

## Acceptability of Descriptive Statistics Books for Elementary School Teacher Education Students

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### ABSTRACT

An analysis held on students of Schools of Elementary School Teacher Education shows that they need books on descriptive statistics as a reference to accomplish their course on Applied Statistics. The need of reference that comes with examples fit in their daily life, while the lectures need the same kinds of reference to assist students that comes with various inherent numerical and verbal competencies. Filling the needs, a book on descriptive statistics is written. The analysis made use model consisting of 4 steps: 1). Need analysis, 2). First result, 3). Expert verification, 4). Final result. The expert on planning suggests on presenting the expected achievements and the indicators to achieve them, and the summary for each chapter on the systematics of writing. While the expert of content encourage improvements on typing, and easiness on presenting questions by numbering and easier formulas. Mean scores taken from the expert assessment is very good, so that we may conclude that the result of the book acceptability assessment is very useful, very feasible, and accurate.

**KEY WORDS:** book, statistics, descriptive, students

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### INTRODUCTION

University of PGRI Adi Buana Surabaya is one of the universities that provides statistics courses in all study programs, one of them is the Elementary School Teacher Education study program. Students of Elementary School Teacher Education study program come from various majors of high school including Science, Social and Language (in bahasa Indonesia are IPA, IPS and Bahasa). Students from these different backgrounds have different numerical and mathematical abilities. So some students are got difficulties in understanding statistical lecture materials that consist of advance mathematical analysis. Moreover, students' verbal skills are not similar. Based on those background, a statistical course is require to integrate between numerical and verbal abilities to support learning process. Learning objectives can be derived from national education objectives, performance analysis, student needs analysis, and student learning difficulties [1]. Based on that opinion, a Descriptive Statistics Book was prepared which can be used as one of the learning resources of Elementary School Teacher Education students. This book is prepared by paying more attention to students' need and wishes. The questionnaire is held to understanding the student needs. The results is that 80% of the students said they really need Descriptive Statistics book, 85% want the contents of the book easily understood, 82.5% choose the book statistics with an example to make easier to understand, 87.5% they want a statistical book with an applicative example, practice questions easy to understand and in line with the needs of students. The lecturers of Statistics in Elementary School Teacher Education requires the book Descriptive Statistics as one reference, with the contents of the book that is easy to understand, examples, applicable problems and exercises easily understood by students, because students Elementary School Teacher Education consists of students who have various capabilities, there is a high numerical ability low verbal ability and vice versa. To unite these abilities, it takes creativity and innovation from lecturers.

The next step determines the steps taken to achieve the learning objectives [1]. To achieve the learning objectives, then the first compiled Product in the form of Learning Plan Semester Statistics Lecture which in this case is Statistics and Descriptive Statistics Descriptive Book for Elementary School Teacher Education Students [2].

### RESEARCH METHODS

This research is a development research. The development model used is a model with 4 stages [1]. The first phase needs analysis, initial production, expert testing, and final product.

#### Procedure

The activities undertaken in developing the Descriptive Statistics book begins with the analysis phase of the needs of students and lecturers. The second stage in this development is planning. At this stage the activities of designing and preparing Semester Lesson Plan, designing and compiling the book of Descriptive Statistics, and

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assessment instrument in the form of questionnaire Acceptability of Expert and Planning Expertise book. The result of this stage is the Descriptive Statistics book which is equipped with Lesson Plan.

### Expert Test Subject

Expert subjects consist of product content experts, product design experts [3]. The product is a completed descriptive statistics book. The contents are written by a statistician who has master's or doctoral degrees and has experience writing static books. Design expert, is an educational technologist who has also mastered a master's degree or a doctorate and has experience in the field of research development.

Expert test subjects assess the degree of acceptability of books, including: usefulness, feasibility and precision before being tested on the students. This is in accordance with what is stated in [4], about the acceptability of books. Validation of questionnaire assessment of acceptability and attractiveness is done by technology education experts.

Characteristics of the book to be tested are expected to have: usability, feasibility and accuracy.

- a. Usability:  
Usability is the benefit of Descriptive Statistics book for lecturers and students of Elementary School Teacher Education
- b. Feasibility :  
The feasibility of a book if the achievement of course learning along with the completeness of the indicator as follows:
  1. Completeness of the material;
  2. Material breadth;
  3. Material depth
- c. Accuracy :  
For the aspect of book accuracy, the indicators that must be met a following point:
  - a. Accuracy of concepts and definitions
  - b. Principle accuracy.
  - c. Procedure accuracy.
  - d. Accuracy of example, facts and illustrations
  - e. Accuracy of prople example and solution.

Data obtained from the results of expert assessment Content and Design experts on the usefulness, feasibility and precision of the book Descriptive Statistics. The data collection instrument used is the assessment questionnaire. This questionnaire is also used to gather expert opinions about how this book is. Aspects Acceptability measured consists of Usefulness, 6 (six) items, Feasibility 6 (six), and Accuracy aspects 6 (six) question items. Each question has alternative answers 1 through 4 with details of clarity of meaning as follows:

- 1: not useful / improper.
- 2: less useful / less proper
- 3: useful / proper
- 4: very useful

Data obtained in the form of questionnaires and suggestions of inputs of experts, then analyzed descriptively quantitative and qualitative. Scoring of questionnaires from Experts. The design of products on aspects of acceptability (acceptability), using a frequency distribution approach, as written by [5] as follows:

#### a). Aspects of Book Usability

The usefulness aspect of the book consists of 6 (six) question items, with a score of 1 - 4. The minimum score is 6 and maximum 24. Criteria for the assessment can be determined by the following approach:

1. Specified range of data, ie the largest data (score) minus the smallest data (score):  $24 - 6 = 18$
2. Score answer are 4 to determine criteria to be very useful, useful, less useful and useless, range divided by four.  $18 : 4 = 4,5$
3. Define the criteria by using the following 4.5 class interval

**Tabel 1. Criteria for Scoring of Usability Aspects**

Score	criteria
6 - < 10.5	useless
10.5 - < 15	less useful
15 - < 19.5	useful
19.5 - 24.00	very useful

#### b). Book Eligibility Aspects

The feasibility aspect of the book consists of 6 (six) question items, with a score of 1 - 4. The minimum score is 6 and maximum 24. Criteria of assessment results can be determined as in Aspect Usefulness of the book as follows:

1. Specified range of data, ie the largest data (score) minus the smallest data (score):  $24 - 6 = 18$

2. An answer score is 4, then to define criteria to be not feasible, less feasible, feasible dan very feasible, range divided by 4:  $18: 4 = 4.5$
3. Define the criteria by using the following 4.5 class interval:

**Table 2. Criteria for Scoring of Eligibility Aspects**

Score	Criteria
6 - < 10.5	Not feasible
10.5 - < 15	less feasible
15 - < 19.5	feasible
19.5 - 24.00	very feasible

**c). Aspects of Book Accuracy**

The precision aspect of the book consists of 6 (six) question items, with a score of 1 - 4. Minimum score is 6 and maximum 24. Criteria of the assessment results can be determined also as in the aspect of usability and feasibility, as follows:

1. Specified range of data by the largest data (score) minus the smallest data (score):  $24 - 6 = 18$
2. The score is 4, to define criteria to be not accurate, less accurate, accurate, very accurate. The range divided by 4:  $18: 4 = 4.5$
3. Define the criteria by using the following 4.5 class interval:

**Table 3. Criteria Assessing Aspect Score Accuracy**

Score	Criteria
6 - < 10.5	not accurate
10.5 - < 15	less accurate
15 - < 19.5	accurate
19.5 - 24.00	very accurate

## RESULTS AND DISCUSSION

Semester's learning plan has been developed as the basis for the preparation of the Descriptive Statistics book for Elementary School Teacher Education students [2]. Books that have been completed, tested by expert Content and Planning expert [5]. The test that has been done by the expert of Contents and Planning aims to test the acceptability of books in terms of content and learning design. The expert inputs and suggestions are used to revise the product before it is submitted to the prospective user group.

**Assessment Result Data**

The results of the first draft compilation of the Descriptive Statistics descriptive product development product were completed, the expert content and planning review was carried out. The data obtained from the two experts was obtained through a direct assessment questionnaire. The results of the questionnaire and discussion with the content and planning experts obtained the assessment, comments, and suggestions of input for the perfection of the book as follows:

**a. Subject One (Design Expert)**

The subject of the draft expert gives ratings, comments and suggestions for perfection of Descriptive Statistics as follows:

Expert design validation results:

- 1). Writing system;
- 2). Achievement of subject learning;
- 3). Add learning outcomes and its indicators;
- 4). Created a summary of the material in each chapter and equipped with exercise questions in accordance with the achievement indicators of course learning.

**b. Subject Two (Expert Content)**

This Content Expert judges the contents of the Descriptive Statistics book with the following subjects:

- 1). Preliminary,
- 2). Data and Data Collection,
- 3). Data Presentation,
- 4). Measures of central tendency
- 5). Measures of location
- 6). Measures of dispersion
- 7). Skewness, Slope, and symmetric

Expert Content suggest:

- 1). Typing improvements;
- 2). Sample questions are numbered;
- 3). Use the easiest median formula

A summary of product revisions can be seen in the following table:

**Table 4. Summary of Product Revisions**

Input / Suggestion	Revision	Implementation
Expert Planning	1. Systematics writing	Has been revised
	2. There should be learning achievement of subject in each chapter	Has been revised
	3. There should be learning achievement and indicator in every chapter	Has been revised
	4. Bibliography	Has been revised
Expert Content	1. Improvement of typo	Has been revised
	2. Sample questions are numbered	Has been revised
	3. Preferably the median formula is used which is more easily understood	Has been revised

#### Data on Acceptability Assessment Results

The results of the questionnaire assessment by both experts on the usefulness, appropriateness and appropriateness of descriptive statistics are as follows:

##### a. Aspect Usefulness of Descriptive Statistics Book

Indicators used to explain the usefulness of books are: the usefulness of books for lecturers and students, practicality, content questions and media needs [6]. The three experts agree that this book is very useful when applied to Elementary School Teacher Education students, this is indicated by the scoring is very high (four), unless the indicator needs the media given a score of 3 and the first expert gives a score of 3 on the item the need for students have initial knowledge, in order to follow the learning well. Means that descriptive statistics book is very useful for students and requires media. The results of the assessment of the two experts can be seen in the following table:

**Table 5. Aspect Assessment Results of Use**

No.	Question	Score	
		Expert 1	Expert 2
1.	Use of descriptive statistics book for students	4	4
2.	Use of descriptive statistics book for lecturers	4	4
3.	The need for lecturers to have statistical competence	4	4
4.	The amount of statistical book needs in improving learning achievement	4	4
5.	The need for students to have initial knowledge, in order to follow the learning well	3	4
6.	Needs of media learning	3	3
<b>Total Score</b>		<b>22</b>	<b>23</b>

##### b. Feasibility Aspect of Descriptive Statistics Book

The feasibility of a book if it has fulfilled the achievement learning and its complete indicators [7,8]. The books of descriptive statistics had the agreement from expert that the contents of the book is very feasible and it is indicated by the assessment of the score 4. Presentation of the material concept, the second expert argues worthy and the first expert is very worthy. Presentation of definitions, principles and procedures of the first expert states worthy and second expert is very worthy. The material concept of experts gives a score of four, it is very worthy to explain the concept of matter. Examples of problems and practice questions experts agree to give a score of 3, meaning the sample questions and questions in the book is feasible to use. Material compatibility with cognitive, affective and psychomotor domains is very feasible. Assessment of the two experts on the feasibility aspects of the book gives a very high score on each item question. Based on the calculation of the 6 items the question cumulatively obtained an average of 22.

**Table 6. Feasibility Aspect Appraisal Results**

No.	Question	Score	
		Expert 1	Expert 2
1.	The contents of the book is feasible with the achievement of learning courses	4	4
2.	Presentation of material concepts	4	3
3.	Presentation of definitions, principles and procedures	3	4
4.	Explanation the concept of material	4	4
5.	Examples of problems and exercises	3	3
6.	Material according to the cognitive, affective and psychomotor domains	4	4
<b>Total Score</b>		<b>22</b>	<b>22</b>

**c. Aspect of Accuracy (Accuracy) Descriptive Statistics Book**

For the aspect of book accuracy, the indicators are:

- a. Accuracy of concepts and definitions
- b. Principle precision.
- c. Accuracy of Procedures
- d. Exact accuracy, facts and illustrations
- e. Accuracy of Problem.

The analysis of Aspects of Accuracy, concepts and definitions have been formulated appropriately, given a very high score by the experts, as well as on the material according to the achievement of the course learning, the material provided fulfills the adequacy aspect and the procedure is formulated accurately [9,10]. The accuracy of examples of experts agreeing to give high scores and the accuracy of exercise questions are scored high by the second expert. Based on the average score obtained, it can be said that the accuracy of books or book audiences have been very precise or very accurate, because the average score reached 22.5, very close to the maximum score. Here are the Table of the Aspect Appraisal Aspects of Accuracy:

**Table 7. Scoring in Accuracy Aspects**

No.	Question	Score	
		Expert 1	Expert 2
1.	Concepts and definitions have been formulated appropriately	4	4
2.	Material in accordance with the achievement of learning subject	4	4
3.	The material provided satisfies the aspect of adequacy	4	4
4.	The procedure is formulated accurately	4	4
5.	Exact accuracy of example	3	3
6.	Accuracy of practice questions	4	3
<b>Total Score</b>		<b>23</b>	<b>22</b>

## CONCLUSION

The book of Descriptive Statistics has been revised with an advice of the experts. The draft expert suggests the systematics of writing, achievements of the course's learning and its indicators, and the summation of the material per chapter. The Content Experts suggest typing improvements, the sample questions given the numbers and use easiest median formulas. Assessment Acceptability of a book by experts expressed very useful, very feasible and accurate, indicated by the score of expert assessment results that average indicates very good criteria.

## Suggestion

1. Utilization of Descriptive Statistics Book for Elementary School Teacher Education Students resulting from this research has fulfilled the criteria of acceptability so that it can be used for Elementary School Teacher Education student learning UNIPA Surabaya. The resulting book can be used as a reference to the learning of Statistics.
2. For other researchers may develop Inferential Statistics book for Elementary School Teacher Education Students.

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