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ANALYSIS OF CORRESPONDENCE BETWEEN SCHOOL CONDITIONS, TEACHING STAFF, AND LEARNING INFRASTRUCTURE ON SCHOOL PERFORMANCE AT SD RICCI 1 WEST JAKARTA CITY

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ABSTRACT

One of the tools to measure a school's progress is school achievement. School achievement is influenced by various factors including the school environment, community environment, and family environment. In this study, researchers limit the problem to the school environment. The school environment is the factor that has the most direct interaction in the world of education, including the school's condition, teaching staff, and learning infrastructure. This study uses correspondence analysis to produce a perception map to find the relationship between the school environment and school achievement in RICCI Elementary School 1 City of West Jakarta. Correspondence analysis reduces variable dimensions and describes the row and column vector profiles of a data matrix from a contingency table. The results obtained are that good achievements are more influenced by the condition of the school and teaching staff and learning infrastructure.

Keywords: *Correspondence Analysis, School Conditions, Teaching Staff, Infrastructure, School Achievement.*

INTRODUCTION

So many factors affect the improvement of learning achievement at SD RICCI 1, both from factors such as school conditions, teaching staff and infrastructure. When viewed from the condition of the school, teaching staff and infrastructure facilities have been categorized as adequate because there are facilities and teaching staff that support the teaching and learning process. However, in SD RICCI 1 with good school conditions, good teaching staff and infrastructure results in good school performance. For school achievement taken is the average score on each particular subject. SD RICCI 1 uses a mono system of minimum completeness criteria (KKM), which is 76. Education units can choose one KKM for all subjects. After the KKM of each subject has been determined, the KKM of the education unit can be determined by choosing the lowest KKM, average, or mode of all KKM subjects. Where the interval and predicate with an interval value of 92-100 predicate A with very good information, the interval value 84-91 predicate B with good information, the interval value 76-83 predicate C with good information, and the value of < 76 predicate D with less information. In the 2016/2017 academic year, the average value of arts, culture and crafts was 79.5 with a KKM score of 76 in the fairly good category and also for an average English score of 81.3 with a KKM score of 82 in the good enough category. Likewise, in the 2017/2018 academic year, the average Indonesian score for an average score of 82.4 with a KKM score of 83 is categorized as quite good. This is a question for SD RICCI 1 so that further analysis is needed regarding the relationship between school conditions, teaching staff

and infrastructure to see the trend pattern of external factors that affect school performance.

Several studies have been conducted related to school achievement, based on research conducted by Nurwahida (2015) entitled "Correspondence Analysis of Learning Facilities and Teaching Staff on Learning Achievement of High School and Vocational Students in Palopo City", further about the possibility of the relationship between learning facilities and teaching staff on the learning achievement of high school and vocational students in Palopo City using correspondence analysis. The results show that external factors that have a meaningful relationship with learning achievement are teaching staff. This is supported by the relationship pattern resulting from the correspondence analysis plot which explains that high learning achievement is obtained more from schools with Good Teaching Staff (TPB) while schools with poor teaching staff (TPKB) and good enough teaching staff (TPCB) tend to get moderate and less achievement.

Other previous studies have some of the same variables but use different analyses, namely research conducted by Nurhayati (2015) entitled "The Influence of the Environment and Learning Infrastructure on Learning Achievement (Study on KKPI Students Class I APK SMK Muhammadiyah 3 Singosari)". This study uses descriptive and inferential statistical analysis techniques, while environmental variables and learning infrastructure in this study are one of the supporting factors in achieving student achievement. A good and supportive learning environment and infrastructure will certainly maximize students' learning achievement. Two factors are part of the environment, namely the family and school environments. For the factors of learning infrastructure, there are also two factors, namely learning infrastructure at home and learning infrastructure at school. These factors are certainly very necessary as an effort to achieve maximum achievement in learning.

Based on research conducted by Nurwahida and Nurhayati, researchers are interested in studying the relationship pattern between school conditions, teaching staff and infrastructure on school achievement at SD RICCI 1. Of course, it differs from the research conducted by Nurwahida and Nurhayati. Researchers conclude that the solution that can be taken is to use Correspondence Analysis*,* an analytical method that can provide output in the form of plots between rows and columns of a matrix in the form of categorical data, and the accuracy of the results is no less good than statistical analysis that uses assumptions.

METHOD

The secondary data is school annual report data at SD RICCI 1. School report data summarizes school achievement data, school conditions, teaching staff and infrastructure from the 2016/2017 academic year to the 2020/2021 school year.

The number of samples used in this study is 5 years of lessons with various achievement scores on the original data. After data collection is carried out, data processing will be carried out. Researchers grouped three variables of achievement indicators, including:

1. Achievement X (Very Good) with a score of 87.06 – 90.82
2. Achievement Y (Good) with a score of 83.30 – 87.05
3. Achievement Z (Good Enough) with a score of 79.53 – 83.29

The data analysis steps used in this study are data transformation, cluster analysis, contingency tables, *chi-square tests* (χ^2) and correspondence analysis.

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RESULTS AND DISCUSSION

This study aims to determine the factors that affect school achievement in 5 school years, namely from the 2016/2017 academic year to the 2020/2021 academic year at SD RICCI 1 West Jakarta. These include environmental factors, namely school conditions, teaching staff and infrastructure. Below is a description of the relationship between school conditions, teaching staff, and infrastructure with school performance as follows:

```
> #Chi-square test
> chisq.test(KondisiSekolah_dengan_PrestasiSekolah)

        Pearson's Chi-squared test

data:  KondisiSekolah_dengan_PrestasiSekolah
X-squared = 10, df = 4, p-value = 0.04043
```

Figure 1. Chi Square Calculation using R-Studio for School Conditions With Achievement Sekolah.

```
> #Chi-square test
> chisq.test(TenagaPengajar_dengan_PrestasiSekolah)

        Pearson's Chi-squared test

data:  TenagaPengajar_dengan_PrestasiSekolah
X-squared = 10, df = 4, p-value = 0.04043
```

Figure 1. Chi Square Calculation Using R-Studio for Teaching Staff with School Achievement.

```
> #Chi-square test
> chisq.test(SaranaPrasarana_dengan_PrestasiSekolah)

        Pearson's Chi-squared test

data:  SaranaPrasarana_dengan_PrestasiSekolah
X-squared = 10, df = 4, p-value = 0.04043
```

Figure 2. Chi Square *calculation* uses R-Studio for infrastructure with school performance.

Based on the calculation results with the help of software see the *chi-square* test value of the *p-value* as follows:

perfo rman ce	*Singular Value*	*Inertia*	*Chi Square*	*Sig.*	*Proportion of Inertia*		*Confidence Singular Value*
					Accounted for	*Cumulative*	*Standard Deviation*
1	1.000	1.000			0.500	0.500	0.000
2	1.000	1.000			0.500	1.000	0.000
Total		2.000	10.000	0.040[a]	1.000	1.000	

Table 2. *Overview of Row Points* on School Achievement for School Achievement with School Conditions

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Prestasi Sekolah	*Mass*	*Score in Dimension*		*Inertia*	*Contribution*				
					Of Point to Inertia of Dimension		*Of Dimension to Inertia of Point*		
		1	2		1	2	1	2	Total
X	0.200	-2.000	0.000	0.800	0.800	0.000	1.000	0.000	1.000
Y	0.400	0.500	1.118	0.600	0.100	0.500	0.167	0.833	1.000
Z	0.400	0.500	-1.118	0.600	0.100	0.500	0.167	0.833	1.000
Active Total	1.000			2.000	1.000	1.000			

Table 3. Overview of column points on school conditions for school achievement with school conditions

Kondisi Sekolah	*Mass*	*Score in Dimension*		*Inertia*	*Contribution*				
					Of Point to Inertia of Dimension		*Of Dimension to Inertia of Point*		
		1	2		1	2	1	2	Total
KSSB	0.200	-2.000	0.000	0.800	0.800	0.000	1.000	0.000	1.000
KSB	0.400	0.500	1.118	0.600	0.100	0.500	0.167	0.833	1.000
KSCB	0.400	0.500	-1.118	0.600	0.100	0.500	0.167	0.833	1.000
Active Total	1.000			2.000	1.000	1.000			

Two main axes can be created. The first main axis can explain 50% of the diversity of data with an inertial value (Eigen value) of 1. As for the second main axis can explain 50% of the variance, so the total variance that the main and second axes can explain is 100%. The first main axis for the category of school conditions that have the largest contribution is given by the condition of schools with very good criteria (KSSB) of 80% and the condition of schools with good criteria (KSB) of 10% while the condition of schools with good enough criteria (KSCB) is only 10%. While the second main axis for the KSSB variable is 100%, the KSB variable is 16.7%, and the KSCB variable is 16.7%. In school achievement the greatest contribution is given by achievement X (very good), by 100%. The largest achievement variable is given by achievement X (very good), which is 80%, achievement categories Y (good) and Z (good enough) each by 10%. Meanwhile, school achievement in the Y (good) and Z (good enough) categories was 16.7% each.

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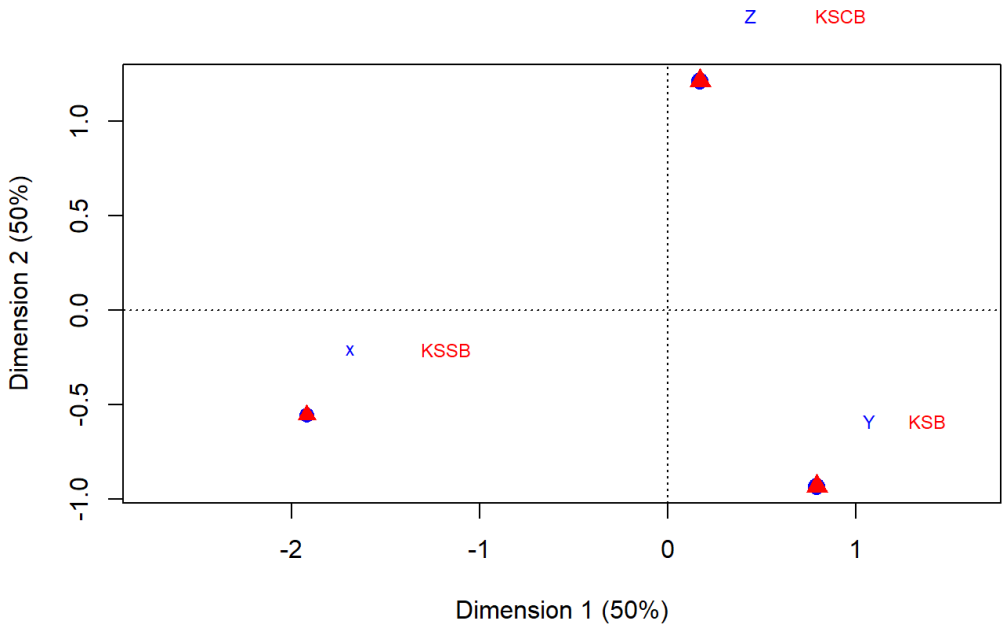

Figure 4. Plot Analysis of School Condition Correspondence with School Achievement

The variables in figure 4.4 show that they have something in common. Learning achievement X (very good) is very close to very good school conditions (KSSB). This proves that school conditions that have excellent quality will produce excellent learning achievement.
Learning achievement Y (good) is very close to good school conditions (KSB). This proves that school conditions that have good quality will produce good learning achievement.
Learning achievement Z (good enough) has a very close distance to the condition of the school is quite good (KSCB). This proves that school conditions that have good enough quality will produce good learning achievements.

1. Pattern of Relationship Between Teaching Staff Variables and School Achievement

Table 4. Summary of Teaching Staff with School Achievement

Dimension	*Singular Value*	*Inertia*	*Chi Square*	*Sig.*	*Proportion of Inertia*		*Confidence Singular Value*
					Accounted for	*Cumulative*	*Standard Deviation*
1	1.000	1.000			0.500	0.500	0.000
2	1.000	1.000			0.500	1.000	0.000
Total		2.000	10.000	0.040[a]	1.000	1.000	

Table 5. Overview of Row Points on School Achievement for Teachers with School Achievement

Prestasi Sekolah	*Mass*	*Score in Dimension*		*Inertia*	*Contribution*				
					Of Point to Inertia of Dimension		*Of Dimension to Inertia of Point*		
		1	2		1	2	1	2	Total

X	0.200	-2.000	0.000	0.800	0.800	0.000	1.000	0.000	1.000
Y	0.400	0.500	1.118	0.600	0.100	0.500	0.167	0.833	1.000
Z	0.400	0.500	-1.118	0.600	0.100	0.500	0.167	0.833	1.000
Active Total	1.000			2.000	1.000	1.000			

Table 6. *Overview of column points* on teaching staff for teachers with school performance

Tenaga Pengajar	*Mass*	*Score in Dimension*		*Inertia*	*Contribution*				
					Of Point to Inertia of Dimension		*Of Dimension to Inertia of Point*		
		1	2		1	2	1	2	Total
KSSB	0.200	-2.000	0.000	0.800	0.800	0.000	1.000	0.000	1.000
KSB	0.400	0.500	1.118	0.600	0.100	0.500	0.167	0.833	1.000
KSCB	0.400	0.500	-1.118	0.600	0.100	0.500	0.167	0.833	1.000
Active Total	1.000			2.000	1.000	1.000			

Two main axes can be created. The first main axis can explain 50% of the diversity of data with an inertial value (Eigen value) of 1. As for the second main axis can explain 50% of the variance, so the total variance that the main and second axes can explain is 100%.

The first main axis for the category of teaching staff who have the largest contribution is given by teaching staff with very good criteria (TPSB) of 80% and teaching staff with good criteria (TPB) of 10% while teaching staff with good enough criteria (TPCB) is only 10%. While the second main axis for the variable of very good teaching staff (TPSB) is 100%, the variable of good teaching staff (TPB) is 16.7%, and the variable of good enough teaching staff (TPCB) is 16.7%. In school achievement the greatest contribution is given by achievement X (very good), by 100%. The largest achievement variable is given by achievement X (very good), which is 80%, achievement categories Y (good) and Z (good enough) each by 10%. Meanwhile, school achievement in the Y (good) and Z (good enough) categories was 16.7% each.

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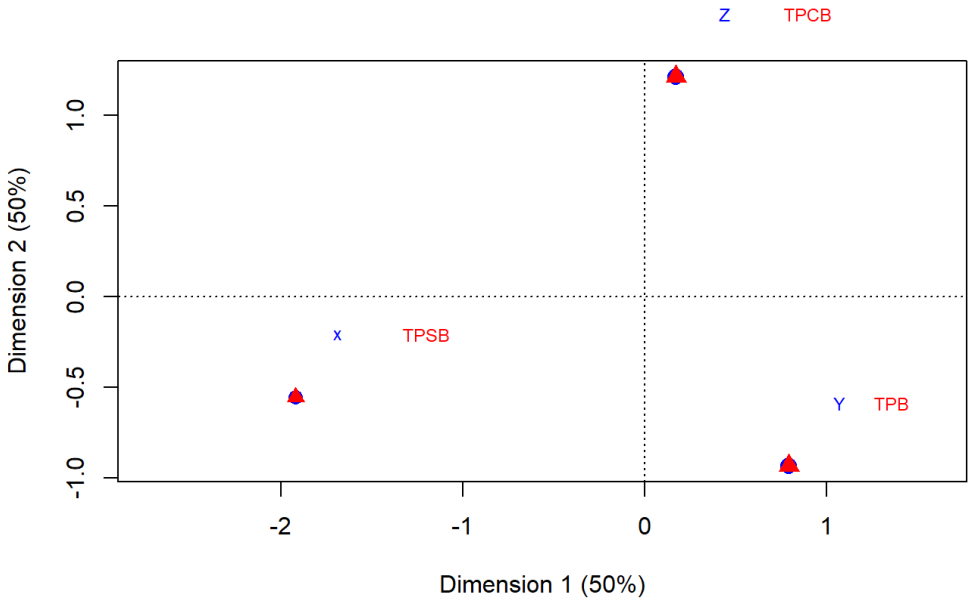

Figure 3. Plot analysis of the correspondence of teaching staff with learning achievement

The variables in the figure show that they have something in common. Learning performance X (very good) has a very close distance to very good teaching staff (TPSB). This proves that teaching staff who have excellent quality will produce excellent learning achievements.
Learning performance Y (good) is very close to good teaching staff (TPB). This proves that teaching staff who have good quality will produce good learning achievements.
Learning performance Z (good enough) has a very close distance to the teaching staff is good enough (TPCB). This proves that teaching staff who have good enough quality will produce good learning achievements.

1. Pattern of Relationship Between Variables of Infrastructure Facilities and School Achievement

Table 7. Summary of Infrastructure Facilities with School Achievement

Dimension	*Singular Value*	*Inertia*	*Chi Square*	*Sig.*	*Proportion of Inertia*		*Confidence Singular Value*
					Accounted for	*Cumulative*	*Standard Deviation*
1	1.000	1.000			0.500	0.500	0.000
2	1.000	1.000			0.500	1.000	0.000
Total		2.000	10.000	0.040[a]	1.000	1.000	

Table 8. Overview of Row Points on School Achievement for Infrastructure Facilities with School Achievement

Prestasi Sekolah	*Mass*	*Score in Dimension*		*Inertia*	*Contribution*				
					Of Point to Inertia of Dimension		*Of Dimension to Inertia of Point*		
		1	2		1	2	1	2	Total

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X	0.200	-2.000	0.000	0.800	0.800	0.000	1.000	0.000	1.000
Y	0.400	0.500	1.118	0.600	0.100	0.500	0.167	0.833	1.000
Z	0.400	0.500	-1.118	0.600	0.100	0.500	0.167	0.833	1.000
Active Total	1.000			2.000	1.000	1.000			

Table 9. Overview of column points on infrastructure facilities for infrastructure facilities with school achievement

Sarana Prasarana	*Mass*	*Score in Dimension*		*Inertia*	*Contribution*				
					Of Point to Inertia of Dimension		*Of Dimension to Inertia of Point*		
		1	2		1	2	1	2	Total
KSSB	0.200	-2.000	0.000	0.800	0.800	0.000	1.000	0.000	1.000
KSB	0.400	0.500	1.118	0.600	0.100	0.500	0.167	0.833	1.000
KSCB	0.400	0.500	-1.118	0.600	0.100	0.500	0.167	0.833	1.000
Active Total	1.000			2.000	1.000	1.000			

Two main axes can be created. The first main axis can explain 50% of the diversity of data with an inertial value (Eigen value) of 1. As for the second main axis, it can explain 50% of the variance, so the total variance that the main and second axes can explain is 100%.

The first main axis for the category of infrastructure facilities with the largest contribution is given by infrastructure facilities with complete criteria (SPL) of 80% and infrastructure facilities with fairly complete criteria (SPCL) of 10%. In comparison, infrastructure facilities with incomplete criteria (SPKL) are only 10%. While the second main axis for the SPL variable is 100%, the fairly complete infrastructure variable (SPCL) is 16.7%, and the incomplete infrastructure variable (SPKL) is 16.7%. In school achievement the greatest contribution is given by achievement X (very good), by 100%. The largest achievement variable is given by achievement X (very good), which is 80%, achievement categories Y (good) and Z (good enough) each by 10%. Meanwhile, school achievement in the Y (good) and Z (good enough) categories was 16.7% each.

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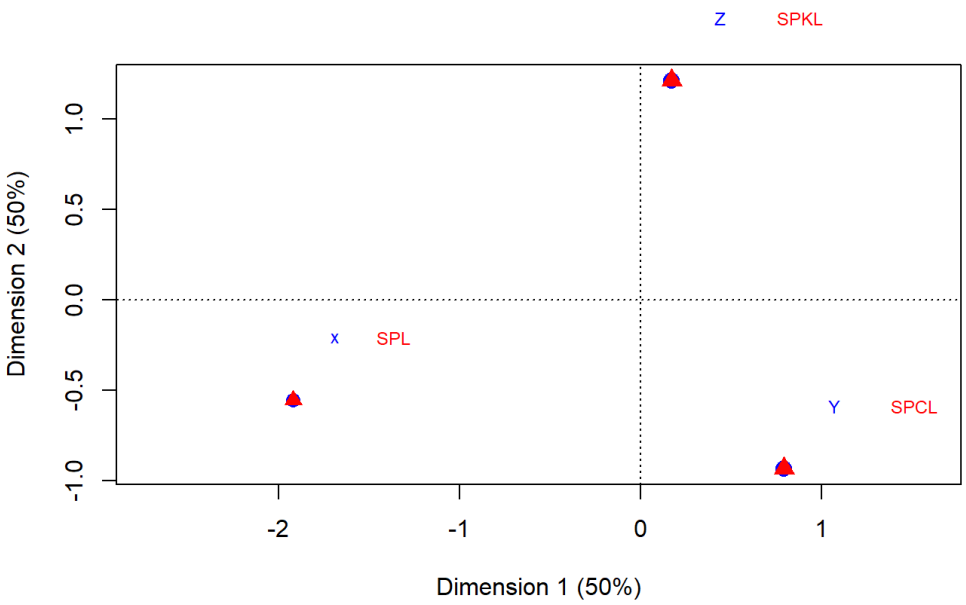

Figure 4. Plot analysis of correspondence of infrastructure with learning achievement

The variables in the figure show that they have something in common. Learning achievement X (very good) is very close to complete infrastructure (SPL). This proves that infrastructure facilities that have complete quality will produce excellent learning achievements.
Learning achievement Y (good) is very close to fairly complete infrastructure facilities (SPCL). This proves that infrastructure facilities that have complete quality will produce good learning achievements.
Learning achievement Z (quite good) has a very close distance to incomplete infrastructure facilities (SPKL). This proves that infrastructure facilities that have incomplete quality will produce quite good learning achievements.

CONCLUSION

Based on the results of research at SD RICCI 1, the following conclusions were obtained:

1. There is a relationship between school conditions and school performance.
2. There is a relationship between teaching staff and school performance.
3. There is a relationship between infrastructure and school performance.
4. Achievement X (very good) tends to be influenced by very good school conditions (KSSB), Y achievement (good) tends to be influenced by good school conditions (KSB) and Z achievement (good enough) tends to be influenced by school conditions quite good (KSCB).

Achievement X (very good) tends to be influenced by very good teaching staff (TPSB), Y performance (good) tends to be influenced by good teaching staff (TPB) and Z performance (good enough) tends to be influenced by good enough teaching staff (TPCB).
Achievement X (very good) tends to be influenced by complete infrastructure (SPL), performance Y (good) tends to be influenced by fairly complete infrastructure (SPCL) and achievement Z (good enough) tends to be influenced by incomplete infrastructure (SPKL).

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