Improvement of the Quality of Scientific Writing of Sports Coaching Education Students, Faculty of Sports Science, Universitas Negeri Medan

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Abstract. This paper is to analyze the knowledge of students about the parts of scientific papers and to determine the policies that need to be issued to solve these problems. This research is a qualitative method with a case study approach while the research design is a single case design. The purposive sampling technique was used to determine the number of samples with certain considerations or requirements. The data was collected using the Google Form questionnaire. Then, the data were analyzed using simple and multiple regression analysis with a significance level of $p < 0.05$. The results of data analysis were interpreted as a case study report. The results of simple linear regression analysis were obtained the significance value of X3 (Scientific Paper Platform Usage) and X4 (Determination Flow of Scientific Papers Ideas), namely 0.005 and 0.000, have a significant effect on variable Y (Student Creativity Program (PKM) Knowledge). Meanwhile, the significance value of X1 and X2 (0.050 and 0.309) is greater than 0.05, so the variables X1 (Systematic Writing of Scientific Paper) and X2 (Paper Writing Etiquette) have no effect on the variable Y. The results of multiple regression test was obtained a significance value of 0.000, so all the independent variables simultaneously have a significant effect on the dependent variable. The follow-up of the research results allows the PKO UNIMED department to teach a new course to hopefully help improve the quality and quantity of students' scientific papers.

Keywords: academic paper, thesis, quality writing, writing etiquette, systematic writing

1   Introduction

The goal of Indonesian national education is to educate the nation's life and improve Indonesian society in realizing a superior, justice, and prosperous society based on Pancasila, which is a common hope. In improving the quality of Indonesian society, especially students, the role of education is very important to improve the quality of life and

produce graduates who have competitiveness in facing global challenges. Students, as the intellectuals of the nation, have the obligation to improve the quality of themselves and the quality of the nation by studying a field of science during their campus education. Then, they must apply the knowledge they have mastered through the educational process in college.

In higher education, it is not only the lecture or learning process carried out in the classroom, but also various programs for students, one of which is the Student Creativity Program (PKM). In addition, they also have an obligation that must be done in the final project, namely in the form of writing a scientific paper or thesis and journal articles, so that the requirements they must have, namely the ability to write scientific papers. Writing scientific papers requires certain writing methods and techniques so that the results of writing can be accounted for. The difficulty in writing scientific papers is felt by students, especially students of Sports Coaching Education (PKO) at the Faculty of Sports Science (FIK) Universitas Negeri Medan (Unimed). As a result, the quality of their writing is still not good and the quantity of writing that participates in the PKM program is also very less. From the description of the above problems, the purpose of this study is to analyze the knowledge of students about the parts of scientific papers and determine the policies that must be issued to solve these problems.

2   Method

This research is a qualitative method with a case-study approach, while the research design is a single case design. Then, the purposive sampling technique was used to determine the number of samples. Sample considerations or requirements could be stated as follows, (1) be active as a student of Sports Coaching Education in 2020 – 2022 and (2) fill out the questionnaire provided. Data were taken using the questionnaire of Google Form. Furthermore, the stages of data analysis were stated as follows, (1) validity test using Product Moment Pearson correlation, (2) reliability test of Cronbach's Alpha, (3) normality test using Kolmogorov-Smirnov test, (4) simple and multiple regression analysis, and (5) case study report. Specifically for the t-test, a probability value of alpha 0.05 was used in this study. These stages were tested using SPSS version 16.0.

3   Results

Table 1. Validity Test Results of Systematic Writing Questionnaire of Scientific Paper (X1)

		X1.1	X1.2	X1.3	X1.4	X1.5	Total X1
X1.1	Pearson Correlation	1	.409**	.394**	.454**	.519**	.738**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	402	402	402	402	402	402
X1.2	Pearson Correlation	.409**	1	.443**	.404**	.476**	.734**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	402	402	402	402	402	402
X1.3	Pearson Correlation	.394**	.443**	1	.427**	.375**	.727**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	402	402	402	402	402	402
X1.4	Pearson Correlation	.454**	.404**	.427**	1	.473**	.750**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	402	402	402	402	402	402
X1.5	Pearson Correlation	.519**	.476**	.375**	.473**	1	.758**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	402	402	402	402	402	402
Total X1	Pearson Correlation	.738**	.734**	.727**	.750**	.758**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	402	402	402	402	402	402

Table 2. Validity Test Results of the Paper Writing Etiquette Questionnaire (X2)

		X2.1	X2.2	X2.3	X2.4	X2.5	Total X2
X2.1	Pearson Correlation	1	.421**	.413**	.497**	.502**	.746**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	402	402	402	402	402	402
X2.2	Pearson Correlation	.421**	1	.435**	.387**	.464**	.724**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	402	402	402	402	402	402
X2.3	Pearson Correlation	.413**	.435**	1	.447**	.516**	.739**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	402	402	402	402	402	402
X2.4	Pearson Correlation	.497**	.387**	.447**	1	.571**	.770**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	402	402	402	402	402	402
X2.5	Pearson Correlation	.502**	.464**	.516**	.571**	1	.803**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	402	402	402	402	402	402
Total X2	Pearson Correlation	.746**	.724**	.739**	.770**	.803**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	402	402	402	402	402	402

Table 3. Validity Test Results of the Scientific Paper Platform Usage Questionnaire (X3)

		X3.1	X3.2	X3.3	X3.4	X3.5	Total X3
X3.1	Pearson Correlation	1	.590**	.565**	.484**	.480**	.796**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	402	402	402	402	402	402
X3.2	Pearson Correlation	.590**	1	.602**	.514**	.396**	.796**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	402	402	402	402	402	402
X3.3	Pearson Correlation	.565**	.602**	1	.542**	.430**	.805**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	402	402	402	402	402	402
X3.4	Pearson Correlation	.484**	.514**	.542**	1	.475**	.774**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	402	402	402	402	402	402
X3.5	Pearson Correlation	.480**	.396**	.430**	.475**	1	.722**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	402	402	402	402	402	402
Total X3	Pearson Correlation	.796**	.796**	.805**	.774**	.722**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	402	402	402	402	402	402

Table 4. Validity Test Results of the Determination Flow Questionnaire of Scientific Papers Ideas (X4)

		X4.1	X4.2	X4.3	X4.4	X4.5	Total X4
X4.1	Pearson Correlation	1	.666**	.596**	.608**	.536**	.812**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	402	402	402	402	402	402
X4.2	Pearson Correlation	.666**	1	.626**	.624**	.640**	.850**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	402	402	402	402	402	402
X4.3	Pearson Correlation	.596**	.626**	1	.618**	.625**	.836**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	402	402	402	402	402	402
X4.4	Pearson Correlation	.608**	.624**	.618**	1	.619**	.837**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	402	402	402	402	402	402
X4.5	Pearson Correlation	.536**	.640**	.625**	.619**	1	.826**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	402	402	402	402	402	402
Total X4	Pearson Correlation	.812**	.850**	.836**	.837**	.826**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	402	402	402	402	402	402

Table 5. Validity Test Results of the Student Creativity Program (PKM) Knowledge
Questionnaire (Y)

		Y.1	Y.2	Y.3	Y.4	Y.5	Total Y
Y.1	Pearson Correlation	1	.820**	.745**	.760**	.693**	.905**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	402	402	402	402	402	402
Y.2	Pearson Correlation	.820**	1	.781**	.701**	.677**	.896**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	402	402	402	402	402	402
Y.3	Pearson Correlation	.745**	.781**	1	.738**	.739**	.900**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	402	402	402	402	402	402
Y.4	Pearson Correlation	.760**	.701**	.738**	1	.694**	.879**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	402	402	402	402	402	402
Y.5	Pearson Correlation	.693**	.677**	.739**	.694**	1	.858**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	402	402	402	402	402	402
Total Y	Pearson Correlation	.905**	.896**	.900**	.879**	.858**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	402	402	402	402	402	402

The r-table value with a sample size (N) of 402 is 0.098, so in all tables (Tables 1-5) the Pearson Correlation value is higher than the r-table value. It can be concluded that all statements in the questionnaire are valid. In addition, the reliability test results in Table 6 show that all statements in the questionnaire are reliable because Cronbach's Alpa value of 0.952 is higher than the r-table value of 0.098.

Table 6. Reliability Test Result for All Questionnaires

Cronbach's Alpha	N of Items
.952	25

Table 7. Normality Test Result of Questionnaire Data

		Unstandardized Residual
N		402
Normal Parameters[a]	Mean	.0000000
	Std. Deviation	3.32076999
Most Extreme Differences	Absolute	.062
	Positive	.048
	Negative	-.062
Kolmogorov-Smirnov Z		1.237
Asymp. Sig. (2-tailed)		.094

The questionnaire data obtained in this study are normally distributed. This is based on the Asymptotic Significance 2-tailed value in Table 7, which is 0.094, greater than the probability value (p-value) of 0.05. Then, the results of simple linear regression analysis (Table 8) were obtained the significance value of X3 (Scientific Paper Platform Usage) and X4 (Determination Flow of Scientific Papers Ideas), namely 0.005 and 0.000, have a significant effect on variable Y (Student Creativity Program (PKM) Knowledge), because the value is smaller than the p-value of 0.05. Meanwhile, the significance value of X1 and X2 (0.050 and 0.309) is greater than 0.05, so the variables X1 (Systematic Writing of Scientific Paper) and X2 (Paper Writing Etiquette) have no effect on variable Y.

Table 8. T-Test Results of Independent Variables Separately Against the Dependent Variable

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.614	.751		-.817	.414
Total X1	.142	.072	.102	1.965	.050
1 Total X2	.074	.072	.058	1.018	.309
Total X3	.189	.066	.160	2.849	.005
Total X4	.545	.068	.473	8.058	.000

Table 9. F-Test Results of Independent Variables Simultaneously Against the Dependent Variable

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4816.763	4	1204.191	108.109	.000ᵃ
	Residual	4422.033	397	11.139		
	Total	9238.796	401			

The results of the multiple regression test in Table 9 obtained a significance value of 0.000, which is smaller than the p-value of 0.05, so all the independent variables together have a significant effect on the dependent variable. Then, the percentage of influence exerted by the independent variables on the dependent variable at the same time is 0.521 or 52.10%. This result is based on the R Square value in Table 10 below.

Table 10. Coefficient of Determination Results of Independent Variables Simultaneously Against Dependent Variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.722ᵃ	.521	.517	3.337

4   Discussion

Based on the results of the data analysis above, all statements in each writing skill variable have a correlation and influence on improving the quality and quantity of students' scientific papers, although there are parts that independently do not have a significant effect. There are several stages that students need to perform when writing scientific papers. The first is the knowledge of the rules and systematics of writing, such as the parts of scientific content, language use, reference guidelines, and others (1). In Table 8, some students understand the systematics of writing, but there are still students who do not understand it.

The second thing that needs to be applied is the ethics of writing scientific papers. This section is related to the violations in the creation of scientific writing and the honesty of the author, such as the act of plagiarism, accurate and complete reporting, confidentiality of identity, and so on (2). Although the analysis results (Table 8) show a good level of writing ethics, there are still things that are often violated, one of which is plagiarism, so this section must be continuously emphasized to students to be serious and honest in writing scientific papers. Next is the third stage, which is the use of scientific writing support platforms. Various platforms, both online and offline, have been created to facilitate everyone's work, including the educational or academic fields. PAW (Perpisa Academic Writing) is one of the platforms used to support students and teachers in academic writing (3). There are many other applications that can be used by

students to produce academic papers (4). From a citation and referencing perspective, the use of applications or websites is useful for improving the quality of students' scientific papers (5).

Moreover, the steps of determining the idea of scientific work, often they are confused about determining the study they should research. A literature review suggests that the parts that must be done by researchers in determining the idea until the completion of the research are (1) identifying the problem to be studied, (2) determining the hypothesis, (3) conducting research, and (4) interpreting the results(1). In addition, when writing scientific texts, researchers must also be able to create a logical flow using precise and concise words, compose clear sentences, and connect well-structured paragraphs (6). In other words, in the context of this study, students as researchers need to be trained in the logic of thinking in order to develop research parts.

Finally, students also lack knowledge about the Student Creativity Program (PKM), such as the types of programs, scope, concept, and the benefits and advantages of participating in PKM. Based on the results of the study, this is due to the ease of obtaining information about the PKM program, so the number of participating students is low. Low student participation is also related to four other factors as independent variables in this study. The low participation indirectly affects the difficulty of the students to produce the final work (thesis) and its quality. From the results of this report, the Department of Sports Coaching Education (PKO) of Medan State University needs to make new policies, such as proposing new courses to improve the quality of scientific papers and the quantity of students who submit their papers to the PKM program.

5   Conclusion

The low knowledge of students in the parts (variables) of using support platforms and the flow of determining scientific paper ideas has an impact on the low quality and quantity of scientific papers, especially those who participate in the PKM program. The other two parts have no effect on scientific papers, but at the same time, all the parts in this study have a significant effect on scientific papers. The follow-up of the research results allows the PKO UNIMED department to teach a new course in order to hopefully support the improvement of the quality and quantity of students' scientific papers.

6   Acknowledgements

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