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STUDENTS' DIFFICULTIES IN UNDERSTANDING STATISTICAL CALCULATION

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Abstract

ABSTRACT

The paper entitled "Students' Difficulties in Understanding Statistical Calculation" is conducted to analyze the students' difficulty in understanding statistical calculation and the causes of it. The research is applied to the seventh semester students of English Education Study Program, Faculty of Teacher Training and Educational Sciences, Pakuan University. Students who got low score in statistics subject are chosen as the participants. Descriptive method is used in conducting this research. Questionnaire and interview are used to collect the data of this research. The result of this research shows that the students get difficulties in understanding statistical calculation. The problems are students are not able to answer statistics questions. Additionally, they are not able to understand the statistical formulas, not able to use scientific calculator, and not able to absorb the material that was taught well. Then, the causes are they are not interested in statistical calculation, they are not taught by interesting method, they were weak in calculating, and they are not familiar with scientific calculator.

INTRODUCTION

The importance of statistics is well recognized by all the disciplines in Indonesia. Statistics is concerned with the systematic collection of numerical data and its interpretation. In university, statistics is the material for calculating the data. Then, the purposes of learning statistics for students are; students can understand how to calculate the data and how to interpret the statistical calculation, because statistics is important to use especially for students who are conducting

quantitative research.

However, students who learned statistics face difficulties in that subject, especially in understanding statistical calculation. It includes are students found difficulty for understanding statistical calculation and students do not understand which formula should be used while they calculating the data. In fact, based on the data of list of students' predicate in statistics for sixth semester students of English Education Study Program in *Pakuan University*, most of the students got low predicate in statistics subject. It shows that the students got some difficulties in statistics subject, especially in statistical calculation. Then, based on pre-observation result also, the difficulty is they do not understand which formula should be used while they calculating the data. Calculating the data is not easy for the students because most of statistical calculation is complicated to be applied. The questions of this research are: "What are students' difficulties in understanding statistical calculation?", and "What are causes of students' difficulties in understanding statistical calculation?"

RESEARCH METHODOLOGY

Descriptive method is used to describe and analyze the data in every single information derive from the instruments. Nazir (2005: 54) in Rojak (2013) says, "Descriptive method is used to describe systematically, factually, accurately, about the facts and the natures of the relationship that investigated". Questionnaire and interview are the tools in gaining the qualitative data. Students who learned statistics and got low predicate in seventh semester are chosen as the participants. These are the way how the researcher collects the data:

a. Questionnaire

   The questionnaire is given to the respondents. Closed questionnaire is used in this research.

b. Interview

   The interview is done to get further information about students' difficulties in understanding the statistical calculation and the cause of it. Structured interview is used to get information. In doing the interview section, the recorder is used. These are how the researcher analyzes the data:

   a. Data Analysis of Questionnaire

      The results of questionnaire are analyzed based on the indicators.

b. Data Analysis of Interview

The results of interview are transcribed and summarized. It is used to confirm te information about students' difficulties in understanding the statistical calculation and the causes of it.

DISCUSSION

According to Singh (2006) in Irdiyansyah (2015:6), statistics are; it refers to numerical facts, refers to method or methods of dealing with numerical facts, refers to the summarized figures of numerical facts such as percentage, averages, means, medians, modes, standard deviations etc. It means that statistics relates to three things, they are; calculating the data, methods for calculating the data, and results of calculating the data. It is important used by the students in university, especially in statistical calculation for conducting quantitative research.

Based on the data analysis, most of the students get difficulties in understanding the statistical calculation. The factors of the difficulties and the causes of it are subject factor, teacher factor, and student factor. According to Adeleye and Ofili (2009: 236) mentions that, "The respondents who complained of the difficulty were further asked to indicate the perceived reasons – whether the subject itself was difficult (subject factor), whether it was not well taught (teacher factor), whether they considered themselves to be lazy or unserious about the subject (students factor), or whether other reasons existed". It shows that the students' difficulties and the causes are relates to the subject factor, teacher factor, and student factor.

In subject factor, the public's assumption about mathematics is a difficult lesson, whether statistics Is branch of mathematics. Almost of all students (78.3%) asserted that they had difficulty to answer the statistics question because they did not know which one the correct formula that must be applied. It is caused by mathematic lessons is complicated in terms of finding answers such as the use of long formulas, the use of symbols and requires a high concentration.

According to Rusani (2015) states that based on the observations of psychologists and social observers, there are many factors that lead to low productivity of mathematics lessons in most of students from primary, secondary, and university levels. It is caused by mathematic lessons is complicated in terms of finding answers such as the use of long formulas, the use of symbols and requires a

high concentration. So, the public's assumption about mathematics is a difficult lesson – whether the statistics is branch of the mathematics.

In teacher factor, especially in interview section, most of the students (56.7%) said that they are not taught by interesting method, so they had no motivation to learn statistics. In fact, most medical students who indicated that they found statistics difficult to understand is because the subject is not well taught, (Adeleye and Ofili, 2009: 237).

Based on Karmawati (2016: 42), "External factor that causes of the difficulties in statistics are the teacher gives understanding statistics is not clear, curriculum is not supported, and family is not supported". It shows that teacher factor is one of the causes of the difficulties in statistics. The cause is the teacher gives understanding statistics is not clear.

In student's factor, most of the students (68.3%) said that they could not finish statistics questions accurately because they forgot about the formula, forgot about how to apply the formula, and could not use calculator well. Therefore, they were weak in calculating. Karmawati (2016: 40) states that, "Internal factor is one of the causes of the difficulties in statistics. Those are student intellectual ability is low, student learning attitude is ignorant and undisciplined, student learning motivation is low, student concentration ability is low, student memory ability is low, and student sensory perception is disturbed. It means that students factor itself is the biggest internal factor that the causes of the difficulties in statistics.

CONCLUSION AND SUGGESTION

It can be concluded that there are difficulties that still find by the students in understanding statistical calculation. They are difficult to apply statistical calculation into statistics questions, difficult to understand the formula, especially the analysis of variance (ANOVA), and difficult to absorb the material that was taught.

It caused by four things. The first, they are not interested in statistical calculation, so it makes them are not serious to learn statistics subject. The second, they are not taught by interesting method, so they had no motivation to learn statistics. The third, they were weak in calculating, so they are not able to apply statistical calculation well. The fourth, they are not familiar with scientific calculator,

so they do not understand about the functions every button.

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