

Exploring Relationship between School and National-based Tests

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Abstract—The purposes of this study are to explore the relationship between the school based-test and National based-test results and to prove whether the school-based results can predict the average obtained on National-based results. This study used quantitative method with cross-sectional survey. It focused on the relationship between two variables; the average of school results as independent variable or predictor and the average of National examination as dependent variable. The data were collected for 1446 students from six high schools. The random sampling was adopted to select the schools. The data used in this research were collected using documentation. The data were analyzed by using linear regression. As level of significance, the researchers preferred .05 with SPSS 16. The findings of this study proved that there is no strong correlation between the school based-test and the National based-test average. However, the school results cannot be used as good predictors of National examination results.

Keywords—correlation, school-national test, linear-regression, predictor.

I. INTRODUCTION

The national examination or known as *Ujian Nasional* (UN) is a standardized test to measure and assess the learners' competency in particular subjects in primary and secondary education in Indonesia (*KEMDIKNAS*). The national examination has been implemented for five decades. UAN tested students' performance in three subjects; Bahasa Indonesia, English and Mathematics. In 2005, UAN was changed to *Ujian Nasional* (National Examination) or UN. In 2008, the government adds more subjects tested in the UN, they are biology, chemistry and physics for natural science program and math, sociology, economy and geography for social science mainstream [1].

National test is designed to test particular subject matters learnt during the school's activities for several purposes. According to Clause 3 of the Decree No. 75/2009 from the ministry of education (Indonesia), there are four purpose of National Exam: first, as a mean of mapping Indonesia's national education quality; second as a basis to determine whether students can pass and proceed from one educational level to another level; third, as the main consideration on whether to accept new students in the upper levels of education; fourth, as a basis to supervise and assist particular schools in order to achieve the quality of national education.

As a state-mandated test that every student in primary and lower-upper secondary school must pass to graduate from their schools. National exam has already undergone long process of policy changes and sparked a number of

issues within its implementation. From year to year, the national exam has already changed, along with the change of policies that Government meant to design. It brings many implications to teachers, students and government should aware.

Evaluation is a very important tool in any educational system. The evaluation results obtained by students are considered constant and sustainable if students' score is as good on school based examination as on state-based examination. Based on the initial pre-survey about the scores of students turned out there are some students whose scores at the end of semester are high but low scores on national examination and vice versa [1].

The 'paradigm shift' in education from traditional to constructivist approaches has paved the way for the emergence of a variety of forms of assessment under the umbrella of school-based assessment (SBA). Teacher assessment in an institution could be considered an integral part of SBA. One of the key characteristics of teacher assessment is that it is progressive or continuous [2]. So, students in grade 9 and 12 have to ready to face National examination. That's why the evaluation of students should be progressive and continuous.

From the background above, the research questions are:

- To which extent are School based tests and National based test correlated? How well do students' results on School based test predict their results on National test?
- How well do students' results on School based test predict their results on National test?

The rest of this paper is organized as follow: Section II describes proposed research method. Section III presents the obtained results and following by discussion in Section IV. Finally, Section V concludes this work.

II. PROPOSED METHOD

Basing on the purpose of this research, quantitative method with inferential technique was adopted. The study used cross-sectional survey. The average of school-based test results for six high schools in Yogyakarta province, scholastic year 2014-2015 and 2015-2016, was considered independent variable or predictor whereas the average of results on national examination was considered dependent variable. The subjects involved in this study are Mathematics, Indonesian, and English; the average was calculated relying on them.

The participants in this study are 1446 students selected from each school involved. Schools were randomly selected. Thus, the results of this study can only be generalized to the six high schools because they are still few to represent the whole province high schools.

The data used in this study were collected using documentation. The process of collecting data started from 26th January until 26th February 2017. All the data collected are to the scholastic 2014/2015 and 2015/2016 for school-based test and National based test. To make sure the data collected are true, the data collection format was signed by every school principal (head teacher). The data were collected on three subjects (Mathematics, Indonesian, and English) for each school.

III. RESULTS

For analyzing purpose, the relationship between variable was tested using linear regression. For the accuracy of the results, the researchers used SPSS 16. For the value of relationship (R-value), the significance will be checked on the value varying from -1 to 1. According to rule of thumb the following guidelines on strength of relationship are often useful (though many experts would somewhat disagree on the choice of boundaries).

TABLE I. THE RULE OF THUMB BOUNDARIES AND RELATIONSHIP STRENGTH

Value of R	Strength of relationship
<.10	Trivial
.10 - .30	Small to medium
.30 - .50	Medium to large
>.50	Large to very large

From Table I, in general, the value $r > 0$ indicates positive relationship and $r < 0$ indicates negative relationship. While $r = 0$ indicates no relationship (or that the variables are independent and not related). Here, $r = +1, 0$ describes a perfect positive correlation (strong) and $r = -1, 0$ describes a perfect negative correlation (none or very weak). Closer the coefficients are to +1.0 and -1. 0 greater is the strength of the relationship between the variables. For prediction, the researchers chose the level of significant equals .05. Therefore, the prediction is significant if p -value $< .05$.

IV. DISCUSSION

For clarification purpose, school data were displayed in the Tables II and III below:

TABLE II. MODEL SUMMARY (2014/2015)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.351 ^a	.123	-.096	6.59910

TABLE III. MODEL SUMMARY (2015/2016)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.395 ^a	.156	-.055	6.74844

According to the results described in the Tables II and III, the R square between School and National examination results average are .123 and .156 respectively; the coefficients do not support a strong correlation.

TABLE IV. COEFFICIENTS FOR SCHOLASTIC YEAR 2014/2015

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	21.619	45.004		.480	.656
US	.424	.567	.351	.749	.496

a. Dependent Variable: UN

TABLE V. COEFFICIENTS FOR SCHOLASTIC YEAR 2015/2016

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-28.279	94.107		-.300	.779
US	1.007	1.173	.395	.859	.439

Looking at the values of significance in the Tables IV and V the predictors have .496 and .439 respectively. Both p-values are greater than .05. Clearly, they cannot be considered in the model.

The well-known model of regression is expressed in the following formula: $y = m x + b$ (Unstandardized) and $y = m x + 0$ (Standardized), where m is the slope of the line, and b is the interception of the line with the y -axis.

TABLE VI. ERROR OF PREDICTION ESTIMATE AVERAGE PART I

No	School Name	X1	Y1	Y1'	Y1-Y1'	(Y1-Y1') ²
1	A	82.69	66.97	29.02	37.94	1439.88
2	B	76.21	56.62	26.75	29.87	892.23
3	C	71.34	51.58	25.04	26.54	704.35
4	D	77.62	48.99	27.24	21.74	472.86
5	E	82.30	54.61	28.89	25.72	661.66
6	F	85.58	52.74	30.04	22.70	515.35

TABEL VII. ERROR OF PREDICTION ESTIMATE AVERAGE PART II

X2	Y2	Y2'	Y2-Y2'	(Y2-Y2') ²
82.96	64.14	32.77	31.37	984.13
79.43	55.04	31.37	23.67	560.04
76.96	49.28	30.40	18.88	356.48
77.66	48.59	30.68	17.91	320.92
81.56	52.47	32.22	20.25	410.22
82.67	45.56	32.65	12.90	166.55

Any Letter with Number 1 stands for the First Scholastic Year (e.g: Y1). However, that Accompanied with Letter 2 Represents the Second Year

To compute predicted values, the second formula was used because the data in table above were computed after being put at the same scale. The interpretation of the values coloured in the Tables VI and VII above displayed is as follows:

- The blue colored columns represent the predicted values (average) of National examination;
- The yellow colored column represents the difference between real National examination average and predicted average of it;
- The green colored column represents the error² of prediction (average).

The more error square increases, the more prediction probability decreases.

Generally, the answer to the first question is that there is no strong correlation or relationship between both Schools and National examination average even though all the tests are prepared basing on the same curriculum. For the second question, both school examination averages are not predictors of National examination because both p-values do not deserve to fit in the model of regression.

V. CONCLUSION

This study has explored the relationship between the school based-test and National based-test results and to prove whether the school-based results can predict the average obtained on National-based results. It is concluded that there is no strong correlation between the school based-test and the National based-test average. However, the school results cannot be used as good predictors of National examination results.

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