

Running head: DATA PROJECT

Data Project using Elementary School data set

in APA Style

Denise A. Wallace

Valdosta State University

Research questions to be answered using given data set:

Correlation Questions:

1. Is there a relationship between students' mean scale scores for the FCAT math test and students' mean scale scores for FCAT reading test?
2. Is there relationship between the average years of teaching experience and the students' mean scale scores for the FCAT reading test?

Independent means t-test Questions:

3. Is there a significant difference between schools that finance higher per pupil expenditures and schools who finance lower per pupil expenditures on the students' mean scale scores for the FCAT reading test?
4. Is there a significant difference between schools with higher average years of experience and schools with lower average years of experience on the students' mean scale score for the FCAT reading test?

1. Is there a relationship between students' mean scale scores for the FCAT math test and students' mean scale scores for FCAT reading test?

FCAT math test scores ranged from 278 to 350, with a mean of 320.65 (SD=17.84).

FCAT reading test scores ranged from 262 to 333, with a mean of 301.62 (SD=16.14). Math and reading skewness and kurtosis values are within the range of ± 1 indicating that the scores of both variables are normally distributed (see Table 1).

Table 1

Descriptive Statistics of FCAT Math and Reading mean scale scores for Elementary School District Students

	N	M	SD	Skewness	Kurtosis
Math	43	320.65	17.84	-.73	-.04
Reading	43	301.62	16.14	-.28	-.10

A Pearson product-moment correlation coefficient was used to determine if there was a significant relationship between students' mean scale scores for math and students' mean scale scores for reading on the FCAT test (N=43). The results of the Pearson r revealed a strong relationship between math scores (M=320.65, SD=17.84) and reading scores (M=301.62, SD=16.14), $r(41) = .8337$, this correlation is significant at the .05 level. The r^2 coefficient of determination, ($r^2 = .69$) indicates that 69% of the total variance is shared by the two variables. Both the r and r^2 values reveal a large effect size. Note that the correlation

does not imply a causal relationship between the variables. Therefore, we reject the null hypothesis that there is no relationship between FCAT math scores and FCAT reading scores.

2. Is there relationship between the average years of teaching experience and the students' mean scale scores for the FCAT reading test?

Average years of teaching ranged from 4 years to 23 years, with a mean of 11.04. (SD=4.23). FCAT reading test scores ranged from 262 to 333, with a mean of 301.62 (SD=16.14). Average teaching years and reading skewness and kurtosis values are within the range of ± 1 indicating that the scores of both variables are normally distributed (see Table 2).

Table 2

Descriptive Statistics of Average years Teaching experience and Reading mean scale scores for Elementary School District Students

	N	M	SD	Skewness	Kurtosis
Teaching	43	11.04	4.23	.56	.92
Reading	43	301.62	16.14	-.28	-.10

A Pearson product-moment correlation coefficient was used to determine if there was a significant relationship between the average years of teaching experience and students' mean scale scores for reading on the FCAT test (N=43). The results of the Pearson r revealed a weak

relationship between teaching years ($M=11.04$, $SD=4.23$) and reading scores ($M=301.62$, $SD=16.14$), $r(41) = -.14297$, this correlation is not significant at the .05 level. The r^2 coefficient of determination, ($r^2=.02$) indicates that only 2% of the total variance is shared by the two variables. Both the r and r^2 values reveal a small effect size. Note that the correlation does not imply a causal relationship between the variables. Therefore, we fail to reject the null hypothesis that there is no relationship between students' FCAT reading scores and average years of teaching experience.

3. Is there a significant difference between schools that finance higher per pupil expenditures and schools who finance lower per pupil expenditures on the students' mean scale scores for the FCAT reading test?

Average higher financing per pupil mean scale scores for the FCAT reading test ranged from 326 to 262, with a mean of 298 ($SD=17.38$). Average lower financing per pupil mean scale scores for the FCAT ranged from 332 to 274, with a mean of 304 ($SD=14.93$). Average high financing scores and low financing scores skewness and kurtosis values are within the range of ± 1 indicating that the scores of both variables are normally distributed (see Table 3).

Table 3

Descriptive Statistics of Average High Financing per pupil and Low Financing per pupil mean scale scores on FCAT reading for Elementary School District Students

	N	M	SD	Skewness	Kurtosis
High	20	298	17.38	-.41	-.44
Low	20	304	14.93	-.23	-.25

An Independent Means t Test was used to determine if there was a significant difference between the mean scale scores in reading for high financed students and the mean scale scores in reading for the low financed students. The results of the t Test revealed that there was not a significant difference between the mean scores in reading for high financed students and the mean scores in reading for the low financed on the FCAT; $t(35) = 1.11, p = .27, p > .05$. There was a small to medium effect size of .36 between the mean FCAT reading scores. Note: Three schools did not report an expenditure figure; their test scores were not included in the results.

Among students in the Elementary School District taking the FCAT reading test ($N=40$), there was no statistically significant difference between high financed students ($M=298, SD=17.34$) and low financed students ($M=304, SD=14.93$), $t(35)=1.11, p=.27, p > .05$, $CI.95=8.38, 7.20$. Therefore, we fail to reject the null hypothesis that there is no difference in the FCAT scores between students financed at a higher per pupil rate and those financed at a lower per pupil rate. Further, Cohen's effect size value ($d = .36$) suggested low to medium practical significance.

4. Is there a significant difference between schools with higher average years of teaching experience and schools with lower average years of teaching experience on the students' mean scale score for the FCAT reading test?

Average for greater experience teaching on student's mean scale scores for the FCAT reading test ranged from 326 to 273, with a mean of 300 ($SD=15.81$). Average for lesser experience teaching on students' mean scale scores for the FCAT ranged from 333 to 262, with a mean of 303 ($SD=17.40$). Average greater teaching experience scores and lesser teaching

experience scores skewness and kurtosis values are within the range of ± 1 indicating that the scores of both variables are normally distributed (see Table 4).

Table 4

Descriptive Statistics of Average Greater Experience Teaching and Lesser Experience Teaching on mean scale scores on FCAT reading for Elementary School District Students

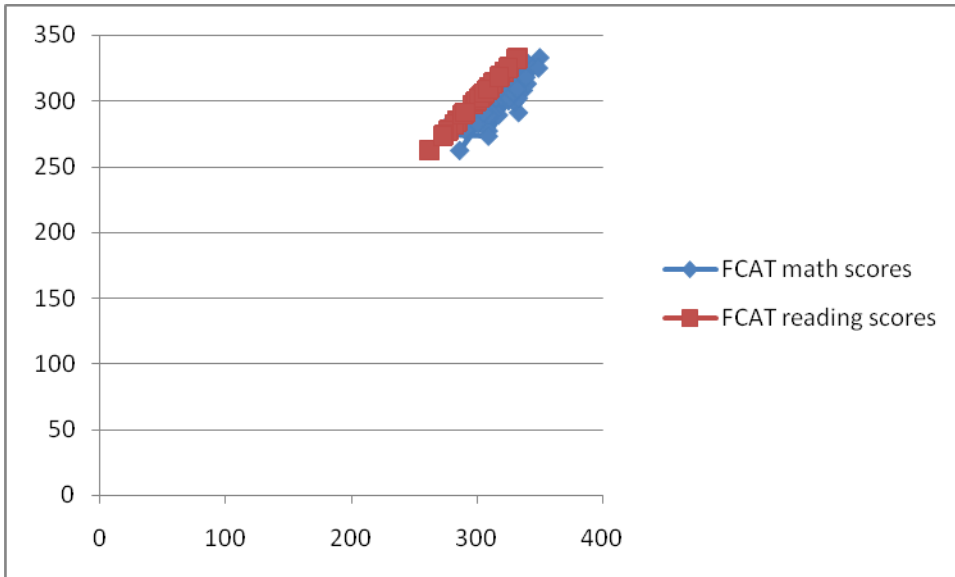
	N	M	SD	Skewness	Kurtosis
Greater	20	300	15.81	-.25	-.77
Lesser	23	303	17.40	-.34	.25

An Independent Means *t* Test was used to determine if there was a significant difference between the mean scale scores in reading for students at schools where the teachers had greater average of teaching experience and the mean scale scores in reading for students at school where the teachers had a lesser average of teaching experience. The results of the *t* Test revealed that there was not a significant difference between the mean scores in reading for high financed students and the mean scores in reading for the low financed on the FCAT; $t(39)=.51$, $p=.61$, $p>.05$. There was a small effect size of $-.15$ between the mean FCAT reading scores.

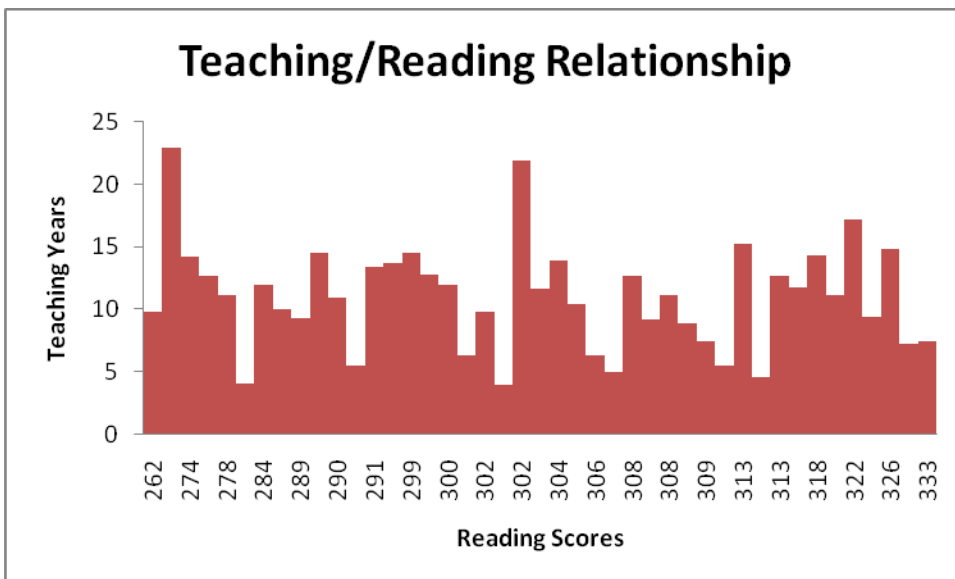
Among students in the Elementary School District taking the FCAT reading test ($N=43$), there was no statistically significant difference between students taught by greater experienced teachers ($M=300$, $SD=15.81$) and lesser experienced teachers ($M=303$, $SD=17.04$), $t(39)=.51$, $p=.61$, $p > .05$, $CI.95=7.62, 7.72$. Therefore, we fail to reject the null hypothesis that there is no

difference in the FCAT scores between students taught by greater experienced teachers and those taught by lesser experienced teachers. Further, Cohen's effect size value ($d = -.15$) suggested low practical significance.

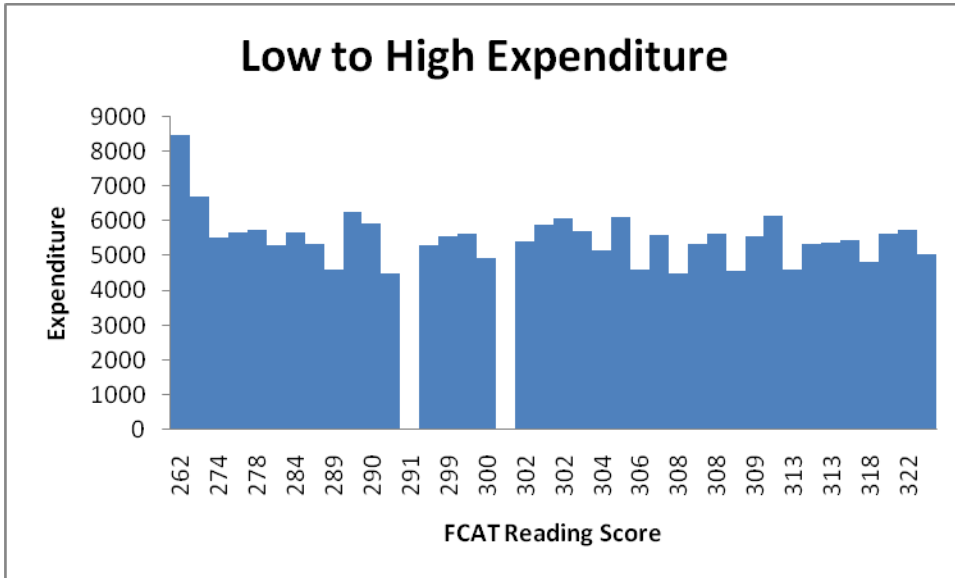
Scatter Chart showing relationship in Question #1.



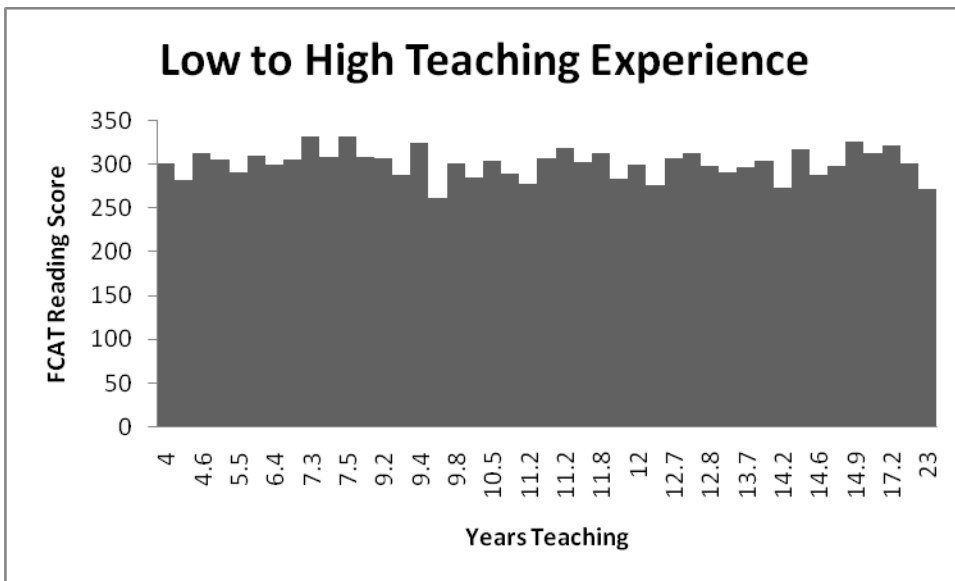
Bar Graph showing relationship of Question #2.



Bar Graph showing no significant difference of Question #3.



Bar Graph showing no significant difference of Question #4.



Discussion and Recommendations

The results of these research queries have not found any determinant factors that contribute to the increase or decrease in students' FCAT mean scale scores in reading beyond the positive relationship that FCAT math scores have on FCAT reading scores. It does show that students can score well on the FCAT reading test even if they receive the least amount of money in terms of financial expenditure per pupil. The results also show that students can score well on the FCAT reading test with less experienced teachers.

Factors that may have had a determining effect on the FCAT outcome were not addressed; suggested questions may include: Did students eat breakfast? Was the test before or after lunch/recess? Did student spend more time reading for pleasure? Did students study similar types of questions? Could a pre test/post test situation be used to test various factors?

Overall recommendation would be to cut spending and hire less experienced teachers at a reduced cost; use the excess money on the library.