THE EFFECT OF SEFORRA AND VOSVIEWER ON STUDENTS 'ABILITY IN DISCOVERING RESEARCH IDEAS

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Abstract

The research is encouraged by the low ability of students to find research ideas in study methodology courses. The goal is to test the effectiveness of SeforRA with the help of VOSviewer in enhancing the ability of students to find research ideas in writing papers and articles. The method used in this study was a quasi-experiment involving 122 participants consisting of students and lecturers. In this study, experimental groups compiled articles using SeforRA and analyzed them to find research ideas using VOSviewer. While the control group compiles articles using SeforRA but analyzes research opportunities manually. The results showed that the experimental group was superior to the control group with a score of 40.53 while the control group was only 36.81.

Keywords: VOSviewer, research ideas, methodology courses

Introduction

In the preparation of the final task on the course of the methodology such as making short proposals, articles or papers many students feel difficulties especially in determining research ideas. But at the end of this course, students are required to be skilled in analyzing the problem (Cuschieri et al., 2018) in order to find the relevant research idea to be a short proposal. As for getting all of that, students should be able to analyse many articles to get the novelty of the idea to be used. There are many ways to discover new research ideas, such as through literature study (Amplayo et al., 2018; Budiharso & Tarman, 2020) and bibliometric analysis (Hernández-Torrano & Ibrayeva, 2020). Later, the Bibliometric analysis is widely chosen because it is accurate and easy to do. The Bibliometric analysis is performed by collecting various articles (Bornmann et al., 2019; Fauzan, 2018) from year to year to find research opportunities through research map visualisation.

Based on previous research, there are many ways to compile articles such as through Web of Science (González de Dios et al., 2019; Soosaraei et al., 2018), scopus (Lu et al., 2020; Md Khudzari et al., 2018; Rose & Kitchin, 2019), Histcite (Shah et al., 2019), China National Knowledge (Zhang et al., 2020), cited article (Liu et al., 2020; Zhang et al., 2020) and others.

The novelty in this research, students were directed to compile the article through SeforRA which was officially launched in January 2020 by the research team. SeforRA is a search engine of web-based research articles using the Big-data mining method of various scientific research journal publishers, using filtering methods based on impact rating and sorting methods based on relevance level with the search word, for later results are displayed and downloadable by users with impact factor data, sorted by relevance and impact. After students gather articles then they can analyze the article. There are several ways of analyzing articles as researchers have mentioned above. In this experimental research researchers used the application Visualization of Similarities (VOS) viewer.

VOSviewer is used to analyze the network (Liu et al., 2020), counting the number of articles, quotes, research trends by year and the desired topic (Byington et al., 2019) In addition, VOSviewer can also visualize research maps based on the list of libraries, quotations (Merigó et al., 2018) co-sitation, co-authorhip and Cooccurrence (Xie et al., 2020; Haryanto, 2020). However, in using VOSviewer students should first compile the publication data through multiple sites.

The purpose of this study was to test the effectiveness of the Seffora with the help of vosviewer in improving the ability of students to

find research ideas in composing the final task of this course. This study needs to be done considering the low ability of students in determining research ideas, so that many students make mistakes by repeating similar topics. In fact, many students tend to copy other people's research ideas in libraries and the Internet.

Method

The population in this study was 20 lecturers and 200 students. But based on simple random sampling which researchers use, samples obtained 122 people consisting of students and lecturers of three colleges in Pandeglang-Banten; STKIP Syekh Manshur Campus 1 (40 students and 6 lecturers), STKIP Syekh Manshur Campus 2 (35 students and 4 lecturers) and STIA Syekh Manshur (30 students and 7 lecturers). This study was conducted for 2 months, starting from January-February 2020 with 8 meetings simultaneously. The method used is quasi experiment.

Table 1. Distribution of the sampling

University	Sample		Σ
	Students	Lectures	
STKIP SM 1	40	6	46
STKIP SM 2	35	4	39
STAI SM	30	7	37
Total			122

The instrument used to measure the ability to find research ideas using a psychomotor test based on Dave's taxonomy consisting of 55 questions; 40 questions are a multiple choice and 15 of them are open questions. These tests measure variables; probability proportions and the ability of students in finding research ideas as well as application usage in both experimental groups (use SeforRA and VOSviewer and in the control group (SeforRA only).

Responses given by students are evaluated using the SPSS 11.5 packet program. Descriptive analysis is made to determine the distribution of students according to universities and their groups. Pre and post-test scores are used in analyzing variables;

Independent samples of t-test are used to examine the differences controls and experimental groups. One way the ANOVA test is used to examine the effects of SeforRA and VOSviewer use of the skills of discovering new research ideas in composing the final task on the course of Methodology studies.

Results and Discussion

Based on statistical analysis results by comparing data from experimental groups (students using SeforRA and VOSviewer) with control group data (students who only use SeforRA), are obtained as follows.

Table 2. Descriptive statistics of pre-test result

Group	N	X	S	df	P	t
Experiential	64	43,64	15,99	119	,324	,990
Control	57	46,57	16,63			

From the table above, it can be seen that between the experiential group and the same control group, has no excess before the treatment. Then in table 3 it can be seen that after students have been given

treatment in the experiment group and control group there is a difference between them. The results of the statistical analysis:

Table 3. Comparative post-test scores between groups after treatment

Group	N	X	S	df	P	t
Experiential	64	40,53	21,95	118	,327	-,985
Control	57	36,81	19,26			

Based on the analysis results can be seen that between the experiment group and control group have a difference in score after the treatment and post-test. In the table above the average in the experiment group is 40.53 larger than the control group which is only 36.81. After getting the average difference, the researcher conducted an analysis of ANOVA's calculations to ensure the difference between the experimental group and the control group after 6 times. Then obtained the following data:

Table 4. Descriptive statistics of post-test result

Group	University	N	$\bar{x}$	Sd
Experimental	STKIP SM 1	23	36,13	20,95
	STKIP SM 2	19	40,68	19,76
	STAI SM	20	45,45	24,89
	Total	62	40,53	21,95
Control	STKIP SM 1	22	28,82	16,19
	STKIP SM 2	17	52,00	12,80
	STAI SM	19	32,47	30,17
	Total	58	36,81	19,26

Table 5. ANOVA results of post-test scores

Group	Varience	$\sum$	df	Mean	F	p
Experimental	Between Groups	929,772	2	464,88	,954	,387
	Within Groups	28463,664	59	482,43		
	Total	29393,435	61			
Control	Between Groups	5684,904	2	2842,45	10,117	,000
	Within Groups	15452,010	55	280,94		
	Total	21136,914	57			

According to the analysis results of the statistics there are differences ($F_{2-57} = 10,117$ ve $p < .05$) between the experiment groups using the application SeforRA and VOSviewer with control groups that use only SeforRA applications. Although in the control group, the STKIP SM 2 has a score 52.00. But overall the experiment group is superior to the control group because it has a total value of 40.53 while the control group is only 36.81.

Conclusions

Based on all statistical data can be concluded that the experiment group is superior to the control group after being given treatment. From the above results can also be seen that to find the idea of research students should be able to analyze the article related topics that will be discussed. All that requires a special application for the analysis process to run quickly. However, based on the research results explained that collecting articles using the big data SeforRA is not enough. Students will be experiencing difficulties to map articles, making it very difficult to find research ideas. Unlike the students who use the SeforRA and assisted by VOSviewer they are much more proficient in discovering new ideas results from analyzing the article using aVOSviewer r map visualization. It can be concluded that the experimental group is more excellent than the control group because in finding the research idea is not enough by analyzing the article through the SeforRA but also must be coupled with the visualization map of VOSviewer r.

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