

High Performance School Study

High Performance Schools = Highly Qualified Teachers = Highest Academic Achievement?

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Over the past two decades we have witnessed an increased interest by both researchers and practitioners as to the effects of schooling on students (Sackney, 1988). In particular the emphasis has been on how schools can improve student achievement. Simultaneously, research has been ongoing concerning the quality of a school building and its health related affects *and* their impacts on the performance of those who use the building (Buckely, Schneider, & Shang, 2004). Some studies have shown a direct correlation between the quality of school facilities and the performance of its inhabitants – both teachers and students alike. So, what makes a “quality building?” Many factors contribute to the quality of the school building which, in turn, may affect the quality of teacher life and, ultimately, educational outcomes (Buckely, et al., 2004). An example is air quality (EPA, 2000). Poor air quality is widespread and many schools suffer from what is commonly known as “sick building syndrome,” which has been linked to student and teacher absenteeism, reducing student performance (Kennedy, 2001; Leach, 1997; Smedje & Norback, 1999; Rosen & Richardson, 1999). Classroom lighting has also been shown to play a critical role in performance (Phillips, 1997). In one particular study, over 21% of the teachers reported that the lighting in their school was inadequate (Benya, 2001). Another building condition that is often related to performance is noise. Lackney (1999) reported that teachers believe that noise impairs academic performance. In a study conducted by Lucas (1981) teachers reported that their classrooms and hallways were so noisy that it affected their ability to teach.

In direct contrast to low quality school buildings, high performance schools, as a general rule, provide superior indoor air quality, adequate ventilation, ambient noise reduction and increased daylighting. Individually, these aspects have been shown to create an environment, which has a substantial impact on human health, achievement, attendance, and overall well-being (Buckely, et al., 2004).

Concurrently, while research on facilities was being done, research concerning the factors that affect and or contribute to a teacher’s ability to teach were also on the rise. It is now well documented that there are a variety of factors that affect and or contribute to a teacher’s ability to teach (Darling-Hammond, 2000). The reality is however, that there is only one place for that teaching to take place – the school building. Thus it is possible that the quality of a teachers teaching environment may directly affect their health, their morale and/or, their ability to teach (Buckely, et al., 2004).

A variety of research studies have demonstrated the relative ease of measuring concise constructs such as attendance and achievement. On the other hand, health, well-being, and morale are multi-dimensional constructs that include physical as well as social and psychological aspects (Andrews, &

Neuroth, 1988). Each of these concepts has individual merit but for the sake of clarity in this study we will coalesce these pieces into a single construct known as efficacy. In very simple terms, teacher efficacy is a self-judgment of a teacher's capability to bring about the desired outcomes of student engagement and learning (Tschannen-Moran & Hoy, 2001). In this case we are looking at the efficacy of the teachers and principal as a whole and thus, *School Efficacy*.

One particular aspect of high performance schools, daylighting, has received a lot of research attention over the past several years. In the Heschong Mahone Group study (1999) the academic achievement of 21,000 students was compared to the amount of daylight allowed into the classroom. The results demonstrated that students with the most daylighting in their classrooms progressed 20 percent faster on math tests than those with the least amount of daylighting. A possible drawback, however, with the study is that it did not attempt to explain *why* students in the classroom with greater daylight scored higher.

Heschong, one of the architects for the Group, believes two possible theories may be - better vision, and/or better morale. According to Heschong, "Kids see better, or teachers see better," she said. "It may be that teachers feel better, and are more motivated by daylighting" (Heschong, 1999). When one contrasts Heschong's statement with the research that has shown that "teachers are the single most important influence on student progress," (Archer, 1999) one can see that the possibility exists that high performance schools may provide teachers with a healthier and safer environment, which in turn may affect their morale and/or efficacy and thus their ability to teach, ultimately resulting in improved academic achievement. This possibility gave rise to the H₃ hypothesis: High Performance Schools facilitate teacher quality and teacher quality, in turn, facilitates greater student academic achievement.

Definition of Terms

Before this study could be fully implemented, working definitions were created for each of the design elements. The need for this is based in part due to the fact that many terms in this arena are still being defined. "The term 'green building' hasn't reached Webster's dictionary, but it's certainly in the news" (Stromberg, 2005). Green building rating systems have been developed and are continuing to evolve (Gowri, 2004). Some states, such as California, have even designed "report cards" which allows an individual to be able to assess particular components of high performance or sustainable design (CHPS, 2006).

For the sake of this study we defined our three factors as follows:

- 1) *High Performance Schools*: also known as sustainably designed schools, are schools that were intentionally designed as sustainable and which achieve a rating of 19 or above on the modified Collaborative for High Performance Schools (CHPS) inventory;
- 2) *Highly Qualified Teachers*: also known as teacher quality, were said to be present in schools with high collective teacher efficacy; and
- 3) *Academic Achievement*: grade 3-5 math TAKS scores as assessed by the Texas Education Agency (TEA).

Purpose

The purpose of this study was to determine whether there is a correlation between facilities, teachers and student achievement.

Rationale

As was discussed in the introduction, a variety of studies have been conducted in and around each of the factors under investigation in this study. This researcher, however, was unable to find a study which took into account all three factors simultaneously. The H₃ study was conducted as an attempt to look at the relationship between facilities and teachers *and* teachers and student achievement.

Design

As a means of testing whether a correlation exists between facilities, teachers, and student achievement the researchers collected and analyzed the data from six schools in McKinney, Texas. McKinney ISD was selected for this study for three reasons:

- 1) The State Energy Conservation Office (SECO), through the Sustainable School Design Demonstration program provided funding for the sustainable school design, construction, and commissioning phases for the McKinney ISD schools;
- 2) McKinney ISD has four sustainable or high performance schools – three of which participated in this study; and
- 3) Each of the high performance schools is located within the same boundary as a traditionally built school.

High Performance Classification

To determine whether the schools which were intentionally designed as high performance schools actually qualified as such for this study, the researchers obtained the following: (see appendix A)

- Monthly and annual use of electricity (kwhr, kw) and natural gas (mcf) which was converted to an annual unit basis of kw/ft², kw-hrs/ft², BTU/ft²;
- Cost totals (monthly and annual) as well as annual cost/ft²;
- Documentation of occupied hours for school and non-school functions was obtained;
- CHPS inventory conducted on each campus; and
- Light measurements

Study Sample

Following the classification process, three high performance schools were selected and served as our experimental schools and three traditionally designed schools served as controls. As noted in Table 1, each experimental school was paired with a control school which fell within its same geographical boundary. Further, each pair had similar populations, and enrollment statistics (see appendix D for school profiles). For the sake of anonymity, the experimental schools are labeled Group 1 schools, and the control schools are labeled Group 2 schools.

Table 1

Experimental School	Control School	Boundary	Year Opened	Total Enrollment
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1		75070	2000-2001	527
	2	75070	2001-2002	677

Experimental School	Control School	Boundary	Year Opened	Total Enrollment
1		75070	2002-2003	565
	2	75070	1997-1998	750

Experimental School	Control School	Boundary	Year Opened	Total Enrollment
1		75069	2002-2003	479
	2	75069	1994-1995	519

Research Instruments Used

In order to test the hypothesis and theoretical model of this study, operational measures for collective efficacy, school climate, principal and faculty T-scales, high performance classification, and school achievement in mathematics were required.

Though there are currently collective efficacy instruments (Goddard, Hoy, & Woolfolk Hoy, 2000) as well as Organizational Health Inventories (Hoy & Feldman, 1987), available, none of these instruments pertain to high performance school settings. The researchers obtained permission from Woolfolk Hoy to add eight questions concerning school facilities to the *School Climate Index* instrument (see appendix C). Our modified *School Climate Index* had additions to the original Tschannen-Moran and Hoy survey. These additions were used to assess the impact of the school facility on teacher attitudes. The modified survey had 28 items on a 5 point Likert scale for a total of 140 points. To alleviate confusion, the researchers re-named this instrument the *School Efficacy* survey. The *Collective Teacher Beliefs* (CTB) survey had 20 items on a 9 point Likert scale for a total of 180 points. The CTB was designed to assess teacher efficacy and has been used extensively in school settings since its inception (see appendix ***).

The *Teacher Trust Survey* (or *Faculty T-Scales*) has 26 items on a 6 point Likert scale for a total of 156 points. Four survey items were stated negatively on the *Teacher Trust Survey*. The responses for these items were recoded so that the total points would be for positive responses. The trust surveys were designed to determine a teacher's attitudes about their students, fellow teachers, principal and their overall attitude concerning the school atmosphere. The *Principal Trust Survey* (or *Principal T-Scales*) has 20 items on a 6 point Likert scale for a total of 120 points. As with the Teacher Trust Survey, the Principal Trust Survey was designed to assess the principals' attitudes about their students, teachers, the surrounding community, and their overall attitude concerning the school atmosphere. The *Collective Teacher Beliefs* survey, *Faculty T-Scales* and *Principal T-Scales* instruments were not modified and can be found in appendix B.

The *Collaborative for High Performance Schools (CHPS)* inventory was modified for use in this study. The CHPS criteria is similar to the US Green Building Council's (USGBC) LEED™ 2.0 Rating System (see appendix A for modified CHPS inventory). The CHPS examines Site, Water, Energy, Materials, Indoor Environmental Quality (IEQ), and District Resolutions. The CHPS was originally developed to evaluate California School facilities. Due to differences between the states the CHPS was modified for use in this study for the following reasons:

- 1) code compliance differences between the states;
- 2) many local authorities do not currently allow for potable water use for sewage conveyance with reclaimed water;
- 3) locating schools near public transit is not currently feasible;
- 4) water use budgets are not currently prevalent in Texas;
- 5) due to fiscal constraints, using renewable energy or distributed generation of energy is not currently feasible for Texas schools;
- 6) California recommends building 90% of their classrooms without air conditioning, which is not feasible in Texas;
- 7) California recommends a daylighting factor of 2% but due to factors relating to days of sun that can be reduced to 1% in Texas.

For a copy of the Volume III – Criteria High Performance School Best Practices Manual go to:
www.chps.net.

The Texas Education Agency (TEA), through the *Texas Assessment of Knowledge and Skills (TAKS)*, measures school achievement in mathematics. First administration of this test is in third grade. For this study, third, fourth and fifth grade math TAKS scores were combined for each study school. For a comprehensive view of the 2005 accountability ratings go to:
www.tea.state.tx.us/perfreport/aeis/2005/index.html

Data Collection Procedures

Data for collective efficacy, school climate, and principal and faculty T-scales, were collected from the principals and faculty of each study school during the 2004-2005 school year during a regularly scheduled faculty meeting. All teacher responses were anonymous and participation was voluntary (see Table 2 for results).

The CHPS scores were determined through a group process, which included both researchers and outside contractors (see appendix A for completed modified CHPS report).

Light quantity samples were obtained on 6/27/06. The rooms selected at each school were as identical as possible. They were each in the same section of each school and each test was administered on the same day between 1:19 pm and 2:35 pm. The weather on June 17th, 2006 was sunny with scattered clouds. Nine test measurements were taken in distinct areas of each of the traditional schools. Ten test measurements were taken in the high performance schools; however the nine that were taken in equivalent areas of the classroom were utilized. The tenth measurement was excluded. In each room, the shades and/or blinds were open. Two tests were administered. The first test was conducted with all of the fluorescent lights on in the classrooms. The second test was administered with all of the fluorescent lights

off in the classrooms (see appendix A for sample tests).

Energy consumption data for the 2003-2004 was obtained from Estes, McClure & Associates (see appendix A for raw data)

The third, fourth, and fifth grade TAKS math scores were obtained from the TEA website (<http://www.tea.state.tx.us/cgi/sas/broker>).

Statistical Analyses

The hypothesis was tested using independent t-tests and correlational analyses. The alpha level or level of risk was set at $p < .05$.

The first correlational analysis was conducted to determine if there was a relationship between the Teacher Trust Survey, the School Efficacy instrument, and the Collective Teacher Beliefs instrument. Using SPSS 12, the surveys were found to be correlated. The School Efficacy survey was correlated to the Collective Teacher Belief Survey ($p = .002$, $n = 228$) and the Teacher Trust Survey was correlated to the School Efficacy survey ($p = .003$, $n = 228$) and thus the reliability of the Collective Teacher Belief Survey can be applied to the *School Efficacy* survey. In all of the remaining correlational analyses, the *School Efficacy* scores were used. See Table 2 for summary of scores.

Table 2
Summary of Data collected

Group	Boundary	CHPS Score	Teacher Retention	Teacher Attendance	School Efficacy	Math TAKS
1	75069	19	82 %	92%	75%	91%
2	75069	14	80%	93%	75.7%	93%
1	75070A	19	89%	94%	87.85%	98%
2	75070A	14	77%	92%	90.7%	99%
1	75070B	20	85%	91%	89.28%	99%
2	75070B	14	82.5%	93%	85%	99%

Next, an independent T-test was used to determine if there were any statistically significant differences between the experimental schools (group 1) and the control schools (group 2). See Table 3 for test results.

Independent Samples T- test

Table 3

		Levene's Test for Equality of Variances		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
		F	Sig.					
Retention	Equal variances assumed	.269	.632	-2.272	4	.086	-5.66667%	2.49444%

Attendance	Equal variances not assumed			-2.272	3.625	.092	-5.66667%	2.49444%
	Equal variances assumed	2.571	.184	.354	4	.742	.33333%	.94281%
School Efficacy	Equal variances not assumed			.354	2.560	.751	.33333%	.94281%
	Equal variances assumed	.057	.823	-.039	4	.971	-.24333%	6.30285%
Math TAKS	Equal variances not assumed			-.039	3.994	.971	-.24333%	6.30285%
	Equal variances assumed	.364	.579	.311	4	.771	1.00000%	3.21455%
	Equal variances not assumed			.311	3.806	.772	1.00000%	3.21455%

As one can see from Table 3, although teacher retention did approximate statistical significance none of the factors were found to be statistically significant at the assigned test value ($p < .05$). What this tells us is that in reality, the similarities between the schools on the tested factors are greater than the differences between the schools. This may be due to a myriad of factors which will be discussed in the summary section of this report.

The intent of this study, however, was not to analyze the differences between the schools, but rather to determine whether there is any relationship or correlation between the factors. Since all of these schools are similar, this provides confidence for us to move forward with the correlational analysis.

Correlations

Table 4

		Group	Teacher Retention	Teacher Attendance	School Efficacy	Math TAKS	CHPS
Group Experimental (1) vs. Control (2)	Pearson Correlation	1	.185	-.174	.019	-.154	.988(**)
	Sig. (1-tailed)	.	.363	.371	.486	.386	.000
	N	6	6	6	6	6	6
Teacher Retention	Pearson Correlation	.185	1	.419	.186	.379	.139
	Sig. (1-tailed)	.363	.	.204	.362	.229	.397
	N	6	6	6	6	6	6
Teacher Attendance	Pearson Correlation	-.174	.419	1	-.128	-.027	-.196
	Sig. (1-tailed)	.371	.204	.	.404	.480	.355
	N	6	6	6	6	6	6
School Efficacy	Pearson Correlation	.019	.186	-.128	1	.949(**)	-.040
	Sig. (1-tailed)	.486	.362	.404	.	.002	.470
	N	6	6	6	6	6	6
3-5 Math TAKS	Pearson Correlation	-.154	.379	-.027	.949(**)	1	-.204

CHPS	Sig. (1-tailed)	.386	.229	.480	.002	.	.349
	N	6	6	6	6	6	6
	Pearson Correlation	.988(**)	.139	-.196	-.040	-.204	1
	Sig. (1-tailed)	.000	.397	.355	.470	.349	.
	N	6	6	6	6	6	6

** Correlation is significant at the 0.01 level (1-tailed).

As evidenced in Table 4, the test did not reveal any relationship between which school type the teachers and students were in and their retention, attendance, school efficacy, or math scores. There is a direct correlation between which group they were in and their CHPS score, as would be expected as that was one of the methods used to assign them into a group. The only other correlation uncovered is a very important one, however. There is a statistically significant correlation between School Efficacy and Math TAKS scores ($p=.002$, $n=6$). This noted correlation confirms the vast number of other studies which have looked at the relationship between teachers and student achievement. The unique aspect in this study, however, is that this was not a study of individual teacher efficacy, but instead a study of School Efficacy as a collective measure.

Other Noteworthy Findings

Two quantifiable factors concerning sustainable schools were given additional attention. These are the factors of light and energy consumption. These two factors were selected due to the fact that the CHPS report card is an overall *survey* of sustainable design and does not provide for specific measures.

First, we ran a t-test to determine if there was a statistically significant difference between the experimental schools and the control schools with all of their lights turned off. As one can see in table 5, there is a statistically significant difference ($p=.000$, $n=9$). What this tells us is that there is more light available in the experimental schools than there is in the control schools without the use of classroom lighting. This would be due to the 100% daylighting which is present in each of the experimental schools.

All Lights Off

Table 5

		Levene's Test for Equality of Variances						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
light	Equal variances assumed	4.286	.055	6.560	16	.000	68.55556	10.45109
	Equal variances not assumed			6.560	10.586	.000	68.55556	10.45109

Next, we ran a t-test to determine if there was a statistically significant difference between the six schools if all of them had their lights on. As would be expected, since all six schools have energy efficient fluorescent lighting that includes T-8 fluorescent lamps and electronic ballasts, there was not a statistically significant difference between the schools ($p=.848$, $n=9$). In other words, with all of the lights on in both experimental and control classrooms, the quantity of light available in each was not statistically different from the quantity of light available in the other.

All Lights On

Table 6

		Levene's Test for Equality of Variances		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
		F	Sig.					
light on	Equal variances assumed	2.253	.153	.195	16	.848	2.22222	11.38198
	Equal variances not assumed			.195	12.250	.848	2.22222	11.38198

Finally, we ran a t-test to determine if there was a statistically significant difference between the schools if the control schools had their lights on and the experimental schools had their lights off. As one can see in table 7, there is not a statistically significant difference between the lighting in the schools ($p=.582$, $n=9$). What this tells us is that statistically, there is not a difference in the amount of light available in the experimental schools with daylighting when they have their fluorescent lights turned off, and the traditional schools who have their lights turned on. This result has value when one considers the myriad of previous studies which have documented the benefits of daylit schools, the number of light available days in Texas, and the need for reduced energy consumption.

Control Schools lights On/Experimental Schools lights off

Table 7

		Levene's Test for Equality of Variances		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
		F	Sig.					
light	Equal variances assumed	1.535	.233	.562	16	.582	6.22222	11.07271
	Equal variances not assumed			.562	12.512	.584	6.22222	11.07271

Next we wanted to determine if there was a difference in energy usage between the sustainable schools and the traditional schools. For this analysis, we chose to exclude one experimental school and one control school. One experimental school was excluded due to the fact that it had a 10 EER split system, which was top of the line at the time it was built but is no longer considered so, while the other two sustainable schools had 13/16 SEER gas/electric units, which are much more energy efficient. One control school was excluded due to the fact that it was built in a previous era when windows were located on both sides of the classroom to provide outside ventilation. This type of design is not present in any of the other sample schools.

Energy Data

Table 8

School	Sq. Ft.	Total Hours ¹	Non-School Use Hours ²	Total Energy Cost: Non-school use Hours	Total Energy Cost: School Use Hours	ECI: School Use Hours Only
1	68,788	2016	306	\$8,599	\$48,052	\$0.67
2	67,228	1875	165	\$4,842	\$50,186	\$0.73
1	71,515	2521	811 ³	\$19,817	\$41,786	\$0.61
2	69,052	2126	416	\$12,530	\$51,506	\$0.77

¹Includes 180 school days and 10 teacher work days (7 am-4 pm) plus non-school use hours in next column. (Does not include Club 360 program, utilizing only the cafeteria, held at each school for approximately two hours on school days.)

²City partnership activities and leased church hours

³Includes summer day care program 12 hours each day for 10 weeks totaling 600 hours.

The ECI was calculated by taking the total number of hours the building was in use, subtracting the non-school use hours and dividing the total energy cost for school use hours by the square footage of each of the sample schools. (See appendix A for raw data).

School	Water Use – Irrigation (kgal)	Cost
1	1,380	\$3,461
2	1,605	\$4,730
1	1,036	\$2,706
2	3,059	\$7,544

Due to the small sample size (n=4) it would not be appropriate to use statistical analysis to compare these schools. However, mathematically the combined energy cost for the traditional schools was \$101,692 for the 2003-2004 school year while the combined energy cost for the sustainable schools was \$89,838 for that same year; constituting a difference of \$11,854 for one year. Plus, the cost for irrigation for the control schools, which did not incorporate native landscaping in the design, was \$12,274 for the year while the experimental schools, which did incorporate native landscaping, was \$6,167 for the same time period, which equates to almost 50% less water usage for irrigation for the year.

Though it is impossible to predict the energy and irrigation consumption for future years, it does appear that there is a substantial enough monetary difference to warrant further examination, especially considering the fact that the experimental schools have more square footage than the control schools. In

the first comparison group, the experimental school is more than 1,500 square feet larger than its comparable control and in the second group the experimental school is more than 2,400 square feet larger than its comparable control. Thus the experimental schools are larger, yet consume less energy and less water.

Results and Discussion

If we accept as truth the current research that demonstrates that teachers have the greatest influence on student achievement then wouldn't it behoove us to learn what has the greatest influence on teachers? It was our contention when we began this study that high performance schools would be considered "quality" facilities and as such provide a healthier (socially, psychologically, and physically) environment for teachers to work. Based on this study and the resulting statistical analysis, this hypothesis was not accepted. The results demonstrated that there was not a statistically significant correlation ($p > .05$) between the factors of Teacher Retention and Teacher Absenteeism, and the type of school the teachers were in, be that traditional or sustainable.

One logical explanation for this finding may be the fact that all of the schools in the study were either new or recently retrofitted and upgraded. All six of the schools were designed to maintain identical air ventilation, and all had similar results in CO₂ and acoustics readings (see appendix C). And as noted earlier, all of the schools are more similar than different. Much of the research in the past that has looked at correlations between facilities and academics have contrasted schools which were in dramatic disrepair or had dramatic sound or lighting issues with schools that were the newer, etc. (McGuffey, 1982). These differences cannot be found in McKinney ISD. All of the schools are well maintained, whether they are sustainably or traditionally designed.

Further, it does not appear, using the CHPS criteria to quantify "quality," that whether the school is sustainable or not has any effect on school efficacy. In retrospect, the CHPS Inventory may not have been the test with the "best fit," for this study. What may be needed is an instrument which is created specifically for Texas schools and which accounts for differences between schools rather than similarities. In the case of McKinney ISD, for instance, when a particular "sustainable practice" was found to be effective in one school (i.e. high energy HVAC; additional daylighting) it was applied to all newly built schools – whether intentionally traditionally or sustainably designed. Some traditional schools have even been retrofitted with additional daylighting added to libraries and/or hallways with access to an outer wall (Estes et al, 2006). Thus, much of what is considered "sustainable design" around the US has now become simply good building practice – at least for McKinney ISD.

Further proactive measures instituted by McKinney ISD include very efficient air-conditioning systems and energy management controls (Estes et al., 2006). This allows weekend and after hour activities to occur in conditioned spaces while the remainder of the school's air-conditioning is set back. And possibly the most noteworthy decision that McKinney ISD made was in the hiring of a professional energy manager. This individual was able to "develop and implement a comprehensive district wide energy management program that includes energy awareness, energy auditing, energy management control operations, operating guidelines, energy procurement, utility usage/billing monitoring, etc." (Estes et al., 2006). This manager oversees all of the schools within the district and has implemented programs such as "energy watchers" as well as distributing monthly energy reports to the schools and providing

energy saving tips for teachers and administrators alike; creating an atmosphere which promotes energy savings for the district. Due to the accumulation of these factors, one can see that there are minimal differences between the traditionally built schools constructed between 2000 and 2003 and the sustainable schools built in that same time frame.

Our hypothesis also posited that if teachers had a greater sense of school efficacy that this would lead to higher academic achievement of the students within the school. In this particular case and based on the resulting statistical analysis, this hypothesis was accepted. The results demonstrated that there was a statistically significant correlation ($p < .01$) between school efficacy and student achievement on TAKS mathematics. Though this result validates much of what has been reported in the past concerning the relationship between teacher efficacy and student achievement, it again does not answer the question of “what.” What effects teacher efficacy? In this particular case we did not determine that the type of buildings themselves affected school efficacy, though this could be more a factor of how similar the study schools were to each other. Also, this result should make us pause a moment and reconsider the now famous study conducted by the Hescong group (1999). In that study they found a correlation between daylighting and student achievement but they left the teacher out as an intervening factor. If that test were to be done again, using the School Efficacy instrument to determine the “teacher effect” might the results show us that the teachers are the connection between the “daylighting” and student achievement?

Recommendations

The researchers were unable to obtain a cost breakdown of construction prices for each of the schools but overall McKinney ISD estimates that they spend more money in the construction of a sustainable school versus the traditional school design. Much of this “extra” cost is thought to be attributable to the 100% daylighting in the sustainable schools (Estes et al., 2006).

One recommendation might be to consider reducing the amount of available daylighting. With the fluorescent lights off and thus daylighting only at the experimental schools, all areas of the classroom maintained more than the 50-60 fc recommended by the State Energy Conservation Office (Estes et. al, 2006). Implementing an 80% or 90% daylighting system may well provide for the recommended 50-60 fc and simultaneously provide a construction cost savings to the district. Other costs attributable to the construction of the sustainable schools are items such as Rain Water Collection Systems, and Windmills. In the original design, the rainwater was to be collected, stored and used to help irrigate the school’s lawns and flush toilets and urinals.

Due to local authority restrictions, the rainwater has only been used for irrigation purposes (Estes et. al., 2006). And even for irrigation purposes, the rainwater does not appear to reduce the overall consumption and cost of irrigation for the sustainable schools compared to the traditional schools (see appendix A). Also, originally, a windmill was intended to be used to replenish the water in the cisterns from a well to be drilled. After a test well was drilled, the water table was found to be deeper than had been expected. Therefore, the windmill only serves to circulate water within the system (Estes, et. al., 2006). Since the systems are not able to be fully utilized at this time, removing the Rain Water Collection Systems and Windmills from future sustainable designs could provide considerable construction cost savings. Finally, a greenhouse was provided at each of the sustainable schools for the teacher’s use to

supplement intended eco-education (Estes et. al, 2006).

During the time this study was being conducted, none of the schools were utilizing the greenhouses and/or provided eco-education, which included such things as a sun dial, a visible rainwater collection system, active solar energy collectors, air conditioning unit cut-aways, interactive computer modules, campus weather stations, and eco-ponds. As with any other item purchased by a school district, the costs associated with each of these design elements are only worth bearing if they are going to be fully utilized. And if they are not utilized may these costs may add to the “extravagant” label often placed on the sustainably designed schools and ultimately prohibit their design as an option in other districts.

Future Research

As with most research studies, this one has validated much of what we know to be true, allowed us to look at what we thought might be possible, and opened the door to a myriad of new questions along the way. For instance, it became apparent, during the course of this study, that intentionally designed as such or not, the six schools under investigation had more in common than not. What may be of interest and provide greater insight would be to compare these same McKinney ISD schools, which all have some elements of sustainable design, with another school district which has not incorporated sustainable design elements in their schools.

APPENDIX A
HIGH PERFORMANCE CLASSIFICATION

Energy Data

Group 1 – Experimental Schools

Floor Area: 68,788 square feet

Month	Year	Electricity			Natural Gas		Water (2 meters)		Irrigation	
		Demand (kw)	Consumption (KWH)	Cost	Consumption (MCF)	Cost	Consumption (kgal)	Cost	Consumption (kgal)	Cost
Jul	2003	157	42,090	\$3,206	2	\$32	2	\$80	269	\$616
Aug	2003	337	58,050	\$4,246	0	\$15	7	\$90	705	\$1,553
Sep	2003	359	88,830	\$5,872	11	\$102	63	\$210	343	\$775
Oct	2003	260	71,460	\$4,791	15	\$156	71	\$230	0	\$40
Nov	2003	267	69,540	\$4,709	16	\$169	67	\$226	60	\$197
Dec	2003	382	65,100	\$4,854	42	\$423	48	\$184	0	\$40
Jan	2004	415	60,990	\$5,069	102	\$753	35	\$154	0	\$40
Feb	2004	362	74,610	\$5,450	154	\$1,132	60	\$210	1	\$40
Mar	2004	330	56,580	\$4,446	138	\$748	48	\$184	0	\$40
Apr	2004	231	66,810	\$4,796	41	\$277	59	\$208	0	\$40
May	2004	265	77,010	\$5,323	0	\$0	62	\$214	1	\$40
Jun	2004	291	67,590	\$4,913	14	\$121	60	\$210	1	\$40
Total			798,660	\$57,675	535	\$3,928	582	\$2,200	1,380	\$3,461

Floor Area: 71,515 square feet

Month	Year	Electricity			Natural Gas		Water (2 meters)		Irrigation	
		Demand (kw)	Consumption (KWH)	Cost	Consumption (MCF)	Cost	Consumption (kgal)	Cost	Consumption (kgal)	Cost
Jul	2003	203	49,500	\$3,539	3	\$38	4	\$124	175	\$414
Aug	2003	368	70,590	\$4,973	0	\$17	5	\$126	761	\$1,674
Sep	2003	354	82,530	\$5,552	13	\$119	0	\$0	*	*
Oct	2003	253	68,580	\$4,565	16	\$170	50	\$223	0	\$40
Nov	2003	258	64,320	\$4,370	20	\$209	50	\$228	0	\$40
Dec	2003	293	56,940	\$4,066	47	\$465	32	\$187	0	\$40
Jan	2004	306	58,920	\$4,408	92	\$610	25	\$172	0	\$40
Feb	2004	342	64,410	\$4,864	106	\$783	33	\$189	1	\$40
Mar	2004	256	56,010	\$4,172	89	\$490	36	\$197	0	\$40
Apr	2004	215	60,090	\$4,309	24	\$171	33	\$189	0	\$40
May	2004	270	71,520	\$4,924	0	\$0	45	\$217	11	\$62
Jun	2004	262	46,290	\$3,719	13	\$118	35	\$194	88	\$276
Total			749,700	\$53,461	423	\$3,190	318	\$2,046	1,036	\$2,706

* denotes data not available

Group 2 – Control Schools

Floor Area: 67,228 square feet

Month	Year	Electricity			Natural Gas		Water (2 meters)		Irrigation	
		Demand (kw)	Consumption (KWH)	Cost	Consumption (MCF)	Cost	Consumption (kgal)	Cost	Consumption (kgal)	Cost
Jul	2003	189	48,128	\$3,755	6	\$62	39	\$167	305	\$733
Aug	2003	298	72,290	\$5,038	5	\$51	14	\$87	405	\$948
Sep	2003	383	103,682	\$5,156	0	\$0	180	\$469	289	\$699
Oct	2003	335	83,982	\$5,715	26	\$265	104	\$310	20	\$122
Nov	2003	367	75,574	\$5,442	29	\$293	164	\$452	161	\$520
Dec	2003	400	70,403	\$5,250	27	\$279	151	\$424	0	\$80
Jan	2004	443	68,420	\$5,607	22	\$174	176	\$480	0	\$80
Feb	2004	453	83,536	\$6,386	24	\$194	80	\$263	3	\$84
Mar	2004	398	50,909	\$4,047	28	\$164	70	\$240	9	\$98
Apr	2004	334	71,828	\$5,373	27	\$186	82	\$267	164	\$529
May	2004	321	79,696	\$5,684	0	\$0	85	\$274	67	\$258
Jun	2004	326	59,614	\$4,741	21	\$174	53	\$204	182	\$579
Total			868,062	\$62,194	215	\$1,842	1,198	\$3,637	1,605	\$4,730

Floor Area: 69,052 square feet

Month	Year	Electricity			Natural Gas		Water (2 meters)		Irrigation	
		Demand (kw)	Consumption (KWH)	Cost	Consumption (MCF)	Cost	Consumption (kgal)	Cost	Consumption (kgal)	Cost
Jul	2003	115	33,640	\$2,786	3	\$37	2	\$82	677	\$1,493
Aug	2003	276	56,529	\$3,869	2	\$29	25	\$129	940	\$2,059
Sep	2003	349	89,118	\$5,627	12	\$111	92	\$273	494	\$1,100
Oct	2003	105	75,648	\$4,831	18	\$185	73	\$238	445	\$1,225
Nov	2003	101	75,418	\$4,820	17	\$177	61	\$213	164	\$489
Dec	2003	76	52,903	\$3,813	15	\$158	56	\$202	1	\$40
Jan	2004	75	59,620	\$4,214	11	\$95	45	\$176	0	\$40
Feb	2004	97	69,852	\$4,976	18	\$147	61	\$213	7	\$53
Mar	2004	83	57,547	\$4,351	19	\$120	61	\$213	22	\$91
Apr	2004	279	75,846	\$5,414	18	\$134	77	\$249	108	\$332
May	2004	281	74,809	\$4,969	0	\$0	83	\$262	67	\$217
Jun	2004	295	55,200	\$4,042	14	\$123	20	\$121	134	\$405
Total			776,130	\$53,712	147	\$1,316	656	\$2,371	3,059	\$7,544

Modified CHPS

The Collaborative for High Performance Schools Score, Modified for Texas and Applied to Schools Studied

CHPS SECTION	CREDIT NUMBER ¹	TITLE	California POSSIBLE POINTS	Texas POSSIBLE POINTS	SUMMARY ²	Group 2	Group 2	Group 1	Group 1	Group 1	Group 2
SITE (1 prerequisite; 1 possible points)											
Site Selection	P 1	Code Compliance	Req	*	P1.1. Comply with all requirements of Title 5	*	*	*	*	*	*
	C 1	Sustainable Site Selection	1	1	1.1. No development on sites that are: prime agricultural land, in flood zone, habitat for endangered species, parkland	1	1	1	1	1	1
			1	1	1.2. Do not develop on greenfields	0	0	0	0	0	0
			1	1	1.3. Create centrally located sites within which 50% of students are located within minimum distances of the school	1	1	1	1	1	1
			1	1	1.4. Joint use of facilities	1	1	1	1	1	1
			1	1	1.5. Joint use of parks	0	0	0	0	0	0
			1	1	1.6. Reduced building footprint	0	0	0	0	0	0
Transportation	C 2	Transportation	1	*	2.1. Near public transit	*	*	*	*	*	*
			1	1 (for 5%)	2.2. Provide bike racks & bike lanes for 15% of school population	1	1	1	1	1	1
			1	1	2.3. Minimize parking lot & create preferred parking for carpools	0	0	0	0	0	0
Stormwater Management	P 2	Construction Erosion	Req	Req	P2.1. Control erosion & sedimentation to reduce negative impacts on water & air quality	X	X	X	X	X	X
	C 3	Post-construction Management	1	1	3.1. Minimize runoff	1	1	1	1	1	1
			1	1	3.2. Treat runoff	0	0	0	0	0	0
Outdoor Surfaces	C 4	Design to Reduce Heat Islands	1	1	4.1. Shade or lighten impervious areas, OR reduce impervious parking	0	0	0	0	0	0
			1	1	4.2. Install cool roof	1	0	1	1	1	0
Outdoor Lighting	C 5	Light Pollution Reduction	1	1	5.1. Minimize outdoor illumination with no direct beam leaving site	1	1	1	1	1	1
WATER (4 possible points)											
Outdoor Systems	P 1	Create Water Use Budget	Req	*	P1.1. Establish & comply with water use budget	*	*	*	*	*	*
	C 1	Reduce Potable Water for Landscaping	1-2	1-2	1.1. Use high efficiency irrigation technology, OR reduce potable water consumption for irrigation by 50 or 100%	0	0	1	1	1	0
Indoor Systems	C 2	Water Use Reduction	1	*	2.1. 50% reduction in potable water use for sewage conveyance with reclaimed water	*	*	*	*	*	*

1-2	1-2	2.2. Decrease water use by 20 or 30% after meeting Energy Policy Act	0	0	0	0	0	0	0
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ENERGY (2 prerequisites; 15 possible points; minimum 2 points required)

Energy Efficiency	P 1	Minimum Energy Performance	Req	Req	P1.1. Design building to exceed Title 24-2001 by 10%, OR include prescriptive package of measures	X	X	X	X	X	X
	C 1	Superior Energy Performance	2-10	2-10	1.1. 15% to 35% reduction in total net energy use from Title 24-2001 baseline, or include prescriptive package of measures.	0	0	0	0	0	0
	C 2	Natural Ventilation	1	1	2.1. HVAC interconnect controls with operable windows & doors	0	0	0	0	0	0
			3	*	2.2. Design 90% of classrooms without air conditioning	*	*	*	*	*	*
Alternate Energy Sources	C 3	Renewable Energy	1-6	*	3.1. 5 to 50% of net energy use supplied by renewable energy or distributed generation	*	*	*	*	*	*
Commissioning & Verification	P 2	System Testing & Training	Req	Req	P2.1. Third party or district verification of building systems & training	X	X	X	X	X	X
	C 4	Commissioning	2-3	2-3	4.1. Basic commissioning tasks	0	0	0	0	0	0
	C 5	Energy Management Systems	1	1	5.1. Install an Energy Management System to measure & control loads	0	0	0	0	0	0

MATERIALS (1 prerequisite; 11 possible points)

Waste Reduction & Efficient Material Use	P 1	Storage and Collection of Recyclables	Req	Req	P1.1. Meet local standards for recycling space & have spaces dedicated to recycling	0	0	0	0	0	0
	C 1	Site Waste Management	1-2	1-2	1.1. Meet local ordinances, develop waste management plan, & recycle 50 or 75% of construction waste	0	0	0	0	1	0
	C 2	Building Reuse	1-3	1-3	2.1. Reuse 75% or 100% of previous structure (+ 50% of non-shell systems for 3 points)	0	0	0	0	0	0
	C 3	Resource Reuse	1-2	1-2	3.1. Specify salvaged or refurbished materials for 5 or 10% of building	0	0	0	0	0	0
Sustainable Materials	C 4	Recycled Content	1-2	1-2	4.1. 25 or 50% of building materials meet requirements	0	0	0	0	0	0
	C 5	Rapidly Renewable Materials	1	1	5.1. 5% of materials are rapidly renewable	0	0	0	0	0	0
	C 6	Certified Wood	1	1	6.1. 50% of wood must be certified	0	0	0	0	0	0

INDOOR ENVIRONMENTAL QUALITY (3 prerequisites; 17 possible points)

Daylighting	C 1	Daylighting in Classrooms	3	3 (for 1%)	1.1. Minimum 2% daylight factor in 75% of classrooms	0	0	3	3	3	0
			1	1	1.2. Direct line of site glazing for 90% of classrooms	1	1	1	1	1	1
Indoor Air Quality	P 1	Minimum Requirements	Req	Req	P1.1. HVAC must meet Title 24 ventilation requirements, Cal/OSHA performance requirements, & satisfy ASHRAE 62 requirements for outdoor air supply	X	X	X	X	X	X
	C 2	Low-Emitting Materials	1-4	1-4	2.1. Building materials (paints, ceiling tiles, carpet, adhesives, etc.) meet chemical emission rates detailed in CHPS material specifications	0	0	1	1	1	0

	C 3	Pollutant Source Control	1	1	3.1. Control dust, segregate pollutant sources, local exhaust in kitchens, appropriately plumbed drains in chemical storage areas	1	1	1	1	1	1
			1	1	3.2. Install ducted HVAC returns	1	1	1	1	1	1
			1	1	3.3. Use high efficiency filters	0	0	0	0	0	0
	C 4	Construction IAQ Management Plan	1	1	4.1. Create & implement specified construction IAQ plan	0	0	0	0	0	0
			1	1	4.2. Flush out building or conduct IAQ testing	1	1	1	1	1	1
Acoustics	P 2	Minimum Acoustical Performance	Req	Req	P2.1. Classrooms must have a maximum (unoccupied) noise level of 45dba, with maximum (unoccupied) reverberation times of 0.6 sec.						
	C 5	Improved Acoustical Performance	1-2	1-2	5.1. Classrooms must have a maximum (unoccupied) noise level of 40dba or 35 dbA, with maximum (unoccupied) reverberation times of 0.6 sec.	*	1	*	0	0	1
Thermal Comfort	P 3	ASHRAE 55 Code Compliance	Req	Req	P3.1. Comply with Title 24 required ASHRAE 55-1992 thermal comfort standard	X	X	X	X	X	X
	C 6	Controllability of Systems	1	1	6.1. Operable windows in classrooms	0	0	0	0	0	0
			1	1	6.2. Temperature & lighting controls in all classrooms	1	1	1	1	1	1

DISTRICT RESOLUTIONS (10 possible points)

Institutionalize High Performance	C 1	District Resolutions	1	1	1.1. Institutionalize High Performance Goals on a district level	0	0	0	0	0	0
Indoor Air Quality	C 2	IAQ Management Plan	1	1	2.1. Create IAQ Management Plan and include in Facility Maintenance & Commissioning Plans. Designate a trained staff person with clear responsibility to implement & update the plan	0	0	0	0	0	0
Maintenance	C 3	Maintenance Plan	1	1	3.1. Create a maintenance plan that includes an inventory of all equipment in the school & their preventative maintenance needs	1	1	1	1	1	1
			1	1	3.2. District allocates budget to fund plan at 100%	0	0	0	0	0	0
Energy	C 4	Equipment Performance	1-2	1-2	4.1. Require Energy Star equipment & prohibit wasteful technologies or new equipment to be within 20% of EPA Energy Star "best available" for the category	0	0	0	0	0	0
	C 5	Green Power	2	2	5.1. Engage in a two-year power contract to purchase power generated from renewable sources approved by CEC	0	0	0	0	0	0
Transportation	C 6	Buses & Alternate Fuels	1	1	6.1. Provide busing service	1	1	1	1	1	1
			1	1	6.2. 20% of bus & maintenance vehicle fleet serving the school must use alternative fuels	0	0	0	0	0	0

TOTAL (Minimum points required for CHPS school is 28 of possible 81 in California. Texas modification allows for 19 points out of 59 as the minimum.)

1. P = Prerequisite; C = Credit

2. For specific requirements for each credit, see CHPS Best Practices Manual, Volume III, Criteria, available at www.CHPS.net

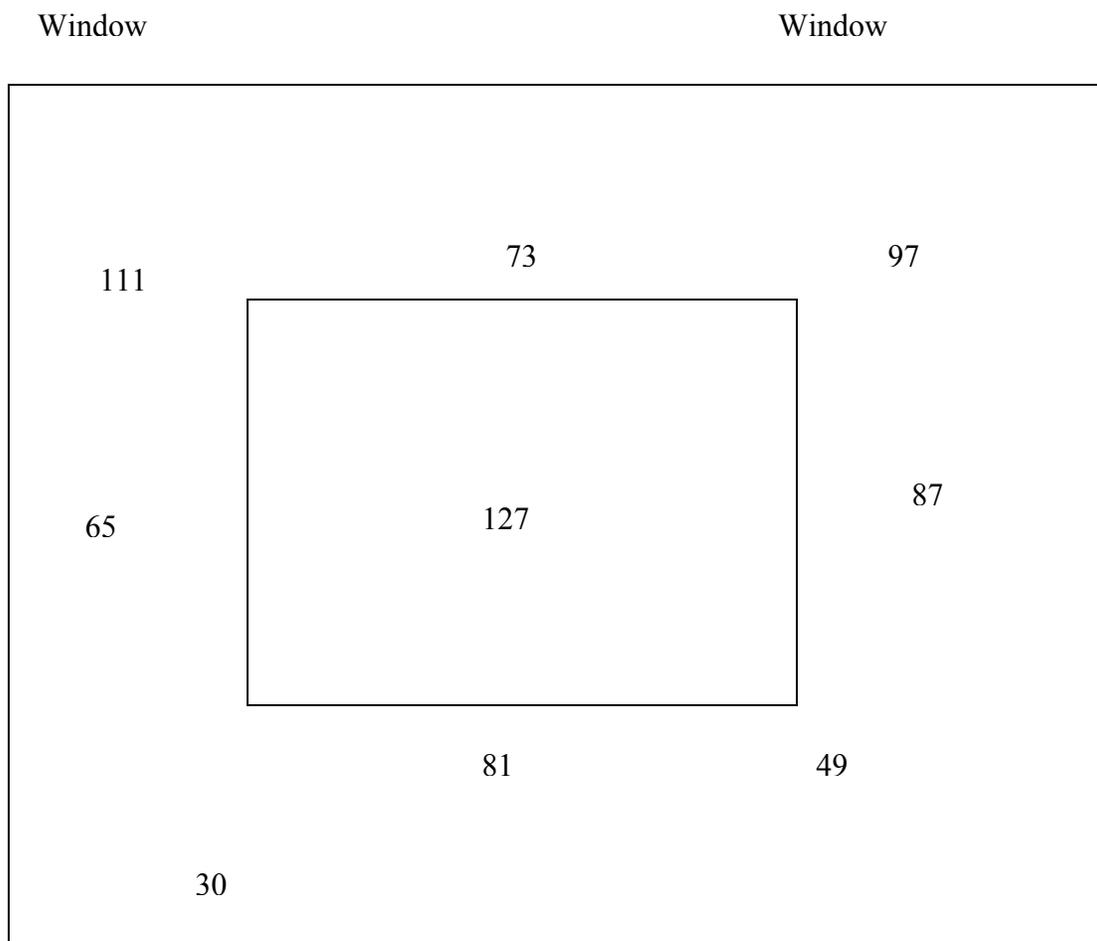
14 14 19 19 20 14

Light Reading Samples

Group 1 School
Room D105

Date 6/27/06
Time 1:58

Notes: Lights in light well did not come on. Other ceiling lights in room were on minimum brightness. This was due to proper operation of controls because of available sunlight.



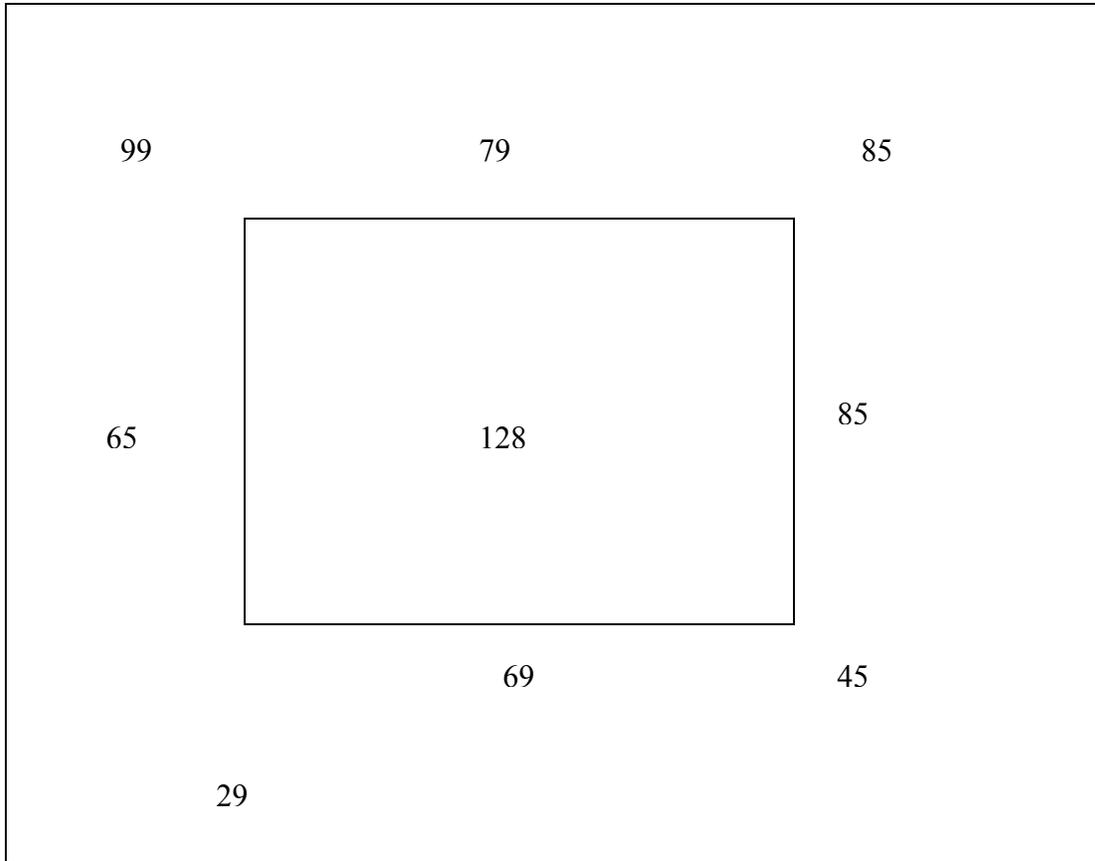
All Fluorescent lights ON, including undercounter and lightwell
Shade for daylighting RETRACTED
Window blinds OPEN

Group 1 School
Room D105

Date 6/27/06
Time 2:08

Window

Window



Door

All Fluorescent lights OFF
Shade for daylighting RETRACTED
Window blinds OPEN

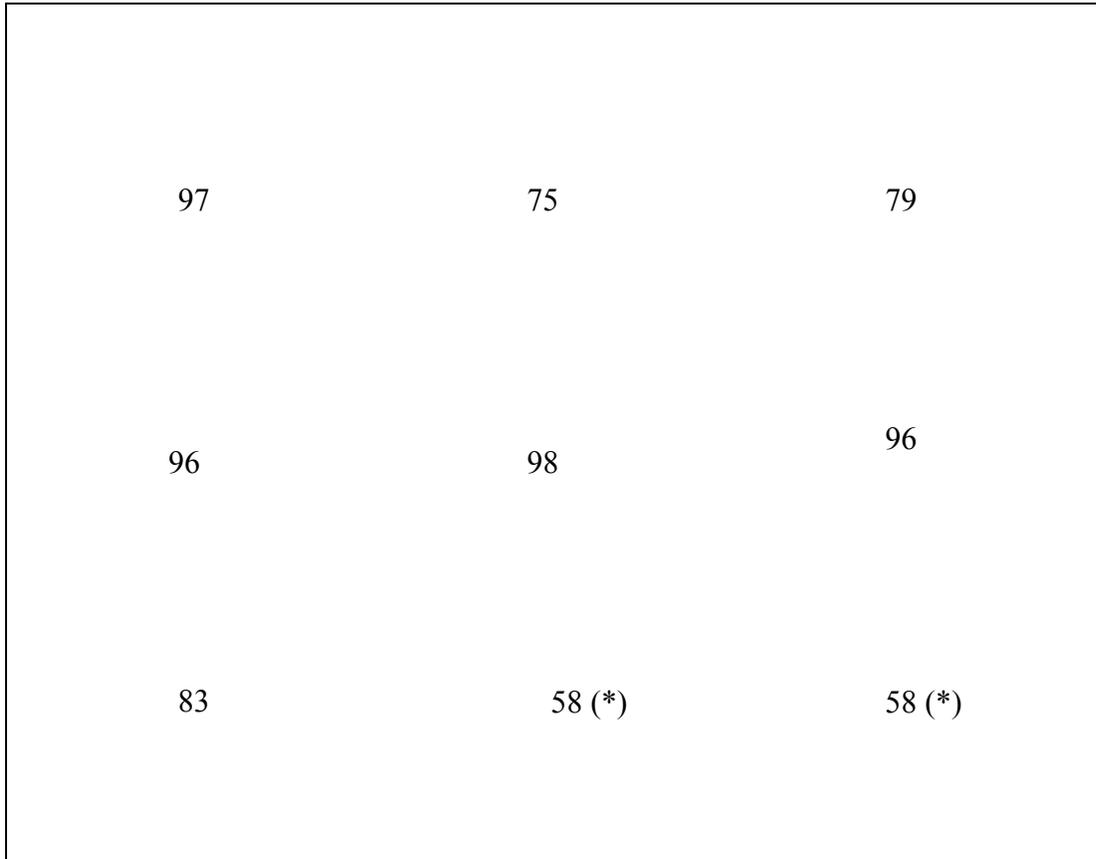
Group 2 School
Room 210

Date 6/27/06
Time 2:35

Notes: (*) 2 lamps burned out in fixture

Window

Window



Door

Fluorescent lights ON
Shades OPEN

Group 2 School
Room 210

Date 6/27/06
Time 2:31

Window

Window

38	6	10
5	2	2
2	1	1

Fluorescent lights OFF
Shades OPEN

APPENDIX B
SURVEYS

School Efficacy

Directions: Please indicate your opinion about each of the questions below by marking one of the nine responses in the columns on the right. The scale of responses ranges from “None at all” (1) to “A Great Deal” (9), with “Some Degree” (5) representing the mid-point between these low and high extremes. You may choose any of the nine possible responses, since each represents a degree on the continuum. Your answers are confidential.

Please respond to each of the questions by considering the current ability, resources, and opportunity of the teaching faculty at your school for each of the following.

	Nothing	Very Little	Some Degree	Quite A Bit	A Great Deal				
1. How much can teachers in your school do to produce meaningful student learning	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2. How much can teachers in your school do to help students master complex content?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
3. To what extent can school personnel in your school establish rules and procedures that facilitate learning?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
4. How well can adults in your school get students to follow school rules?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
5. How much can teachers in your school do to help students think critically?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6. How much can teachers in your school do to promote deep understanding of academic concepts?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
7. How much can school personnel in your school do to control disruptive behavior?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
8. To what extent can teachers in your school make expectations clear about appropriate student behavior?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
9. How much can your school do to foster student creativity?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
10. How much can your school do to get students to believe they can do well in schoolwork?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
11. How well can teachers in your school respond to defiant students?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
12. How much can your school do to help students feel safe while they are at school?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
13. To what extent can teachers in your school use features of the school building and campus site to provide meaningful student learning?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
14. To what extent can your campus site, building, and building systems provide useful teaching examples?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

15. To what extent do the rooms in your school building provide adequate levels of lighting?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
16. To what extent is the temperature of your classroom adequately (neither too hot nor too cold) maintained in your school building?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
17. To what extent do background noises such as equipment, adjacent classes, and outside noises, interfere with hearing and/or being heard in your classroom?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
18. To what extent do your campus site, buildings, and building systems contribute to good student behavior?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
19. To what extent is the technology provided in your school building adequate for teaching?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
20. To what extent does your school building and campus provide a healthy work environment for teachers?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

Principal T-Scales

Directions: The following are statements about your school. Please indicate the extent to which you agree with each statement along a scale from strongly disagree (1) to strongly agree (6).

	Strongly Disagree			Strongly Agree		
1. Teachers in this school are candid with me.	(1)	(2)	(3)	(4)	(5)	(6)
2. I can count on parents to support the school.	(1)	(2)	(3)	(4)	(5)	(6)
3. Students here really care about the school.	(1)	(2)	(3)	(4)	(5)	(6)
4. I have faith in the integrity of my teachers.	(1)	(2)	(3)	(4)	(5)	(6)
5. Students in this school can be counted on to do their work.	(1)	(2)	(3)	(4)	(5)	(6)
6. My teachers typically look out for me.	(1)	(2)	(3)	(4)	(5)	(6)
7. Most students in this school are honest.	(1)	(2)	(3)	(4)	(5)	(6)
8. I question the competence of some of my teachers.	(1)	(2)	(3)	(4)	(5)	(6)
9. I am often suspicious of teachers' motives in this school.	(1)	(2)	(3)	(4)	(5)	(6)
10. Most students are able to do the required work.	(1)	(2)	(3)	(4)	(5)	(6)
11. I trust the students in this school.	(1)	(2)	(3)	(4)	(5)	(6)
12. When teachers in this school tell you something you can believe it.	(1)	(2)	(3)	(4)	(5)	(6)
13. Even in difficult situations, I can depend on my teachers.	(1)	(2)	(3)	(4)	(5)	(6)
14. Parents in this school have integrity.	(1)	(2)	(3)	(4)	(5)	(6)
15. Parents in this school are reliable in their commitments.	(1)	(2)	(3)	(4)	(5)	(6)
16. Most parents openly share information with the school.	(1)	(2)	(3)	(4)	(5)	(6)
17. I believe in my teachers.	(1)	(2)	(3)	(4)	(5)	(6)
18. I trust the teachers in this school.	(1)	(2)	(3)	(4)	(5)	(6)
19. Students in this school are reliable.	(1)	(2)	(3)	(4)	(5)	(6)
20. Most parents here have good parenting skills.	(1)	(2)	(3)	(4)	(5)	(6)

Faculty T-Scales

Directions: The following are statements about your school. Please indicate the extent to which you agree with each statement along a scale from strongly disagree (1) to strongly agree (6).

	Strongly Disagree			Strongly Agree		
1. Teachers in this typically look out for each other.	(1)	(2)	(3)	(4)	(5)	(6)
2. Teachers think most of the parents do a good job.	(1)	(2)	(3)	(4)	(5)	(6)
3. Students in this school care about each other.	(1)	(2)	(3)	(4)	(5)	(6)
4. Even in difficult situations teachers in this school can depend on each other.	(1)	(2)	(3)	(4)	(5)	(6)
5. The principal in this school typically acts with the best interest of the teachers in mind..	(1)	(2)	(3)	(4)	(5)	(6)
6. Teachers in this school can count on parental support.	(1)	(2)	(3)	(4)	(5)	(6)
7. Teachers in this school trust each other.	(1)	(2)	(3)	(4)	(5)	(6)
8. Teachers in this school have faith in the integrity of the principal.	(1)	(2)	(3)	(4)	(5)	(6)
9. Parents in this school are reliable in their commitments	(1)	(2)	(3)	(4)	(5)	(6)
10. Teachers in this school trust their students.	(1)	(2)	(3)	(4)	(5)	(6)
11. Teachers in this school can rely on the principal.	(1)	(2)	(3)	(4)	(5)	(6)
12. Teachers in this school are suspicious of each other.	(1)	(2)	(3)	(4)	(5)	(6)
13. Students here are secretive.	(1)	(2)	(3)	(4)	(5)	(6)
14. Teachers in this school have faith in the integrity of their colleagues.	(1)	(2)	(3)	(4)	(5)	(6)
15. Students in this school can be counted on to do their work.	(1)	(2)	(3)	(4)	(5)	(6)
16. Teachers in this school are suspicious of most of the principal's actions.	(1)	(2)	(3)	(4)	(5)	(6)
17. The principal doesn't tell teachers what is going on.	(1)	(2)	(3)	(4)	(5)	(6)
18. Teachers in this school do their jobs well.	(1)	(2)	(3)	(4)	(5)	(6)
19. Teachers in this school are open with each other.	(1)	(2)	(3)	(4)	(5)	(6)
20. When teachers in this school tell you something you can believe it.	(1)	(2)	(3)	(4)	(5)	(6)
21. Teachers here believe that students are competent learners	(1)	(2)	(3)	(4)	(5)	(6)

22. The principal of this school does not show concern for teachers.	(1)	(2)	(3)	(4)	(5)	(6)
23. Teachers in this school trust the parents.	(1)	(2)	(3)	(4)	(5)	(6)
24. Teachers in this school can believe what parents tell them.	(1)	(2)	(3)	(4)	(5)	(6)
25. The principal in this school is competent in doing his or her job.	(1)	(2)	(3)	(4)	(5)	(6)
26. Teachers in this school trust the principal.	(1)	(2)	(3)	(4)	(5)	(6)

School Climate Index

Directions: The following are statements about your school. Please indicate the extent to which each occurs, from Never (1) to Very Frequently (5).

	Never	Rarely	Sometimes	Often	Very Frequently
1. Our school makes an effort to inform the community about our goals and achievements.	(1)	(2)	(3)	(4)	(5)
2. Our school is able to marshal community support when needed.	(1)	(2)	(3)	(4)	(5)
3. The interactions between faculty members are cooperative.	(1)	(2)	(3)	(4)	(5)
4. Teachers respect the professional competence of their colleagues.	(1)	(2)	(3)	(4)	(5)
5. The school sets high standards for academic performance.	(1)	(2)	(3)	(4)	(5)
6. Students respect others who get good grades.	(1)	(2)	(3)	(4)	(5)
7. The principal is friendly and approachable.	(1)	(2)	(3)	(4)	(5)
8. The principal puts suggestions made by faculty into operation.	(1)	(2)	(3)	(4)	(5)
9. Parents and other community members are included on planning committees.	(1)	(2)	(3)	(4)	(5)
10. Community members are responsive to requests for participation.	(1)	(2)	(3)	(4)	(5)
11. Teachers help and support each other.	(1)	(2)	(3)	(4)	(5)
12. Teachers in this school exercise professional judgment.	(1)	(2)	(3)	(4)	(5)
13. Teachers are committed to helping students.	(1)	(2)	(3)	(4)	(5)
14. Academic achievement is recognized and acknowledged by the school.	(1)	(2)	(3)	(4)	(5)
15. Students try hard to improve previous work.	(1)	(2)	(3)	(4)	(5)
16. The principal explores all sides of topics and admits that other opinions exist.	(1)	(2)	(3)	(4)	(5)
17. The principal treats all faculty members as his or her equal.	(1)	(2)	(3)	(4)	(5)
18. Teachers accomplish their jobs with enthusiasm.	(1)	(2)	(3)	(4)	(5)
19. Teachers “go the extra mile” with their students.	(1)	(2)	(3)	(4)	(5)
20. Teachers provide strong social support for colleagues.	(1)	(2)	(3)	(4)	(5)
21. The learning environment is orderly and serious.	(1)	(2)	(3)	(4)	(5)

22. Students seek extra work so they can get good grades.	(1)	(2)	(3)	(4)	(5)
23. The principal is willing to make changes.	(1)	(2)	(3)	(4)	(5)
24. The principal lets faculty know what is expected of them.	(1)	(2)	(3)	(4)	(5)
25. The principal maintains definite standards of performance.	(1)	(2)	(3)	(4)	(5)
26. Community members attend meetings to stay informed about our school.	(1)	(2)	(3)	(4)	(5)
27. Organized community groups (e.g., PTA, PTO) meet regularly to discuss School issues.	(1)	(2)	(3)	(4)	(5)
28. School people are responsive to the needs and concerns expressed by Community members.	(1)	(2)	(3)	(4)	(5)

APPENDIX C

SCHOOL “HEALTH” DATA

IAQ, Temperature & Acoustics

Group 1 – Experimental Schools

School	Space/ Room	Acoustics (dBA)			IAQ			Comments
		dBA	CR Max.	Condition	CO ₂ (ppm)	RH (%)	Temp (°F)	
1	Hall	48-65		Occupied	688			Two teachers nearby talking; child crying
	E108	58-65		Occupied	1013			Hall occupied; computers on; TV on
	E111	45-58	45		1004		75	45dBA unoccupied; 58 dBA occupied
	E112			Unoccupied	978		74.1	
	Hall	48-65		Occupied	688			Two teachers nearby talking; child crying
2	Hall	48-60		Occupied				Hall between gym & office; office door open; gym occupied
	Hall	48-67		Occupied	968			Outside E107; classrooms & hall occupied
	E110			Occupied	941			
	E113	41-53	53	Unoccupied	887			Sound from classroom across hall; HVAC on
	D110	39-45		Unoccupied	880		75.6	One vocal child in hall; children outdoors
3	Hall	48-65		Occupied	684			Outside CR 108E: Hall occupied 17 students, 4 teachers
	E109	44-57		Occupied	829		73	Most noise from one student across the hall
	D106	39-48	48	Unoccupied	1091		74	Students in hall, adjacent rooms occupied
	Hall	47-68		Occupied	636			Busy hall; students passing single file
	D105					27.5	73.1	April 26, 2005

Group 2 – Control Schools

School	Space/ Room	Acoustics (dBA)			IAQ			Comments
		dBA	CR Max.	Condition	CO ₂ (ppm)	RH (%)	Temp (°F)	
1	Hall	47-66		Occupied				North hall; door slammed shut, very loud talking
	D112	58-69		Occupied	1436		73.4	All students talking; HVAC off being repaired
	F108	48-65		Occupied	1147		72	
	Hall				580			
	A115	45-48		Occupied	639		74	Computers on, TV on, HVAC on
	C101	49-62	*	Occupied	1324			TV on, HVAC off, CO ₂ varied 1304-1396
2	Hall	52-65		Occupied	829			Main entry hall; can hear students going to cafeteria
	G100	48-68		Occupied	1303			Teacher talking; students talking on and off
	Hall	39-45			953			
	G104	35-38	38	Unoccupied	1082			Adjacent classroom occupied; teacher in G103 talking, HVAC came on; computers on
3	218	36-40	40	Unoccupied	884			AC off; Computers on
	Hall	45-65		Occupied	1011			Students & teachers in hall
	205	57-73		Occupied	1320			HVAC off
	210					36	73.5	April 19, 2005

*measurement not obtained

APPENDIX D

SCHOOL PROFILES

Group 1 – Experimental Schools

T E X A S E D U C A T I O N A G E N C Y

Section II

District Name: MCKINNEY ISD
 Total Enrollment: 445
 Campus Name:
 Grade Span: KG - 05
 Campus #: 043907118
 School Type: Elementary

Academic Excellence Indicator System

2004-05 Campus Profile

STUDENT INFORMATION

District	State	-----Campus-----		Campus Group	
		Count	Percent		
Total Students:		445	100.0%	21,166	17,857
4,383,871					
Students By Grade: Early Childhood Education		0	0.0%	0.5%	0.4%
0.3%	Pre-Kindergarten	0	0.0%	5.0%	1.7%
4.0%	Kindergarten	74	16.6%	11.8%	9.0%
7.6%	Grade 1	96	21.6%	13.2%	9.1%
7.9%	Grade 2	80	18.0%	13.2%	9.1%
7.6%	Grade 3	67	15.1%	16.1%	8.5%
7.5%	Grade 4	74	16.6%	19.0%	8.4%
7.4%	Grade 5	54	12.1%	14.2%	7.8%
7.4%	Grade 6	0	0.0%	6.7%	7.7%
7.5%					

7.6%	Grade 7	0	0.0%	0.1%	7.2%
7.5%	Grade 8	0	0.0%	0.1%	7.2%
8.7%	Grade 9	0	0.0%	0.0%	7.5%
7.1%	Grade 10	0	0.0%	0.0%	6.1%
6.3%	Grade 11	0	0.0%	0.0%	5.7%
5.6%	Grade 12	0	0.0%	0.0%	4.6%
Ethnic Distribution:					
14.2%	African American	126	28.3%	19.0%	9.6%
44.7%	Hispanic	138	31.0%	32.4%	21.3%
37.7%	White	172	38.7%	45.0%	66.3%
0.3%	Native American	1	0.2%	0.6%	0.5%
3.0%	Asian/Pac. Islander	8	1.8%	3.0%	2.3%
Economically Disadvantaged					
54.6%		244	54.8%	54.8%	21.8%
Limited English Proficient (LEP)					
15.6%		29	6.5%	9.3%	8.9%
Students w/Disciplinary Placements (2003-04)					
2.4%		2	0.3%	0.5%	1.0%
At-Risk					
45.8%		139	31.2%	34.9%	22.9%
Mobility (2003-04)					
21.1%		138	31.6%	21.0%	16.3%
Number of Students per Teacher					
14.9		10.9	n/a	14.5	15.0

|-----Non-Special Education Rates-----| |-----

Special Education Rates-----|
Retention Rates by Grade:
Campus

Campus

Group	District	State	Campus	Group	District	State	Campus
10.6%	Kindergarten 6.3%	11.3%	0.0%	3.6%	2.5%	2.9%	9.1%
10.5%	Grade 1 5.8%	9.7%	2.6%	5.6%	1.7%	6.0%	0.0%
4.4%	Grade 2 2.2%	4.0%	0.0%	3.2%	0.9%	3.6%	0.0%
2.0%	Grade 3 1.0%	2.0%	3.4%	2.4%	0.7%	2.7%	0.0%
1.2%	Grade 4 0.0%	1.3%	0.0%	1.0%	0.0%	1.7%	0.0%
1.8%	Grade 5 0.6%	1.5%	0.0%	0.6%	0.3%	0.9%	0.0%
0.9%	Grade 6 0.0%	1.6%	-	0.3%	0.1%	1.5%	-
0.0%	Grade 7 0.0%	2.2%	-	7.7%	0.2%	2.3%	-
0.9%	Grade 8 3.0%		-	-	0.2%	1.7%	-

CLASS SIZE INFORMATION

(Derived from teacher responsibility records.)

Class Size Averages by Grade and Subject:			Campus	Campus Group
District	State			
19.0	Elementary: Kindergarten 19.1		14.8	18.9
18.1	Grade 1 18.7		14.5	18.7
18.0	Grade 2 18.9		14.3	18.7
18.1	Grade 3 18.9		12.1	19.8
18.1	Grade 4 19.4		12.0	20.5
19.8	Grade 5 22.0		12.7	24.2

24.0	Grade 6	-	25.6
	22.3		
9.5	Mixed Grades	5.0	27.8
	25.6		
	Secondary: English/Language Arts	-	13.3
22.5	20.5		
22.2	Foreign Languages	-	7.0
	21.8		
21.0	Mathematics	-	?
	20.6		
22.0	Science	-	20.5
	21.7		
23.9	Social Studies	-	20.5
	22.7		

STAFF INFORMATION

		-----Campus-----		Campus	District
		Count	Percent	Group	
State					
100.0%	Total Staff:	50.0	100.0%	-	100.0%
62.2%	Professional Staff:	48.2	96.2%	81.8%	76.5%
50.4%	Teachers	41.0	81.9%	71.0%	63.7%
8.0%	Professional Support	5.2	10.4%	7.4%	8.1%
2.8%	Campus Admin. (School Leader.)	2.0	4.0%	3.5%	3.2%
10.2%	Educational Aides:	1.9	3.8%	18.2%	9.4%
41.0%	Total Minority Staff:	11.0	21.9%	19.4%	13.6%
8.9%	Teachers By Ethnicity and Sex:				
	African American	4.0	9.8%	5.4%	3.7%

19.5%	Hispanic	0.0	0.0%	9.1%	6.1%
70.3%	White	34.0	82.9%	84.4%	88.4%
0.3%	Native American	3.0	7.3%	0.4%	1.2%
1.0%	Asian/Pacific Islander	0.0	0.0%	0.7%	0.6%
22.9%	Males	3.0	7.3%	7.1%	19.4%
77.1%	Females	38.0	92.7%	92.9%	80.6%
Teachers by Years of Experience:					
7.7%	Beginning Teachers	4.0	9.8%	6.5%	7.7%
28.7%	1-5 Years Experience	17.7	43.2%	28.1%	40.2%
19.4%	6-10 Years Experience	8.0	19.5%	21.4%	23.8%
24.5%	11-20 Years Experience	6.6	16.2%	25.6%	17.6%
19.7%	Over 20 Years Experience	4.6	11.3%	18.5%	10.6%

District	State	Campus	Campus Group
8.7 yrs.	Average Years Experience of Teachers:	9.0 yrs.	11.4 yrs.
	11.5 yrs.		
3.6 yrs.	Average Years Experience of Teachers with District:	4.3 yrs.	7.7 yrs.
	7.5 yrs.		

TEXAS EDUCATION AGENCY

Section II

District Name: MCKINNEY ISD

Academic Excellence Indicator System

Total Enrollment: 589

Campus Name:

2004-05 Campus Profile

Grade

Span: KG - 05

Campus #: 043907117

School Type: Elementary

STUDENT INFORMATION

District	State	-----Campus-----		Campus	
		Count	Percent	Group	
Total Students:		589	100.0%	24,353	17,857
4,383,871					
Students By Grade: Early Childhood Education		0	0.0%	0.6%	0.4%
0.3%	Pre-Kindergarten	0	0.0%	1.5%	1.7%
4.0%	Kindergarten	101	17.1%	14.9%	9.0%
7.6%	Grade 1	78	13.2%	15.1%	9.1%
7.9%	Grade 2	118	20.0%	16.0%	9.1%
7.6%	Grade 3	91	15.4%	17.0%	8.5%
7.5%	Grade 4	107	18.2%	18.1%	8.4%
7.4%	Grade 5	94	16.0%	12.7%	7.8%
7.4%	Grade 6	0	0.0%	4.3%	7.7%
7.5%	Grade 7	0	0.0%	0.0%	7.2%
7.6%	Grade 8	0	0.0%	0.0%	7.2%
7.5%					

8.7%	Grade 9	0	0.0%	0.0%	7.5%
7.1%	Grade 10	0	0.0%	0.0%	6.1%
6.3%	Grade 11	0	0.0%	0.0%	5.7%
5.6%	Grade 12	0	0.0%	0.0%	4.6%
14.2%	Ethnic Distribution: African American	46	7.8%	6.7%	9.6%
44.7%	Hispanic	51	8.7%	10.4%	21.3%
37.7%	White	461	78.3%	78.4%	66.3%
0.3%	Native American	9	1.5%	0.5%	0.5%
3.0%	Asian/Pac. Islander	22	3.7%	4.0%	2.3%
54.6%	Economically Disadvantaged	70	11.9%	18.4%	21.8%
15.6%	Limited English Proficient (LEP)	7	1.2%	2.8%	8.9%
2.4%	Students w/Disciplinary Placements (2003-04)	0	0.0%	0.3%	1.0%
45.8%	At-Risk	53	9.0%	19.7%	22.9%
21.1%	Mobility (2003-04)	59	11.8%	11.7%	16.3%
14.9	Number of Students per Teacher	16.9	n/a	15.5	15.0

|-----Non-Special Education Rates-----| |-----

Special Education Rates-----|

Retention Rates by Grade:

Campus

Campus

Campus

Group

District

State

Campus

Group

District

State

13.8%	Kindergarten	1.4%	2.8%	2.5%	2.9%	0.0%	
	6.3% 11.3%						
	Grade 1	0.0%	3.0%	1.7%	6.0%	0.0%	
8.1%	5.8% 9.7%						
	Grade 2	0.0%	1.1%	0.9%	3.6%	0.0%	
1.5%	2.2% 4.0%						
	Grade 3	0.0%	0.8%	0.7%	2.7%	0.0%	
0.2%	1.0% 2.0%						
	Grade 4	0.0%	0.6%	0.0%	1.7%	0.0%	
1.2%	0.0% 1.3%						
	Grade 5	0.0%	0.1%	0.3%	0.9%	0.0%	
0.5%	0.6% 1.5%						
	Grade 6	-	0.0%	0.1%	1.5%	-	
1.5%	0.0% 1.6%						
	Grade 7	-	-	0.2%	2.3%	-	-
0.0%	2.2%						
	Grade 8	-	-	0.2%	1.7%	-	-
0.9%	3.0%						

CLASS SIZE INFORMATION

(Derived from teacher responsibility records.)

District	Class Size Averages by Grade and Subject:	State	Campus	Campus Group
	Elementary: Kindergarten		20.2	19.4
19.0	19.1			
	Grade 1		19.5	19.0
18.1	18.7			
	Grade 2		19.7	19.2
18.0	18.9			
	Grade 3		21.8	19.1
18.1	18.9			
	Grade 4		20.3	19.2
18.1	19.4			
	Grade 5		22.2	23.9
19.8	22.0			
	Grade 6		-	23.8
24.0	22.3			
	Mixed Grades		14.4	27.3
9.5	25.6			

22.5	Secondary: English/Language Arts	20.5	-	-
	Foreign Languages	21.8	-	-
21.0	Mathematics	20.6	-	-
22.0	Science	21.7	-	-
23.9	Social Studies	22.7	-	-

STAFF INFORMATION		-----Campus-----		Campus	District
		Count	Percent	Group	
State					
100.0%	Total Staff:	46.9	100.0%	-	100.0%
62.2%	Professional Staff:	41.0	87.3%	84.5%	76.5%
50.4%	Teachers	34.8	74.2%	73.7%	63.7%
8.0%	Professional Support	4.1	8.8%	7.6%	8.1%
2.8%	Campus Admin. (School Leader.)	2.0	4.3%	3.2%	3.2%
10.2%	Educational Aides:	6.0	12.7%	15.5%	9.4%
41.0%	Total Minority Staff:	0.1	0.2%	6.7%	13.6%
	Teachers By Ethnicity and Sex:				
8.9%	African American	0.0	0.0%	1.7%	3.7%
19.5%	Hispanic	0.0	0.0%	2.7%	6.1%
70.3%	White	34.8	100.0%	94.9%	88.4%

0.3%	Native American	0.0	0.0%	0.4%	1.2%
1.0%	Asian/Pacific Islander	0.0	0.0%	0.3%	0.6%
22.9%	Males	1.0	2.9%	3.6%	19.4%
77.1%	Females	33.8	97.1%	96.4%	80.6%
Teachers by Years of Experience:					
7.7%	Beginning Teachers	1.0	2.9%	4.4%	7.7%
28.7%	1-5 Years Experience	6.0	17.2%	24.4%	40.2%
19.4%	6-10 Years Experience	14.0	40.2%	22.0%	23.8%
24.5%	11-20 Years Experience	12.0	34.4%	29.1%	17.6%
19.7%	Over 20 Years Experience	1.8	5.3%	20.1%	10.6%

District	State	Campus	Campus Group
8.7 yrs.	Average Years Experience of Teachers:	10.1 yrs.	12.2 yrs.
3.6 yrs.	11.5 yrs.		
	Average Years Experience of Teachers with District:	3.4 yrs.	8.0 yrs.
	7.5 yrs.		

T E X A S E D U C A T I O N A G E N C Y

Section II

District Name: MCKINNEY ISD

Academic Excellence Indicator System

Total Enrollment: 650

Campus Name:

2004-05 Campus Profile

Grade

Span: KG - 05

Campus #: 043907115

School Type: Elementary

STUDENT INFORMATION

District	State	-----Campus-----		Campus Group	
		Count	Percent		
Total Students:		650	100.0%	22,180	17,857
4,383,871					
Students By Grade: Early Childhood Education		0	0.0%	0.3%	0.4%
0.3%	Pre-Kindergarten	0	0.0%	0.5%	1.7%
4.0%	Kindergarten	104	16.0%	12.7%	9.0%
7.6%	Grade 1	110	16.9%	13.8%	9.1%
7.9%	Grade 2	110	16.9%	13.7%	9.1%
7.6%	Grade 3	121	18.6%	15.4%	8.5%
7.5%	Grade 4	99	15.2%	22.3%	8.4%
7.4%	Grade 5	106	16.3%	16.8%	7.8%
7.4%	Grade 6	0	0.0%	3.9%	7.7%
7.5%	Grade 7	0	0.0%	0.2%	7.2%
7.6%	Grade 8	0	0.0%	0.2%	7.2%
7.5%					

8.7%	Grade 9	0	0.0%	0.0%	7.5%
7.1%	Grade 10	0	0.0%	0.0%	6.1%
6.3%	Grade 11	0	0.0%	0.0%	5.7%
5.6%	Grade 12	0	0.0%	0.0%	4.6%
14.2%	Ethnic Distribution: African American	46	7.1%	3.7%	9.6%
44.7%	Hispanic	27	4.2%	7.3%	21.3%
37.7%	White	550	84.6%	85.0%	66.3%
0.3%	Native American	5	0.8%	0.4%	0.5%
3.0%	Asian/Pac. Islander	22	3.4%	3.5%	2.3%
54.6%	Economically Disadvantaged	18	2.8%	11.6%	21.8%
15.6%	Limited English Proficient (LEP)	3	0.5%	1.5%	8.9%
2.4%	Students w/Disciplinary Placements (2003-04)	0	0.0%	0.0%	1.0%
45.8%	At-Risk	21	3.2%	14.4%	22.9%
21.1%	Mobility (2003-04)	60	10.8%	10.4%	16.3%
14.9%	Number of Students per Teacher	17.8	n/a	15.5	15.0

|-----Non-Special Education Rates-----| |-----

Special Education Rates-----|

Retention Rates by Grade:

Campus

Campus

Campus

Group

District

State

Campus

Group

District

State

	Kindergarten		3.1%	2.6%	2.5%	2.9%	0.0%
7.5%	6.3%	11.3%					
	Grade 1		0.0%	3.5%	1.7%	6.0%	0.0%
10.5%	5.8%	9.7%					
	Grade 2		0.0%	0.7%	0.9%	3.6%	5.6%
1.5%	2.2%	4.0%					
	Grade 3		0.0%	0.4%	0.7%	2.7%	0.0%
2.0%	1.0%	2.0%					
	Grade 4		0.0%	0.8%	0.0%	1.7%	0.0%
1.5%	0.0%	1.3%					
	Grade 5		0.0%	0.4%	0.3%	0.9%	0.0%
1.9%	0.6%	1.5%					
	Grade 6		-	0.5%	0.1%	1.5%	-
1.3%	0.0%	1.6%					
	Grade 7		-	0.0%	0.2%	2.3%	-
0.0%	0.0%	2.2%					
	Grade 8		-	0.0%	0.2%	1.7%	-
0.0%	0.9%	3.0%					

CLASS SIZE INFORMATION

(Derived from teacher responsibility records.)

Class Size Averages by Grade and Subject:		Campus	Campus Group
District	State		
	Elementary: Kindergarten	20.6	19.7
19.0	19.1		
	Grade 1	22.0	19.8
18.1	18.7		
	Grade 2	22.0	19.0
18.0	18.9		
	Grade 3	20.0	19.6
18.1	18.9		
	Grade 4	19.1	19.5
18.1	19.4		
	Grade 5	25.4	22.2
19.8	22.0		
	Grade 6	-	23.7
24.0	22.3		
	Mixed Grades	4.0	24.1
9.5	25.6		

22.5	Secondary: English/Language Arts	20.5	-	13.6
22.2	Foreign Languages	21.8	-	-
21.0	Mathematics	20.6	-	13.8
22.0	Science	21.7	-	-
23.9	Social Studies	22.7	-	15.7

STAFF INFORMATION		-----Campus-----		Campus	District
		Count	Percent	Group	
State					
100.0%	Total Staff:	44.8	100.0%	-	100.0%
62.2%	Professional Staff:	42.8	95.5%	87.1%	76.5%
50.4%	Teachers	36.6	81.7%	75.8%	63.7%
8.0%	Professional Support	4.2	9.4%	7.4%	8.1%
2.8%	Campus Admin. (School Leader.)	2.0	4.5%	4.0%	3.2%
10.2%	Educational Aides:	2.0	4.5%	12.9%	9.4%
41.0%	Total Minority Staff:	3.0	6.7%	4.3%	13.6%
8.9%	Teachers By Ethnicity and Sex:				
	African American	1.0	2.7%	1.2%	3.7%
19.5%	Hispanic	1.0	2.7%	2.1%	6.1%
70.3%	White	33.6	91.8%	96.2%	88.4%

0.3%	Native American	0.0	0.0%	0.1%	1.2%
1.0%	Asian/Pacific Islander	1.0	2.7%	0.4%	0.6%
22.9%	Males	2.0	5.5%	5.1%	19.4%
77.1%	Females	34.6	94.5%	94.9%	80.6%
Teachers by Years of Experience:					
7.7%	Beginning Teachers	3.7	10.2%	5.3%	7.7%
28.7%	1-5 Years Experience	19.0	51.9%	24.8%	40.2%
19.4%	6-10 Years Experience	4.0	10.9%	22.6%	23.8%
24.5%	11-20 Years Experience	8.1	22.2%	29.5%	17.6%
19.7%	Over 20 Years Experience	1.7	4.7%	17.8%	10.6%

District	State	Campus	Campus Group
8.7 yrs.	Average Years Experience of Teachers:	7.9 yrs.	11.7 yrs.
3.6 yrs.	11.5 yrs.		
	Average Years Experience of Teachers with District:	3.0 yrs.	7.0 yrs.
	7.5 yrs.		

Group 2 – Control Schools

TEXAS EDUCATION AGENCY

Section II

District Name: MCKINNEY ISD Academic Excellence Indicator System
 Total Enrollment: 537
 Campus Name: 2004-05 Campus Profile
 Span: PK - 05
 Campus #: 043907107
 School Type: Elementary

Grade

STUDENT INFORMATION

District	State	-----Campus-----		Campus	
		Count	Percent	Group	
Total Students:		537	100.0%	22,387	17,857
4,383,871					
Students By Grade:	Early Childhood Education	0	0.0%	0.4%	0.4%
0.3%					
	Pre-Kindergarten	48	8.9%	6.7%	1.7%
4.0%					
	Kindergarten	87	16.2%	13.5%	9.0%
7.6%					
	Grade 1	93	17.3%	14.9%	9.1%
7.9%					
	Grade 2	87	16.2%	16.3%	9.1%
7.6%					
	Grade 3	67	12.5%	15.6%	8.5%
7.5%					
	Grade 4	85	15.8%	15.9%	8.4%
7.4%					
	Grade 5	70	13.0%	12.5%	7.8%
7.4%					
	Grade 6	0	0.0%	4.3%	7.7%
7.5%					
	Grade 7	0	0.0%	0.0%	7.2%
7.6%					

7.5%	Grade 8	0	0.0%	0.0%	7.2%
8.7%	Grade 9	0	0.0%	0.0%	7.5%
7.1%	Grade 10	0	0.0%	0.0%	6.1%
6.3%	Grade 11	0	0.0%	0.0%	5.7%
5.6%	Grade 12	0	0.0%	0.0%	4.6%
14.2%	Ethnic Distribution: African American	66	12.3%	6.6%	9.6%
44.7%	Hispanic	342	63.7%	72.5%	21.3%
37.7%	White	125	23.3%	19.4%	66.3%
0.3%	Native American	0	0.0%	0.2%	0.5%
3.0%	Asian/Pac. Islander	4	0.7%	1.3%	2.3%
54.6%	Economically Disadvantaged	406	75.6%	75.8%	21.8%
15.6%	Limited English Proficient (LEP)	252	46.9%	26.3%	8.9%
2.4%	Students w/Disciplinary Placements (2003-04)	2	0.4%	0.3%	1.0%
45.8%	At-Risk	333	62.0%	50.6%	22.9%
21.1%	Mobility (2003-04)	89	20.8%	19.6%	16.3%
14.9	Number of Students per Teacher	12.6	n/a	15.0	15.0

|-----Non-Special Education Rates-----| |-----

Special Education Rates-----|

Retention Rates by Grade:

Campus

Campus

Campus

Group

District

State

Campus

Group

District

State

10.0%	Kindergarten	2.6%	2.9%	2.5%	2.9%	0.0%
	6.3% 11.3%					
11.2%	Grade 1	2.8%	6.5%	1.7%	6.0%	16.7%
	5.8% 9.7%					
4.0%	Grade 2	0.0%	3.2%	0.9%	3.6%	0.0%
	2.2% 4.0%					
1.7%	Grade 3	6.3%	3.0%	0.7%	2.7%	0.0%
	1.0% 2.0%					
0.4%	Grade 4	0.0%	2.0%	0.0%	1.7%	0.0%
	0.0% 1.3%					
2.3%	Grade 5	2.0%	0.8%	0.3%	0.9%	0.0%
	0.6% 1.5%					
2.1%	Grade 6	-	0.7%	0.1%	1.5%	-
	0.0% 1.6%					
0.0%	Grade 7	-	-	0.2%	2.3%	-
	2.2%					
0.9%	Grade 8	-	-	0.2%	1.7%	-
	3.0%					

CLASS SIZE INFORMATION

(Derived from teacher responsibility records.)

District	Class Size Averages by Grade and Subject:	State	Campus	Campus Group
	Elementary: Kindergarten		15.1	18.6
19.0	19.1			
	Grade 1		12.0	19.0
18.1	18.7			
	Grade 2		12.9	18.4
18.0	18.9			
	Grade 3		12.4	19.3
18.1	18.9			
	Grade 4		13.6	20.0
18.1	19.4			
	Grade 5		13.8	22.2
19.8	22.0			
	Grade 6		-	26.6
24.0	22.3			

9.5	Mixed Grades	4.3	21.6
	25.6		
22.5	Secondary: English/Language Arts	-	18.0
	20.5		
22.2	Foreign Languages	-	-
	21.8		
21.0	Mathematics	-	20.0
	20.6		
22.0	Science	-	-
	21.7		
23.9	Social Studies	-	44.0
	22.7		

STAFF INFORMATION

		-----Campus-----		Campus	District
		Count	Percent	Group	
State					
100.0%	Total Staff:	56.9	100.0%	-	100.0%
62.2%	Professional Staff:	48.9	86.0%	80.8%	76.5%
50.4%	Teachers	42.7	75.1%	69.9%	63.7%
8.0%	Professional Support	4.2	7.4%	7.3%	8.1%
2.8%	Campus Admin. (School Leader.)	2.0	3.5%	3.7%	3.2%
10.2%	Educational Aides:	8.0	14.0%	19.2%	9.4%
41.0%	Total Minority Staff:	15.7	27.5%	43.9%	13.6%
8.9%	Teachers By Ethnicity and Sex:				
	African American	0.0	0.0%	4.0%	3.7%
19.5%	Hispanic	8.7	20.4%	35.0%	6.1%

70.3%	White	34.0	79.6%	60.0%	88.4%
0.3%	Native American	0.0	0.0%	0.4%	1.2%
1.0%	Asian/Pacific Islander	0.0	0.0%	0.5%	0.6%
22.9%	Males	3.0	7.0%	9.6%	19.4%
77.1%	Females	39.7	93.0%	90.4%	80.6%
Teachers by Years of Experience:					
7.7%	Beginning Teachers	1.0	2.3%	8.0%	7.7%
28.7%	1-5 Years Experience	16.3	38.3%	30.1%	40.2%
19.4%	6-10 Years Experience	11.9	27.9%	17.4%	23.8%
24.5%	11-20 Years Experience	6.6	15.4%	24.4%	17.6%
19.7%	Over 20 Years Experience	6.8	16.0%	20.1%	10.6%

District	State	Campus	Campus Group
8.7 yrs.	Average Years Experience of Teachers: 11.5 yrs.	9.6 yrs.	11.3 yrs.
3.6 yrs.	Average Years Experience of Teachers with District: 7.5 yrs.	4.7 yrs.	8.4 yrs.

T E X A S E D U C A T I O N A G E N C Y

Section II

District Name: MCKINNEY ISD

Academic Excellence Indicator System

Total Enrollment: 748

Campus Name:

2004-05 Campus Profile

Grade

Span: KG - 05

Campus #: 043907112

School Type: Elementary

STUDENT INFORMATION

District	State	-----Campus----- Count	Percent	Campus Group	
Total Students:		748	100.0%	25,282	17,857
4,383,871					
Students By Grade:	Early Childhood Education	0	0.0%	0.6%	0.4%
0.3%	Pre-Kindergarten	0	0.0%	1.0%	1.7%
4.0%	Kindergarten	129	17.2%	16.2%	9.0%
7.6%	Grade 1	138	18.4%	16.3%	9.1%
7.9%	Grade 2	134	17.9%	16.4%	9.1%
7.6%	Grade 3	107	14.3%	16.3%	8.5%
7.5%	Grade 4	122	16.3%	16.6%	8.4%
7.4%	Grade 5	118	15.8%	13.0%	7.8%
7.4%	Grade 6	0	0.0%	3.6%	7.7%
7.5%	Grade 7	0	0.0%	0.0%	7.2%
7.6%	Grade 8	0	0.0%	0.0%	7.2%
7.5%					

8.7%	Grade 9	0	0.0%	0.0%	7.5%
7.1%	Grade 10	0	0.0%	0.0%	6.1%
6.3%	Grade 11	0	0.0%	0.0%	5.7%
5.6%	Grade 12	0	0.0%	0.0%	4.6%
14.2%	Ethnic Distribution: African American	96	12.8%	6.3%	9.6%
44.7%	Hispanic	68	9.1%	12.7%	21.3%
37.7%	White	552	73.8%	73.8%	66.3%
0.3%	Native American	3	0.4%	0.5%	0.5%
3.0%	Asian/Pac. Islander	29	3.9%	6.7%	2.3%
54.6%	Economically Disadvantaged	44	5.9%	12.6%	21.8%
15.6%	Limited English Proficient (LEP)	14	1.9%	3.4%	8.9%
2.4%	Students w/Disciplinary Placements (2003-04)	0	0.0%	0.2%	1.0%
45.8%	At-Risk	59	7.9%	16.0%	22.9%
21.1%	Mobility (2003-04)	74	10.5%	11.4%	16.3%
14.9	Number of Students per Teacher	17.6	n/a	15.8	15.0

|-----Non-Special Education Rates-----| |-----

Special Education Rates-----|

Retention Rates by Grade:

Campus

Campus

Campus

Group

District

State

Campus

Group

District

State

16.2%	Kindergarten	5.4%	2.5%	2.5%	2.9%	0.0%	
	6.3% 11.3%						
	Grade 1	0.0%	2.4%	1.7%	6.0%	0.0%	
8.5%	5.8% 9.7%						
	Grade 2	0.0%	1.0%	0.9%	3.6%	0.0%	
2.4%	2.2% 4.0%						
	Grade 3	0.0%	0.5%	0.7%	2.7%	0.0%	
0.2%	1.0% 2.0%						
	Grade 4	0.0%	0.2%	0.0%	1.7%	0.0%	
1.1%	0.0% 1.3%						
	Grade 5	0.0%	0.0%	0.3%	0.9%	0.0%	
1.6%	0.6% 1.5%						
	Grade 6	-	0.3%	0.1%	1.5%	-	
0.0%	0.0% 1.6%						
	Grade 7	-	-	0.2%	2.3%	-	-
0.0%	2.2%						
	Grade 8	-	-	0.2%	1.7%	-	-
0.9%	3.0%						

CLASS SIZE INFORMATION

(Derived from teacher responsibility records.)

District	Class Size Averages by Grade and Subject:	State	Campus	Campus Group
	Elementary: Kindergarten		21.5	19.4
19.0	19.1			
	Grade 1		19.7	19.4
18.1	18.7			
	Grade 2		19.1	19.8
18.0	18.9			
	Grade 3		21.1	19.7
18.1	18.9			
	Grade 4		20.3	20.1
18.1	19.4			
	Grade 5		23.6	23.8
19.8	22.0			
	Grade 6		-	24.0
24.0	22.3			
	Mixed Grades		11.5	31.6
9.5	25.6			

22.5	Secondary: English/Language Arts	20.5	-	-
22.2	Foreign Languages	21.8	-	-
21.0	Mathematics	20.6	-	-
22.0	Science	21.7	-	-
23.9	Social Studies	22.7	-	-

STAFF INFORMATION		-----Campus-----		Campus	District
		Count	Percent	Group	
State					
100.0%	Total Staff:	50.5	100.0%	-	100.0%
62.2%	Professional Staff:	48.5	96.0%	87.7%	76.5%
50.4%	Teachers	42.5	84.2%	75.6%	63.7%
8.0%	Professional Support	4.0	7.9%	8.7%	8.1%
2.8%	Campus Admin. (School Leader.)	2.0	4.0%	3.5%	3.2%
10.2%	Educational Aides:	2.0	4.0%	12.3%	9.4%
41.0%	Total Minority Staff:	2.2	4.4%	6.8%	13.6%
8.9%	Teachers By Ethnicity and Sex:				
19.5%	African American	1.0	2.4%	1.4%	3.7%
70.3%	Hispanic	0.0	0.0%	2.8%	6.1%
	White	40.5	95.3%	94.9%	88.4%

0.3%	Native American	1.0	2.4%	0.2%	1.2%
1.0%	Asian/Pacific Islander	0.0	0.0%	0.7%	0.6%
22.9%	Males	2.0	4.7%	4.3%	19.4%
77.1%	Females	40.5	95.3%	95.7%	80.6%
Teachers by Years of Experience:					
7.7%	Beginning Teachers	1.0	2.4%	6.5%	7.7%
28.7%	1-5 Years Experience	12.0	28.2%	23.2%	40.2%
19.4%	6-10 Years Experience	12.1	28.4%	22.0%	23.8%
24.5%	11-20 Years Experience	13.0	30.6%	29.5%	17.6%
19.7%	Over 20 Years Experience	4.4	10.4%	18.9%	10.6%

District	State	Campus	Campus Group
8.7 yrs.	Average Years Experience of Teachers:	10.6 yrs.	12.0 yrs.
	11.5 yrs.		
3.6 yrs.	Average Years Experience of Teachers with District:	3.8 yrs.	7.6 yrs.
	7.5 yrs.		

T E X A S E D U C A T I O N A G E N C Y

Section II

District Name: MCKINNEY ISD

Academic Excellence Indicator System

Total Enrollment: 654

Campus Name:

2004-05 Campus Profile

Grade

Span: KG - 05

Campus #: 043907116

School Type: Elementary

STUDENT INFORMATION

District	State	-----Campus----- Count	Percent	Campus Group	
Total Students:		654	100.0%	21,226	17,857
4,383,871					
Students By Grade:	Early Childhood Education	0	0.0%	0.8%	0.4%
0.3%	Pre-Kindergarten	0	0.0%	0.4%	1.7%
4.0%	Kindergarten	110	16.8%	14.3%	9.0%
7.6%	Grade 1	112	17.1%	15.5%	9.1%
7.9%	Grade 2	131	20.0%	16.9%	9.1%
7.6%	Grade 3	90	13.8%	18.7%	8.5%
7.5%	Grade 4	102	15.6%	19.1%	8.4%
7.4%	Grade 5	109	16.7%	12.5%	7.8%
7.4%	Grade 6	0	0.0%	1.7%	7.7%
7.5%	Grade 7	0	0.0%	0.0%	7.2%
7.6%	Grade 8	0	0.0%	0.0%	7.2%
7.5%					

8.7%	Grade 9	0	0.0%	0.0%	7.5%
7.1%	Grade 10	0	0.0%	0.0%	6.1%
6.3%	Grade 11	0	0.0%	0.0%	5.7%
5.6%	Grade 12	0	0.0%	0.0%	4.6%
Ethnic Distribution:					
14.2%	African American	22	3.4%	1.9%	9.6%
44.7%	Hispanic	29	4.4%	5.7%	21.3%
37.7%	White	585	89.4%	89.3%	66.3%
0.3%	Native American	3	0.5%	0.5%	0.5%
3.0%	Asian/Pac. Islander	15	2.3%	2.6%	2.3%
Economically Disadvantaged					
54.6%		8	1.2%	6.6%	21.8%
Limited English Proficient (LEP)					
15.6%		4	0.6%	1.1%	8.9%
Students w/Disciplinary Placements (2003-04)					
2.4%		0	0.0%	0.0%	1.0%
At-Risk					
45.8%		41	6.3%	11.6%	22.9%
Mobility (2003-04)					
21.1%		51	8.1%	8.9%	16.3%
Number of Students per Teacher					
14.9		17.7	n/a	15.5	15.0

|-----Non-Special Education Rates-----| |-----

Special Education Rates-----|

Retention Rates by Grade:

Campus

Campus

Campus

Group

District

State

Campus

Group

District

State

11.9%	Kindergarten	3.5%	2.8%	2.5%	2.9%	8.3%
	6.3% 11.3%					
	Grade 1	0.8%	1.4%	1.7%	6.0%	14.3%
3.9%	5.8% 9.7%					
	Grade 2	3.0%	0.8%	0.9%	3.6%	6.3%
2.8%	2.2% 4.0%					
	Grade 3	0.0%	0.4%	0.7%	2.7%	0.0%
1.2%	1.0% 2.0%					
	Grade 4	0.0%	0.4%	0.0%	1.7%	0.0%
0.8%	0.0% 1.3%					
	Grade 5	1.0%	0.4%	0.3%	0.9%	0.0%
0.0%	0.6% 1.5%					
	Grade 6	-	0.0%	0.1%	1.5%	-
6.5%	0.0% 1.6%					
	Grade 7	-	-	0.2%	2.3%	-
0.0%	2.2%					
	Grade 8	-	-	0.2%	1.7%	-
0.9%	3.0%					

CLASS SIZE INFORMATION

(Derived from teacher responsibility records.)

District	Class Size Averages by Grade and Subject:	State	Campus	Campus Group
	Elementary: Kindergarten		18.3	19.3
19.0	19.1			
	Grade 1		18.7	19.1
18.1	18.7			
	Grade 2		21.8	19.5
18.0	18.9			
	Grade 3		22.1	19.5
18.1	18.9			
	Grade 4		20.0	20.2
18.1	19.4			
	Grade 5		21.4	21.3
19.8	22.0			
	Grade 6		-	21.5
24.0	22.3			
	Mixed Grades		16.2	36.8
9.5	25.6			

22.5	Secondary: English/Language Arts	20.5	-	-
	Foreign Languages		-	27.3
22.2	Mathematics	21.8	-	-
21.0	Science	20.6	-	-
22.0	Social Studies	21.7	-	-
23.9		22.7		

STAFF INFORMATION		-----Campus-----		Campus	District
		Count	Percent	Group	
State					
100.0%	Total Staff:	45.1	100.0%	-	100.0%
62.2%	Professional Staff:	43.1	95.6%	87.0%	76.5%
50.4%	Teachers	37.0	82.0%	74.6%	63.7%
8.0%	Professional Support	4.1	9.1%	8.6%	8.1%
2.8%	Campus Admin. (School Leader.)	2.0	4.4%	3.8%	3.2%
10.2%	Educational Aides:	2.0	4.4%	13.0%	9.4%
41.0%	Total Minority Staff:	3.6	8.0%	3.5%	13.6%
	Teachers By Ethnicity and Sex:				
8.9%	African American	0.0	0.0%	0.5%	3.7%
19.5%	Hispanic	2.0	5.4%	1.3%	6.1%
70.3%	White	35.0	94.6%	97.4%	88.4%

0.3%	Native American	0.0	0.0%	0.7%	1.2%
1.0%	Asian/Pacific Islander	0.0	0.0%	0.0%	0.6%
22.9%	Males	0.0	0.0%	4.1%	19.4%
77.1%	Females	37.0	100.0%	95.9%	80.6%
Teachers by Years of Experience:					
7.7%	Beginning Teachers	2.5	6.8%	4.8%	7.7%
28.7%	1-5 Years Experience	17.8	48.1%	25.1%	40.2%
19.4%	6-10 Years Experience	11.8	31.9%	19.1%	23.8%
24.5%	11-20 Years Experience	3.0	8.1%	31.2%	17.6%
19.7%	Over 20 Years Experience	1.9	5.2%	19.8%	10.6%

District	State	Campus	Campus Group
8.7 yrs.	Average Years Experience of Teachers:	6.6 yrs.	12.2 yrs.
	11.5 yrs.		
3.6 yrs.	Average Years Experience of Teachers with District:	2.1 yrs.	6.9 yrs.
	7.5 yrs.		

APPENDIX E

Photo Examples

Experimental Schools



Control Schools



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