example given is still not deep c) Book cover should be designed by authors themselves
Validator II	a) Be reproduced reference so that the discussion can be more broadly
Validator III	a) The questions presented are better added so that they can prove the theorems of the discussion
Validator IV	a) There is no numbering definition in Chapter 3 (Binary Operations). While the definition given on another chapter of numbering.
Validator V	a) It is better to give more and clearer examples so that students can solve the problems in the exercises in the book
Validator VI	a) Display animated images on the book cover is still in the form of a quote from Google, should find the original. b) In Chapter I (the Association) it still resembles a book written by Rinaldi Munir entitled Discrete Mathematics and the examples are not exhaustive and still few. c) In Chapter II (Functions) it still resembles a book written by Rinaldi Munir entitled Discrete Mathematics and the examples are not deep yet still few. d) Expand examples for other chapters.
Validator VII	a) Expand examples in explaining the material
Validator VIII	a) Book covers should be made more interesting and explanations in books should be made easier to understand

Structure I book which has been revised based on input from the validator, then was tested on fifth semester students 2018/2019 academic year teachings in order to get inputs to perfect the Algebra Structure I book.

2) Limited Trial

The trial was conducted on the fifth semester students to use the Algebra Structure I Book in the Algebra Structure I course for one semester, that is, in the odd semester of 2018/2019 academic year. The trial was to determine the feasibility of the Algebra I Structure book. In addition to know the feasibility of the Algebra I Structure book, this trial

can also find out the increase in student learning outcomes in the Algebra Structure I course.

The process of evaluating learning outcomes follows the scoring guidelines applicable at the One of university, namely: quiz (10%), learning participation (20%), assignments (25%), Midterm Exams (20%), and End Semester Exams (25%). The recapitulation of student grades in the Algebra Structure I course using the book for one semester can be presented in the following table.

Table 2. Recapitulation Value of Mathematics Education Students in Structure Algebra I.

Class	Number of Students Getting Grades					Total
	A (80 to 100)	B (70 to 79)	C (60 to 69)	D (50 to 59)	E (0 to 49)	
PMM-1	34	11	1	0	0	46
PMM-2	11	23	1	0	0	35
PMM-3	30	15	1	0	0	46
PMM-4	32	13	1	0	1	47
PMM-5	20	9	0	0	0	29
PMM-6	30	9	0	0	0	39
Total	157	80	4	0	1	242
Percentage	64,88%	33,06%	1,65%	0%	0,41%	100%

Based on the Table 2, it was found that from 242 students who took the Algebra Structure I course in the odd semester of 2018/2019 academic year, obtained the following scores: the number of students who received an A grade as many as 157 people with a percentage of 64,88%. The number of students who received B grades was 80 people with a percentage of 33,06%. The number of students who received C grades was 4 people with a percentage of 1,65%. The number of students who get a D value is 0 people with a percentage of 0%. The number of students who get an E score is 1 person with a percentage of 0,41%.

d. Description of the Dissemination Stage

This stage is done to promote product development so that it can be accepted by users. Researchers must coordinate with book printing parties to produce interesting books. The revised Algebra Structure I Book, taking into account suggestions and

input from lecturers and students, which was distributed in the mathematics education department. The book is expected to help students to overcome learning difficulties in the course structure of Algebra I.

A development product is said to be feasible, if it meets all three criteria, namely: valid, practical, and effective. The following three criteria will be explained, namely:

1) Validity Test

The validator's assessment of the Algebra Structure I book, includes several aspects, namely the feasibility of content, language, and presentation. The results of the assessment of 8 validators who work as permanent lecturers of the Department of Mathematics Education, Tarbiyah and Teacher Training Faculty, One of university can be presented in the following table.

Table 3. Results of Validation Book Algebra Structure I

Component	Sub component	Sub-Component Average
Feasibility of Contents	a) Material Coverage	3,87
	b) Accuracy of Material	
	c) Up-to-date	
	d) Stimulates curiosity	
	e) Operational learning objectives	
Language	a) In accordance with the development of students	4,03
	b) Communicative	

Component	Sub component	Sub-Component Average
	c) Dialogical and interactive	
	d) Coherence and order of thought	
	e) Conformity with correct Indonesian language rules	
	f) The use of the symbol and emblem	
Presentation	a) Presentation Technique	4,1
Total Average		4,01

Based on Table 3 and the validity criteria that have been established, the Algebra Structure I textbook developed is included in the very valid category, namely 4,01. The details of each component, namely the content feasibility component average of 3,87. The average language component is 4,03 and the presentation component average is 4,1. Thus, the grid guidebook is suitable for use by students with a few revisions and suggestions for improvement.

2) Practical Test

Text books are said to be practical to use if most book users give a positive

response to the books used. In other words, the use of the Algebra Structure I textbook is said to be practical if it can provide benefits to students in overcoming learning difficulties. The instrument for measuring student responses to product use is in the form of a questionnaire. The student response questionnaire as many as 107 people to the Algebra Structure I manual was given with the aim of providing input on the improvement of the grid manual. From the results of the student response questionnaire can be seen in the following table.

Table 4. Results of Student Questionnaire Response

Assessment Indicators	Statement	Percentage of Student Response (%)	
		Agree	Disagree
1. Interest	1.1. The appearance of the book Structure of Algebra I is interesting	82%	18%
	1.2. This Algebra Structure I book makes me more excited about learning mathematics	80%	20%
	1.3. This Algebra Structure I book supports me to master the material in the Algebra Structure I course	93%	7%
	1.4. With the illustration, it can provide motivation to study the Algebra Structure I course	82%	18%
2. Content	2.1. The material presented in the book Structure of Algebra I is easy for me to understand	73%	27%
	2.2. The delivery of material in the book Structure of Algebra I is very clear and is accompanied by examples that are easy to understand	56%	44%
	2.3. The presentation of the material in the book Structure of Algebra I encourages me to have discussions with other friends	86%	14%

Assessment Indicators	Statement	Percentage of Student Response (%)	
		Agree	Disagree
3. Language	2.4 This Algebra Structure Book I contains an evaluation that can test how far I understand the material in the algebraic structure course	95%	5%
	3.1. The sentences and paragraphs used in this book Algebra Structure I are clear and easy to understand	74%	26%
	3.2. The language used in the book of Algebra Structure I is simple and easy to understand	70%	30%
	3.3. The letters and symbols used are simple and easy to read	89%	11%
Average		80%	20%

Based on Table 4, it is known that the average percentage of student positive responses is 80%, while the average percentage of student negative responses is 20%. Thus, it can be said that the student response to the book Structure Algebra I is "positive".

3) Effective Test

A product is said to be effective if there is an increase in learning outcomes of Algebraic Structure I from before and after using the product. Based on the percentage value of student learning outcomes in the Algebra Structure I course in odd Semester 2017/2018 academic year before using the product and Odd Semester 2018/2019 academic year after using the product, there is an increasing percentage of student results as the table followed:

Table 5. Improved Learning Outcomes in Subjects Abstract Algebra I (Structure Algebra I) Before and After Using Textbook Structure Algebra I

Information	Number (Percentage) of Students Who Received Score				
	A (80 to 100)	B (70 to 79)	C (60 to 69)	D (50 to 59)	E (0 to 49)
Pre	45 people (22,39%)	93 people (46,27%)	57 people (28,36%)	5 people (2,49%)	1 people (0,50%)
Post	157 people (64,88%)	80 people (33,06%)	4 people (1,65%)	0 people (0%)	1 people (0,41%)
Difference	42,49%	13,21%	26,71%	-2,49%	-0,09%

Based on Table 5, it can be seen that the percentage of students who got an A

from before using the product was 22,39% to 64,88% after using the product, or in other words there was a significant increase of 42,49%. This shows a very drastic progress. As for the percentage of acquisition of value B, there was a decrease from 46,27% before using the product to 33,06% after using the product. In other words, there was a decrease of 13,21%. This is due to the large number of students who get an A grade. The percentage of C grade also decreased by 26,71% from 28,36% before using the product to 1,65% after using the product. The percentage of acquisition of D value also decreased by 2,49% from 2,49% before using the product to 0% after using the product. Meanwhile, the percentage of C value also decreased by 0,09% from 0,5% before using the product to 0,41% after using the product. However, in terms of number of students does not decline, this is because the total student getting E values from before and after using the product, just that one person. Students are said to have completed their studies if they get a final grade of >70% (the minimum grade is B). From the data, it is found that the number of students who get grades A and B is 237 people (97,93%), so it is said that the use of the Algebra Structure I book is effective in overcoming student learning difficulties because it has met the completeness requirements, namely $\geq 80\%$ of the total

students. who experienced complete learning.

Based on the description above, it can be concluded that there has been an increase in student learning outcomes in the Algebra Structure I course. This can be seen from the increasing number of students who score A and the decreasing number of students who get grades C and D. Obtaining the value E does not change, this is due to the number of students that one person is not undergoing the lecture until completed.

Thus, the structure of Algebra I textbook is said to meet the criteria of effective use because it can overcome learning difficulties for students. The percentage increase in Student Learning Outcomes in the Algebra Structure I Course before and after using the product can also be seen in the following diagram:

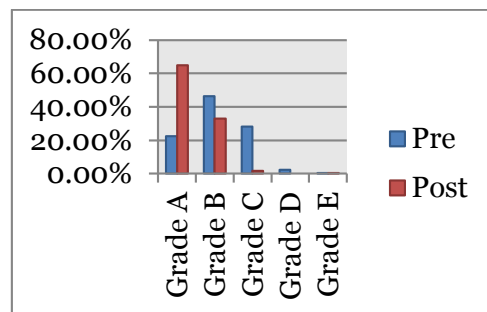


Figure 3. Improving Student Learning Outcomes in the Algebra Structure I Subject

By paying attention to the results of validation by experts and taking into account the positive responses of students and student learning outcomes to the Algebra Structure I book, it is declared suitable to be used.

The product of the Algebra Structure I teaching material is said to be suitable for use in overcoming the learning difficulties of students because it meets 3 criteria, namely: valid, practical, and effective. Based on the results of book validation on 8 permanent lecturers in

one of mathematics education department, it was obtained a validity score of 4,01 very valid categories with the book needing a little revision. While the practicality test was obtained based on a student response questionnaire to the use of Algebraic Structure I teaching materials. Of the 107 students who were asked to fill out the questionnaire, 80% positive response was obtained and 20% negative response. In other words, the book Structure Algebra I is categorized as practical to use. Furthermore, the effectiveness test is marked by the percentage increase in student learning outcomes before and after using the Algebraic Structure I book. This can be seen from the increasing number of students who scored A and the decreasing number of students who get grades C and D.

Because the three criteria are met, namely: valid, practical, and effective, the Algebra Structure I textbook is said to be suitable for use in the Algebra Structure I course to overcome the learning difficulties of students.

4. CONCLUSION

Based on the results of the study, it can be concluded that: The teaching material product of Algebra Structure I is said to be suitable for use in overcoming learning difficulties of mathematics education students because it meets 3 criteria, namely: valid, practical, and effective. The level of validity of the Algebra I structure teaching materials is 4,01 with very valid criteria. The level of practicality of the Algebra I structure teaching material received a positive response from students by 80%. Meanwhile, the level of effectiveness in the use of teaching materials for Algebra Structure I experienced learning completeness of 97,93%.

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