Statistical Literacy Optimization of Senior High School Teachers to Improve Data Processing Skills

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Abstract—**In the new normal era, there is a new habit occurs in education field, namely the online learning. This makes the teacher must be ready to carry out the online learning process using information technology (IT). The use of IT that is commonly used by teachers to assist learning activities is Microsoft Office. However, the ability of teachers to use Microsoft Excel is still lacking. The purpose of this study is to improve the ability of public senior high school teachers in Bandung Regency in terms of mastering IT, especially Microsoft Excel. The method used is to provide Microsoft Excel training which is divided into two sessions, namely data entry and data analysis. The hypothesis test of difference between the mean scores of the pretest and posttest was used to evaluate the ability of teachers before and after being given training. The results showed that the training had a significant effect on increasing the data processing skills of high school teachers.**

Keywords—senior high school, microsoft excel, online learning, statistical literacy, teacher training

I. INTRODUCTION

In this New Normal Era, there are new habits due to outside activities that are limited during the pandemic, including habits in education field. Based on the Circular Letter of the Ministry of Education and Culture Republic of Indonesia Number 4 of 2020 concerning the Implementation of Education Policy in the Emergency Period of the Covid-19, all learning processes in schools must be carried out online or school from home. This condition makes all the educators and students in Indonesia to be ready with an online learning system and they inevitably must use information technology (IT) in learning.

However, the Acting Data Center and Information, Ministry of Education and Culture Republic of Indonesia said that currently, the teachers who master IT in Indonesia have not reached 50% of all teachers [1]. Several studies have shown that student satisfaction in online learning can be influenced by course content and instructors [2-6]. In fact, nowadays teachers are required to be ready to use IT for online learning. Basically, IT is used to make it easier for users to perform their tasks more effectively and efficiently.

Software that is widely and commonly used in carrying out the daily tasks of teachers in learning is Microsoft office which consists of Microsoft Word, Microsoft Power Point, Microsoft Excel [7]. From a survey of 140 teachers in West Java in November 2020, we found that almost half of teachers in schools cannot or have not maximized the use of Microsoft Excel. Whereas the use of Microsoft Excel can help teachers to optimize student data such as attendance, grades and various calculations needed in evaluating learning activities in schools.

Bandung Regency is ranked 3rd in the number of senior high school and the highest number of students in West Java Province [8]. Member of Commission D, Depersonalization and derealization disorder (DPRD) of Bandung Regency said that the distribution of education in Bandung Regency is still far from being evenly distributed [9]. Many factors underlie this problem, according to Afifah [10] this learning problem can be caused by three factors, i.e., the learning approaches, the curriculum change, and the teacher competence. Highlighting the problem of teacher competency, Afifah [10] has said that teachers must master the subject matter broadly and deeply. In addition, teachers must master other abilities that support teacher professionalism. Regarding that, therefore this study aims to improve professionalism in data processing skills of senior high school teachers in Bandung Regency in terms of statistical literacy optimization through Microsoft Excel training.

II. METHODS

The method used in this study is an evaluation method in the form of training. Due to the ongoing Covid-19 pandemic, the training was held online. The training is divided into two sessions, namely data entry and data analysis. Data entry contains introduction to Microsoft Excel, attendance, assessing tests or exams, recap scores, and case study exercises, while data analysis contains statistical literacy, pivot table, pivot chart, data analysis with Toolpak.

The participants of this training were 35 invited participants, namely representatives of public senior high school teachers in Bandung Regency and 26 general

participants. The data used for evaluation is primary data obtained from the pretest and posttest. Participant satisfaction is the main thing in the online course learning experience [11]. Evaluation of the participants' knowledge and mastery of Microsoft Excel was carried out by using a paired two-sample test [12].

III. Results and Discussion

The results of the evaluation of the scores obtained in the pretest and posttest are shown in Figure 1. Before receiving the training, participants already had knowledge about Microsoft Excel with an average pretest score of 53.43 (out of 100). After participating in the training, the average posttest score of the participants became 69 (out of 100), meaning that the average knowledge of the participants increased with an increase in the score of 15,57 or 29,14%. This indicates that the provision of materials and learning experiences to process data independently can improve the skills of participants in processing data using Microsoft Excel.
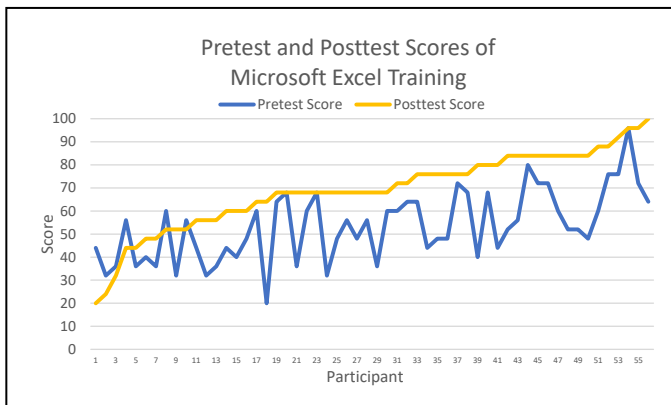

Fig. 1. Pretest and posttest scores of microsoft excel trainning.

From the result of the hypothesis test of difference between the mean scores of the pretest and posttest, it is obtained that the value of t=8.03 (p-value=7.711e-11) > $t_{(0.05,56)}$=2, meaning that there is a difference between the mean scores of the pretest and posttest at the level of significant 5%. In other words, there is sufficient evidence to say that the mean scores of pretests and posttest are statistically significantly different or that statistical literacy optimization training has a significant effect on improving the data processing skills of teachers.

This activity is carried out online so that the training carried out has not given maximum results. Therefore, in the future, similar training activities should be continued by offline with further materials such as analyzing student performance data [13] that can help high school teachers in the learning process.

IV. Conclusion

The training has increased the skills of public senior high school teachers throughout Bandung Regency in terms of

mastering information technology, especially Microsoft Excel with an average increase of 15.57 or 29.14%.

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