Sierra Nevada College

# SCHOOL ARCHITECTURE:

# ITS EFFECTS ON STUDENTS AND TEACHERS

An Action Research Project submitted in partial fulfillment
of the Requirements for the degree of
Master of Arts in Teaching

by

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# ABSTRACT

This action research project examines the design and architecture of schools historically through the present, asking the question if classroom and school environments change the way students and teachers work. A survey was given to students Secondary Charter School in Northern Nevada and a focus group of teachers was asked how their classes and school affected them and gave suggestions to improve them. Both students and teachers are not as affected by their classes as they are by other students and teachers themselves. This action research project demonstrated that while class and school environment is important, teachers and how they teach as well as their classroom management, affects the learning environment more.

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I also thank Steve Jobs, co-founder and CEO of Apple, for giving me impetus and drive to do more with my life than count iPod cases in stockrooms and fix iPods for yuppies. And, for the entire Deux Gros Nez family — without whom this and many other things I will do would not be possible. Thank you all.

# CHAPTER I

## Introduction

The study has been a long journey for me in many, many, ways. From the start of taking the first class at Sierra Nevada College, I have wanted to finish my thesis and graduate with a Master of Arts in Education. Writing this thesis is the culmination of this experience, which has been a very interesting three years of my life.

As I came to finish my student teaching, I had already settled on this topic due to having observed so many different kinds of schools just in Northern Nevada. From Pine and O'Brien, which started life as Open Schools to the Fourth Ward School in Virginia City, the many different kinds of schools in the area made me begin to wonder how it changed and effected their users- students and teachers. Knowing myself very well, I signed up for the Thesis Seminars of the summer of 2008 to keep the momentum going I had from my classes and student teaching since I knew if I lost it, I might not finish my degree. I sacrificed my summer to go to the classes each weekend and though it was difficult, it was enjoyable. I read so much and learned many things about classes and schools that I thought could handle anything. Now, I'm very happy that I this research for not only my thesis but for a more practical reason.

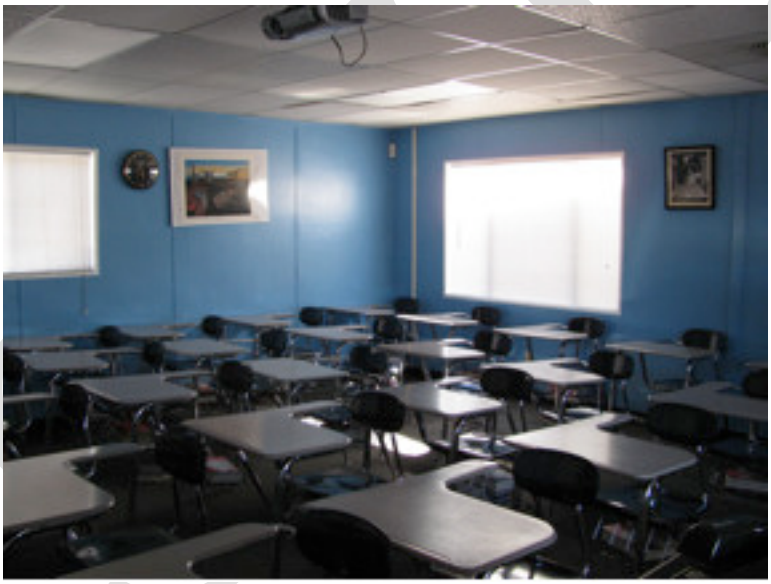
I started my first teaching job in August 2008 at the Coral Academy of Science, where I had done my student teaching. For my first year I taught Seventh Grade and encountered many difficulties, as most first year teachers do, but my difficulties started the moment I walked into my classroom. A week before school was to start, we had the normal teacher meetings and orientations that everyone goes through. After Monday and Tuesday of the week before school

started, I finally found out where my classroom was to be—Portable 2. A portable classroom? That was only the first shock. I got a key from the custodian, D. and went to my room and found it in the state of the pictures on the facing side of this page. The pictures do not truly convey how the class was when I first came to it- it was a total disaster area. There were only four days to prepare my classroom for the new year, not counting the next three days worth of meetings I still had to attend. I had to do something fast.

I called several friends and asked them to come to my new classroom. They were shocked after what they saw and said they'd help me clean and prepare my room for students. Going back on my knowledge of how to best prepare a classroom, I chose a light blue paint that wasn't too distracting but was still a good color and I tried to find fluorescent lights that were as close to natural sunlight as possible. The paint was easily gotten and had the wonderful name of Jacaranda and the lights were just as easily found too. It is possible to purchase fluorescent lights whose output is similar to natural light, which cost only a few more dollars a case as opposed to regular fluorescent lights. It also makes a difference just to keep the light fixtures clean and get the dust out of them. And with those few things I turned the class that I walked into that Wednesday into the class I used for most of the year, as pictured in Figure 1.

*Figure 1.* The author's classroom when she first saw it.

*Figure 2.* The author's classroom after fixing and cleaning it, using ideas from his research.



*Statement of the Problem*

School environments should be designed to enhance the development of student brains – and student brains are about movement, not motionless stagnation ... a traditional school is like a tree, rooted in place – but its function is to develop brains that are committed to

movement. It's something that's biologically important for building committees and architects to ponder,

states Robert Sylwester (2007) in an article titled *Skulls and School Boxes: Student Brains That Want Out*. More often than not, students wish to be anywhere but school and it is possible that this is because of not only what these students are being taught at school as well as their school itself. As Prakash Nair (2008) states in his article *But Are They Learning*?: "School buildings are only a piece of the education reform puzzle, but they may be a more important piece than we have understood in the past."

The purpose of this action research project is to examine the design and architecture of schools historically through the present. And finally, to see if classroom and school environments change the way students and teachers work.

## *Definitions*

*Architect*: a person who designs buildings and advises in their construction. The etymology is Middle French architecte, from Latin architectus, from Greek architekt*n master builder, from archi- + tekt*n builder, carpenter, as defined by Merriam-Webster's 11th Collegiate Dictionary.

*Design*: to create, fashion, execute, or construct according to plan. The etymology is Middle English, to outline, indicate, mean, from Anglo-French and Medieval Latin; Anglo-French designer to designate, from Medieval Latin designare, from Latin, to mark out, from de- + signare to mark, as defined by Merriam-Webster's 11th Collegiate Dictionary.

*One-Room School*: a type of school commonly found in rural or frontier areas of the United States and other countries, where the school was one room with many students at

different levels, usually taught by a single teacher who lived nearby the school or at a teacherage, which was a house attached to the school.

*Open School:* a school designed after World War II to have few walls and to be friendly to teachers and students.

*Panopticon*: an idea first proposed by the English philosopher Jeremy Bentham, of an institution dealing with mass numbers of people that is based around a centralized area where the people who run the institution are able to observe and control the users of the institution at every moment and in every way.

*Security*: freedom from danger; freedom from fear or anxiety, as defined by Merriam-Webster's 11th Collegiate Dictionary.

*Space*: an extent set apart or available; the distance from other people or things that a person needs in order to remain comfortable, Middle English, from Anglo-French espace, space, from Latin spatium area, room, interval of space or time, as defined by Merriam-Webster's 11th Collegiate Dictionary.

*Traditional School*: a school designed using ideas based on construction ideas and concepts, usually designed and built in towns and cities in the United States from 1840 to 1960.

## *Significant Problem*

As will be described in Chapter II, schools in earlier times were typically in very beautiful and aesthetically pleasing locations and places and designed as their primary concern to stimulate both the mind, body and spirit to learn. As time has progressed, schools have appealed less and less to these instincts and have tended to be built as cost effectively as possible or to the whims of architectural or educational whims, without considering students and teachers.

Classes and schools have generally been constructed without regard of their main users, teachers and students. They have been built for changing reasons through time, and usually without consultation of their users.

*Research Questions*

1. Do classrooms and schools effect the ways their users, teachers and students, learn and work?
2. Do classes make learning difficult for students?
3. What do teachers and students want in their classes and schools?

*Conclusion*

After briefly looking at schools in Europe and in North America in a historical overview in Chapter II. Chapter III will examine the methodology behind this action research project. Chapter IV will examine the results of the survey. Finally, Chapter V will further reflect on the results of this project.



# CHAPTER II

## Review of the Literature

### *A Brief History of Schools in Europe and North America Plato's Academy and Schools in Ancient Greece*

Human beings have taught their children the basic skills vital for survival from time immemorial. Historically parents would provide the instruction, since education was not considered to be as

formal an activity as it is today (Kowalski, 2002). The organized education of people at schools in Western culture began in earnest in Classical Greece, the best example being Plato's Academy (Planeaux, 1999). The ancient Greek writer Plutarch describes the Academy of Athens, which was according to legend started by a man named Academos who was an Athenian hero (Planeaux, 1999), and which "was before a bare, dry, and dirty spot ... converted into a well-watered grove, with shady alleys to walk in, and open courses for races". Planeaux states, "The Academy was not so much a school as it was a park and a place to sit and discuss things" (p. 6).

Many Greek schools followed the example of The Academy of Athens and met in gardens and groves of trees (Kowalski, 2002) and did not have permanent structures. Reading through past evidence of schools, the research suggests schools were usually aesthetically beautiful. As stated by Planeaux (1999) "Cimon (an Athenian general) renovated the gardens (of The Academy), making them some of the most beautiful in the Attic countryside. They remained beautiful well into Roman times" (p. 8). Schools in Ancient Greece also met at public baths and gymnasiums as stated by Iamblichus, who stated that Pythagoras, a philosopher and teacher, would conduct talks and discussions in the gymnasium at Creton, a city in southern Italy (Guthrie and Fideler, 1987)

*Schools in Ancient Rome*

Roman schools were often similar to Greek schools, and according to Leach, located off streets normally in markets and near Forums or public places, and only provided shelter against elements.

Livy, an ancient Roman historian wrote in his *Histories*, describing a girl who went to school against the wishes of her parents, "the girl was going to her school in the Forum--the grammar schools were held in booths there" (Schools, 1911). The Roman attitude toward schools is further

evidenced by the lack of discussion of how and where to build schools in Vitruvius Pollio's influential book, *The Ten Books on Architecture*. *Charlemagne and Medieval European Schools*

After the fall of the Roman Empire in Western Europe, the administration of formal education at schools was taken over largely by the church and was conducted in churches, cathedrals and monasteries (Schools, 1911). Fewer and fewer people were being educated and this caused a problem for Charlemagne, the first Emperor of the Holy Roman Empire, as he needed clerks and officials to run his government (Monk of St. Gall, 1999).

With the help of a monk named Alcuin (Einhard, 1999), Charlemagne began to reestablish schools throughout Western Europe and spread learning again. Einhard, a medieval historian and biographer states: “Charlemagne most zealously cultivated the liberal arts, held those who taught them in great esteem, and conferred great honors upon them” (¶ 19). Most of the schools founded by Charlemagne were located in churches

(Monk of St. Gall, 1999), and they helped increase the general level of education of people all throughout Western Europe.

Despite his sponsorship of learning, Charlemagne never learned how to write, although he was completely fluent in several languages. Einhard (1999) states, “He also tried to write, however, as he did not begin his efforts in due season, but late in life, they met with ill success” (¶ 25). Many of the schools that Charlemagne and Alcuin founded were the forerunners for the universities in Paris, Milan, and Bologna (Schools, 1911). *Post-Roman, Medieval and Renaissance Schools in England*

Schools in England were run by the Catholic Church, and located in churches, cathedrals and monasteries, much like in Europe (Schools, 1911). The King's School, Canterbury, located on the grounds of Canterbury Cathedral, was founded in 597 C.E. by Saint Augustine the Lesser and is the oldest continuously open school in the world (Schools, 1911). The reputation of English schools and education was so highly esteemed in Europe that Charlemagne hired the monk Alcuin from York, along with many teachers from England to teach at new schools in his empire (Leach, 1915).

The Catholic Church and those associated with it ran primary education in England throughout the Middle Ages. (Orme, 1989) Usually schools were held in church buildings or buildings on church or cathedral grounds. Most of the time these schools would include dormitories since most students would live at school and only return home during religious holidays and during the summer. Only the very rich could afford to have teachers come to their private homes (Orme, 1989).

In the late fifteenth century, many schools in England began to close since they lost their patronage or had their charters withdrawn by the English government (Leach, 1915). As this happened, new schools opened up that were mostly sponsored by various orders of monks and nuns and were located in monasteries, or were, like before buildings on the grounds of the monasteries. These new schools thrived for about one hundred years, until King Henry VIII of England broke away from the Catholic Church and began the Church of England. Soon after, Henry closed the monasteries and with them, the schools supported by them (Orme, 1989).

After the closure of the monasteries, many former church buildings were turned over to the Church of England, and made into schools. The grammar school that Shakespeare attended in

Stratford-on-Avon was the church school (Honan, 1998). The schools were still based on the medieval scheme of boarding schools; many still are run today in the same way and in the same locations both in England and throughout Europe (Orme, 1989).

*Early American Schools- The One Room School*

Settlers in America from England and the rest of Europe soon after their settlement in America started schools (Kowalski, 2002). The oldest existing school in North America is in St. Augustine, Florida, and it is a One Room School (Craven, n.d.a). From the earliest Colonial times to the start of the twentieth century in some cities, many other places until the 1950s, and even today in some rural areas (Purcell and Shackelford, 2005), One Room Schools serve their communities with a basic education. Essentially, the One Room School is a small house with a large room, usually with a stove in the center of the room and several closets or cupboards where students can store their clothing or their personal items.

*Figure 3*. The oldest school in North America. St. Augustine, Florida, United States.

*Figure 4*. The Glendale School Sparks, Nevada, United States.

An example of the One Room School in Northern Nevada is the Glendale School, now a museum located at Victorian Square, Sparks. The Glendale School was in use from 1864 to 1958, is the oldest existing school building in the state of Nevada and was originally located in the settlement of Glendale at what is now the intersection of Glendale and McCarran in Sparks, NV. Like most early American schools the Glendale School was a day school (Kowalski, 2002). Children would come to school in the morning and leave in the afternoon or at lunch, to help with chores at home. At some One Room Schools, the teacher would even live at the school, maintaining them and allowing the teacher to be paid less since they would be given room and board.

In 1900, there were over 200,000 One Room Schools, however with the urbanization of the United States, there were only 2,000 by 1950, and 1,000 in 1980 (Purcell & Shackelford, 2005).

The last One Room School in the Reno/Sparks area was the Galena Creek School, which closed in 1959. That school still exists in the Galena Creek County Park and is being renovated as a museum to be opened as soon as funds are available (Washoe County Parks Department, n.d.a). The last One Room School in Washoe County was located in the town of Flanigan, 60 miles west of Pyramid Lake and closed in 1972 (Moody, 1985).

Many Americans look back fondly at One Room Schools, seeing them as reminders of simpler times. Their reality was much different as Kowalski (2002) states, “Ceilings were low; ventilation bad; lighting unsatisfactory; heating uneven; and sanitary arrangements often unmentionable” (p. 15).

*Figure 5*. The Fourth Ward School, Virginia City, Nevada, United States.

*Early American Schools- The Fourth Ward School, Schools in Towns and Cities*

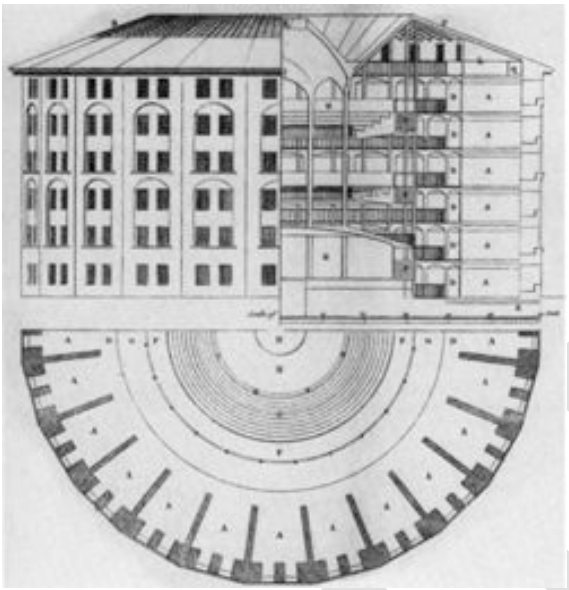
More elaborate early American schools such as the Fourth Ward School in Virginia City, NV, can still be found in some of the larger cities of the United States. The Fourth Ward School is an example of an Early American school, which could be found in larger cities and towns. Usually such schools were separated by grades in separate buildings or could be all grades in one, as was the Fourth Ward School.

The Fourth Ward School was built after most of Virginia City burnt down in 1875, and completed in 1876. Designed by C. M. Bennett, its architectural style is Second Empire, based on a design from the famous architecture and design book *Bicknell's Victorian Buildings* (which was in turn based on a school constructed by Theodore F. Ladue in Lincoln, Illinois) and is one of the remaining schools in the United States of this style (James, 2003). Its location is at the south end of Virginia City at the end of C Street, at the main road and near the path of the V & T Railroad, is a location not unlike where Kowalski would expect in his study of schools. However, The Fourth Ward School had many technological advances for the time that made it a very advanced school, compared to most American schools at the time as "it boasted state-of-the-art heating, ventilation, and sanitation systems, as well as water piped to all floors" (James, 2003, p. 7).

The Fourth Ward School was designed to accommodate 1000 students of all grades and was used from 1876 to 1936, when Storey County Middle School was built to replace The Fourth Ward. Between 1936 and 1964, little was done to the building and it deteriorated. In 1964 and in 1984, money was spent to repair the building and it was turned into a museum and event center in

1986. Since then, the Fourth Ward School has slowly been restored to its original condition of the 1870s (James, 2003).

*Figure 6*. The Panopticon, as imagined by Jeremy Bentham.



*Jeremy Bentham and The Panopticon*

In his book *Discipline and Punish*, the French philosopher Michel Foucault (1977) makes a study of prisons and their impact on European and American society since the seventeenth century. Foucault devotes an entire chapter to the ideas of Jeremy Bentham, with a focus on the Panopticon. The Panopticon is, according to Foucault:

(An) ... enclosed, segmented space, observed at every point, in which the individuals are inserted in a fixed place, in which the slightest movements are supervised, in which all events are recorded, in which an uninterrupted work of writing links the centre and periphery, in which

power is exercised without division, according to a continuous hierarchical figure, in which each individual is constantly located. (Foucault, 1977, p.173)

Foucault (1977) further says:

Hence the major effect of the Panopticon: to induce in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power. So to arrange things that the surveillance is permanent in its effects, even if it is discontinuous in its action; that the perfection of power should tend to render its actual exercise unnecessary; that this architectural apparatus should be a machine for creating and sustaining a power relation independent of the person who exercises it; in short, that the inmates should be caught up in a power situation of which they are themselves the bearers. (p. 174)

Jeremy Bentham was an English philosopher of the nineteenth century, who was an influential social reformer during the early Victorian era. Bentham attempted many social reforms to help the poor and less-fortunate (Wilson, 2007). Many of his reforms were not welcomed, however, and many people even opposed them, considering them to be more harmful than the social ills he attempted to combat with his reforms.

Bentham's greatest success in social reform had to do with the creation of the first workhouses for the poor and the indigent in London. He advanced the idea of the Panopticon to allow supervision of a large number of people in a hospital, mental hospital, prison, or even a school (Bentham, 2001).

In his book *Panopticon Letters,* Bentham writes about applying the ideas of the Panopticon to schools:

"Will the parental feeling endure my applying it at last to schools? Will the observation of its efficacy in preventing the irregular application of undue hardship even to the guilty, be sufficient to dispel the apprehension of its tendency to introduce tyranny into the abodes of innocence and youth?" (Bentham, 2001, p.20)

Bentham (2001) admits that the idea for the Panopticon came from an observation of the Royal Military School of Paris, a school that his brother attended, where,

"bed-chambers... form two ranges on the two sides of a long room; the inhabitants being separated from one another by partitions, but exposed alike to the view of a master at his walks, by a kind of a grated window in each door. This plan of construction struck him, he tells me, a good deal, as he walked over that establishment (about a dozen years ago, was it not?) with you; and possibly in that walk the foundation was laid for his Inspection-House. (p. 25)

Much as Bentham himself hoped, public facilities such as prisons, hospitals,

nursing homes, and other buildings that must accommodate large numbers of people easily and efficiently, have been designed in ways similar to the Panopticon, but few schools were built this way (Wilson, 2007). In more recent times schools have been recommended to be built using Bentham's model (Green, 1999). Many American schools are now built with features from the Panopticon, as will be discussed later this chapter.

*The Modern School- The Spanish Quartet of Reno*

At the turn of the twentieth century many American cities had growing populations and began to find the need to have larger and more modern schools. A modern, well-designed, and safe school was a point of civic pride for many Americans at that time, as is seen by the attitude taken from a guide book written for divorce seekers in the 1920s about Reno called *Reno — A Book of Short Stories and Information* by Lilyan Stratton (2004):

One of the most noteworthy features of Reno is its beautiful schools. There are six besides the High School and the University; Orvis Ring School, McKinley Park School ... Mt. Rose School, [and the] Mary S. Doten School ... The architecture is the 'old mission,' and it is difficult to decide which one really excels in beauty. Apart from the beautiful architecture, these schools are all equipped with every modern device for the training of the younger generation, both physically and mentally. Never in any public school have I seen such a splendidly equipped Domestic Science room as the one in the McKinley Park School. Its beautiful

open, airy Assembly Hall with its hardwood floors and stage for private theatricals and other social affairs is the acme of modern refinement. (Reno and Its People section, ¶ 6)

*Figure 7*. Orvis Ring School, Reno, Nevada, United States.

*Figure 8*. McKinley Park School, Reno, Nevada, United States.

*Figure 9*. Mount Rose School, Reno, Nevada, United States.

The "old mission" style schools to which Stratton refers are the Spanish Quartet schools that were constructed between 1906 and 1912 were the Orvis Ring School, McKinley Park School,

Mt. Rose School, and Mary S. Doten School, designed by Reno architect George Ferris (National Parks Service, n.d.a). The Doten and Ring schools were named for pioneer teachers of Nevada, the McKinley Park was named for the park that the school was built in and Mount Rose was named for the mountain that is nearby Reno. Two of the four schools still stand today and only the Mount Rose School is still used as an elementary school for Washoe County.

The school superintendent of the time, B. D. Billinghurst (National Parks Service, n.d.a), favored California mission-style architecture and had the first four elementary schools in Reno built in that style. With safety concerns in mind, the schools were built with only one floor, to allow for quick evacuations in case of fire. Billinghurst stated: “there is nothing better for school purposes than one-story buildings. The one-story plan eliminates the stair climbing so destructive to the nervous strength of pupils and teachers, and also renders danger from fire impossible” (National Parks Service, n.d.a, ¶ 1). All four schools were built with the latest technology of the time and each cost around $40,000 to construct, which would be approximately $695,504.43 in 2007 U.S. dollars (Williamson, 2008).

All four of the buildings were the same: constructed in a large U and all 15 classrooms as well as every other room in the building had full length windows, looking

out on the center courtyard which had a garden and a fountain and looking out at the street. In the center of the U, where the main entrance of the school was located, was the school's theater, kitchen and offices. The schools all had a basement level that had several more classes and some storage space, as well as the school's boiler and heater.

For the early part of the 20th century, the Spanish Quartet schools were the only elementary schools in Reno. As the town grew into a city, its population moved away from the areas that the schools served and other, more modern schools were built to replace them (National Parks Service, n.d.a). The Doten School was the first to be closed in 1972 and then was used for a time to park Washoe County School busses ("Trustees May Act on Sale of School," 1972). The building was torn down in 1973 and sold to a private individual. Since then, property has been used primarily as parking for tourist busses and as an employee parking lot and as the location of a child-care center for casinos in Reno's downtown corridor. The Orvis Ring and McKinley Park Schools were closed in 1975. The Orvis Ring School was torn down in 1977 and it remained as an empty lot for ten years until The Orvis Ring/Reverend Willy J. Post apartments were constructed on the site in the mid-1980s (National Parks Service, n.d.a). The McKinley Park School was bought by the City of Reno and has been used for city offices, recreational sites and as a stage for productions and other functions (National Parks Service, n.d.a). The Mount Rose School was closed in 1977 due to concerns for the building's earthquake safety. The school was saved from being sold by the Washoe School District and possibly torn down due to public outcry. The school was renovated and reopened in 1980 and is still in operation as an elementary school (National Parks Service, n.d.a).

There are many examples of Modern Schools throughout the country, and the Spanish Quartet of Reno is only one example of such buildings. The modern period of schools stretches from 1900 to the mid-1960, when the influence of John Dewey as well as the Open School movement began to be felt.

*The Open School*

The influence of John Dewey and the Progressive movement on education peaked after World War II, as there was a surge in the number of children in the United States. Although many modern type schools were still constructed throughout the 1950s and 1960s, examples of which in the Reno area are Veteran's Memorial Elementary, built in the Finger School style (Modern Schools with long corridors of classrooms connected to a center, where the offices, kitchen, and multi-purpose room/theater/gym are usually located), and Peavine Elementary (a Finger School whose fingers are detached from the center where the offices, kitchen, and multi-purpose room/theater/gym are, and connected by corridors outside, with metal covering over the walkways between buildings), a new way of building schools began to be suggested by writers and educators such as Ivan Illich, Herbert R. Kohl, and Charles E. Silberman (Ravitch, 2000). These and other thinkers were the leaders of the Open School movement, which began in the late 1960s. Ravtich states: “The open educational movement was a spectacular phenomenon. Never before had an education reform movement risen to national prominence almost overnight, won the enthusiastic support of educational leaders, dominated the national discussion then disappeared in a few years” (p. 173).

Open schools were generally designed without walls and doors that have traditionally separated classrooms. Kohl, in his book *The Open Classroom*, states:

Often, we are not aware of the degree to which the spaces we control give us away, nor conscious of how much we could learn of ourselves by looking at the spaces we live in. It is important for teachers to look at the spatial dimensions of their classrooms, to step back so they

may see how the organization of spare represents the life lived within it. (p. 45)

Open Schools had no partitions or doors within the interior of the school to separate classes and usually had an atrium or courtyard at the center of the building, to bring some nature into the building. The main concept of the open school was to foster team teaching and co-operation between classes and to get teachers to adopt more progressive teaching styles and concepts (Kohl, 1970).

There were many Open Schools built in the United States from the late 1960s through the early 1980s and in Northern Nevada Pine and O'Brien Middle Schools were built, and are examples of Open Schools. Considered to be showcase schools, both were built in 1975. The original designs for both schools were that they were to be totally Open Schools, but folding sidewalls between classes as a partition. No interior permanent walls were put into the design of the schools as they were originally planned and built (O'Driscoll, 1976).

*Figure 11*. William O'Brien Middle School, Reno, Nevada, United States.

In a newspaper article published in *The Nevada State Journal* entitled "Open Classroom: Beauteous Beast Delighting Some, Devouring Others," O'Driscoll (1976) states the pros and cons of the open school: "supporters see it as a fine, innovative tool for team teaching two or more classes in a free unconfined atmosphere. ... detractors view it as a disruptive force which spews noise and distraction across corridors and into other classrooms" (p. 13).

The students at Pine and O'Brien, according to O'Driscoll (1976), seemed to like the Open School design, not for the reasons why those in the Open School movement wanted them to be built, but for "fun" reasons. A student interviewed for the article admitted: "The noise doesn't bother me. And I like it because you can look across and see the boys and talk to them" (p. 13). The most common statement from the students and teachers who used the schools was that it was hard to concentrate with all the classes going on at the same time.

Ideally, the classes should have been team taught with at least one other teacher, as O'Driscoll mentions. Due to scheduling conflicts and few teachers who wanted to team teach, Pine and O'Brien as Open Schools had many problems. Teachers felt "the schools have been designed by educational architects that have never been inside a classroom" (O'Driscoll, 1976, p. 13).

Teachers received no training on how to work in an Open School, according to both the article and to Dr. Mavis Leathley, who taught at O'Brien when it first opened in 1975. "The open classroom was horrible. It was pretty much chaos and almost impossible to have any quality of teaching. You could hear noise all the way down the hall and the behavior at the school was unruly. There were no windows so you never knew what the weather was outside. There was no training in coming to an Open School" (M. Leathley, personal communication, February, 2, 2009). After the first year that the school was Open, walls and doors were installed in both Pine and O'Brien, changing those schools into traditional schools.

*Schools of the Last Thirty Years– The Secure School*

Reacting to the Open School movement, schools returned to the Modern School concept of design, with certain additions from the Open School: larger windows for more light, atriums and common areas in the centers of schools, and larger classrooms. With little exception, schools were built this way from the early 1980s through to the mid- 1990s (Kowalski, 2002). While some allowances for modern technology were made, school design remained the same. With the Columbine School shootings in 1997 and increasing violence in American society, schools design were designed with a higher focus on safety for their users, teachers and students (National Community Development & Crime Prevention Institute, n.d.a). An example of a

school in Northern Nevada designed in this fashion is the Double Diamond Elementary School, which is one of several schools built on the same pattern and concept.

*Figure 12*. Double Diamond Elementary School, Reno, Nevada, United States.

*Figure 13*. The Secure School as suggested by study.

Columbine High School had been designed and operated as an Open School, and after the shootings there, many people questioned how safe schools really were (Green, 1999). To this end, the Department of Justice as well as the FBI commissioned a study to design a school that was safe. The study's main design for a school looks like the Panopticon in its design. The school's main entrance is near the center of the school, where the main office, nurse's station and the principal offices are located. All these rooms are behind a counter with unbreakable glass windows and shutters that can be closed from the inside (Green, 1999).

The Secure School, as recommended to be built, has many security cameras that have a person to constantly monitor them. The school has metal detectors located at every entrance with a security guard to monitor and control each one. Also, the school has small windows, so it is difficult to see inside the class, but people inside can see outside. The windows are located just out of reach for most people and cannot be opened. In nearly every respect, the school is designed like a prison, and is just as secure (Green, 1999).

Double Diamond Elementary, while not totally like an Open School, a Modern School or completely like the Secure School that the Federal study suggests, is a building that incorporates aspects of all three types of school. The corridors between the wings of the school are large and airy and the central great halls are large and widely used, just like an Open School. Like a Modern School, the school is clearly divided and laid out with its main office, cafeteria, and gym/multi-purpose room in the front. And, like the Secure School, the windows throughout the school are small and found out of reach of people and the windows in the classes and main offices are unable to be opened.

*Schools in Non-Traditional Locations*

Another trend of the last twenty years has been schools located in non-traditional locations. As the numbers of Charter Schools have increased all over the United States, many of them have started schools in buildings that were not originally designed as schools. Many of these buildings were at the time abandoned and not in use. The refurbishing and rebuilding of buildings for Charter Schools has been an economic boon for many communities, helping them turn around blighted and deteriorating neighborhoods. (Halsband, 2003)

An example of such a school is found at the website of the American Institute of Architects on a webpage entitled: “Old Laundry Turns Charter School”. An abandoned laundry building in Jersey City, New Jersey was chosen to become the new home for the

University Academy Charter High School, to be a “dream school”. (KSS Architects, 2005) Architects from the firm of KSS Architects went to the school for eight weeks and taught the students the basics of architecture. Then, with the student’s input, the architects made designs for the new school. A year of work went into transforming the laundry into a modern school, while incorporating the original design of the building. “Built on a foundation of community ideas, the charter school balances openness and enclosure, providing a sense of ownership and responsibility for the students and helping them find joy in learning. The layout places classrooms with large rolling doors along the building perimeter, and a community "living room" for students at its center. The central lobby, modeled after an urban street lined with mixed-use spaces, connects the school with a business incubator, a real-life example of the opportunities arising from education. With minimal corridors and a focus on open spaces, the school's inviting environment allows students to focus on learning.” (KSS Architects, 2005)

A non-traditional school in Northern Nevada is the Coral Academy of Science. The Coral Academy of Science serves students K through 12 and has two campuses in Reno, NV. Originally, the school was located in a building shared with Morrison University and two other schools at 140 Washington Street. (Northwest Association of Accredited Schools Accreditation Team, 2007) As the school expanded, a new location was needed and Coral found a building at 1350 E. 9th Street. Previously, this building was a Nevada State Welfare office and it was renovated for the school. Since the building was originally not designed for a school, most of the rooms are small and lack windows.

*Figure 13*. Coral Academy of Science Secondary School.

*Figure 14*. Coral Academy of Science Elementary School.


The school continued to grow and it began to rent space from its next-door neighbor, West Hills Hospital. (Northwest Association of Accredited Schools Accreditation Team, 2007) A gym with locker rooms was added to the school, along with a new science classroom and many other renovations to the existing classes and library. Finally, the school administration wanted to separate the school's primary grades from its secondary grades. A new location for the elementary school was found: a vacant bowling alley on Valley Drive, next to Dick Taylor Park, about two miles away from the original campus. After six months of renovation, the school was opened in August 2008 as the location of the Coral Elementary School.

*Class and School Environment in the Literature*

After an exhaustive search of ERIC, other journals and online repositories, the author was able to find several similar papers to his research topic. The numbers of papers on this topic have increased as time has gone on the topic of how classroom and school environments change the ways students learn and teachers work, the first such paper dating from 1968.

In 1968, Richard Myrick and Barbara S Marx wrote a paper for George Washington University and the Department of Health, Education, and Welfare on High School students on their environment entitled: *An Exploratory Study of the Relationship Between High School Building Design and Student Learning*. The study focused on how High School students interact in their school environments in formal and informal contexts and how it affected the learning process. Myrick and Marx found that students learn in formal and informal situations between teachers and students. Furthermore, not all learning happens in formal contexts, so informal contexts and situations to reinforce formal learning should be encouraged. (Myrick & Marx, 1968)

For her Doctor of Education degree in 2001 from the University of Georgia, Kathleen A. Yarbrough, wrote *The Relationship of School Design to Academic Achievement of Elementary School Children*. Yarbrough looked at a group of elementary students and their standardized test scores from the Iowa Test of Basic Skills and studied if their results changed depending on their environment. Yarbrough's study found that class environment did change the test results, and as she assumed, the student's learning. (Yarbrough, 2001)

Mark Schneider wrote two papers on the school environment and its effect on students and teachers. First, Schneider wrote *Public School Facilities and Teaching: Washington, DC and Chicago.* In it, Schneider surveyed teachers who worked in Washington, D.C. and Chicago to determine their attitudes toward their school and class environments and how it affected them

and their student's learning. The study found that poor school facilities was a contributing factor to underachievement and that most teachers in Washington, D.C. and Chicago felt that their classes and schools were in poor condition. Furthermore, the study found that buildings not in good condition led to teachers being sicker and having lower morale. (Schneider, 2002)

The second paper that Schneider wrote in 2002 for the National Clearinghouse for Educational Facilities was called: *Do School Facilities Affect Academic Outcomes?* This paper looks thoroughly at the school environment in every aspect: lighting, ventilation, temperature, humidity, acoustics, aesthetics, school age and school and class size. He finds that:

School facilities affect learning. Spatial configurations, noise, heat, cold, light, and air quality obviously bear on students' and teachers' ability to perform.

Empirical studies will continue, focusing on fine-tuning the acceptable ranges of these variables for optimal academic outcomes. But we already know what is needed: clean air, good light, and a quiet, comfortable, and safe learning environment. This can be and generally has been achieved within the limits of existing knowledge, technology, and materials. It simply requires adequate funding and competent design, construction, and maintenance. (p. 16)

Summary of Literature Review

The construction of schools has risen and fallen in importance over time. As society and civilization have become more advanced technologically, the need for better schools has increased. What was considered to be the "best school" has changed as well, depending on what

society values at the time that school is built: safety, a better education for children, civic pride and accomplishment, among many other things.

After this examination of what schools have been and are, the next chapter will focus on the author's study of what students believe schools are today and how they would improve and make change them for the future.

# CHAPTER III

## Methodology

This study had two distinctive parts. Part one investigated the opinions of students toward their class and school environment, in the form of a survey. The second part was a focus group of teachers who were asked some of the same questions in a survey format.

### *General Perspective*

The research for this study was of a qualitative form. The qualitative data were the results from the surveys from the students and the teachers.

### *Research Content*

The study was conducted at a Secondary Charter School in Northern Nevada. The school is located in the largest population center of Northern Nevada. The study took place during the school year of 2008-2009. The information on the school comes from the School Accountability Report Card for the school year of 2007-2008 and published during 2008-2009 (Nevada Department of Education, n.d.).

#### *Grade Levels and Student Enrollment*

The school enrolls students between the grades of two through twelve (Nevada Department of Education, n.d.).

#### *Student Demographics*

There are a total of 501 students who attend the school; 268 students are male and 233 are female. Ten students are of American Indian/Alaska Native descent or 2%, 52 are of Asian/Pacific Islander descent or 10.4%, 118 are of Hispanic descent or 23.6%, 16 are of Black/African-American descent, or 3.2%, and 305 students are white or 60.9%. Forty-two students are considered Students with Disabilities, 33 students are Students with Limited English

Proficiency, and 25 students are students qualifying for Free/Reduced Lunch, the number of migrant students is n/a. The transiency rate at the school is 18.3% (Nevada Department of Education, n.d.).

There were no incidents of habitual truancy. There were 12 incidents of violence to other students that resulted in suspension or expulsion, there was one incident of possession of a weapon that resulted in suspension or expulsion, and there were no habitual disciplinary expulsions (Nevada Department of Education, n.d.).

Two students in 4th grade were retained, four students in 6th grade were retained, three students in 7th grade were retained, three students in 8th grade were retained, four students in 9th grade were retained, eight students in 10th grade were retained, and four students in 11th grade were retained (Nevada Department of Education, n.d.).

The student/teacher ratio is 18:1. The average class size in English is 20, 21 in Mathematics, 20 in Science, and 22 in Social Studies. The school per-pupil expenditure was $6,054.06. $4,249 was spent on instruction, $273 was spent on instructional support, $521 was spent on operations and $1,010 was spent on leadership (Nevada Department of Education, n.d.).

*Teachers*

Of the elementary classes, 24.6% are not taught by Highly Qualified Teachers, 75% of Arts classes are not taught by Highly Qualified Teachers, 0% of English classes are not taught by Highly Qualified Teachers, 70.6% Mathematics classes are not taught by Highly Qualified Teachers, 0% of Science are not taught by Highly Qualified Teachers, and 0% of Social Studies classes are not taught by Highly Qualified Teachers. One teacher has an emergency teaching credential, pursuant to NRS 391.125, two teachers teach pursuant to waiver with state approval

and no teachers teach without an endorsement for their subject area (Nevada Department of Education, n.d.).

*Student Achievement Rates*

The elementary school has been designated as making Adequate Yearly Progress in English language arts, mathematics and the other school-wide indicator. The middle school has been designated as making Adequate Yearly Progress in English language arts, mathematics and the other school-wide indicator. The high school has been designated as making Adequate Yearly Progress in English language arts, mathematics, and the other school-wide indicator (Nevada Department of Education, n.d.).

In grades K-8, students proficient and above on the Nevada criterion referenced tests CRTs are 77% for Reading, 58% for Writing, 72% in mathematics, and 79% in science. In grades 9-12 students proficient and above on the Nevada High School Proficiency Exam (HSPE) in reading is 95%, 87% in writing and 46% in mathematics (Nevada Department of Education, n.d.).

The graduation rates for the schools are not listed as they are not presented for groups with fewer than ten in their graduating class. Five students, or 50% received a standard diploma from the school, two or 20%, received an advanced diploma from the school, one student or 10% received an adjusted diploma, and two or 20% received a Certificate of Attendance (Nevada Department of Education, n.d.).

Four students enrolled in the Nevada System of Higher Education after graduating from the school. One student, or 25%, needed to be remediated.

The dropout rate for the school was 3.9%. 6.7% for males, 1.5% for females, 0% for American Indian/Alaska Natives, 0% for Asian/Pacific Islander, 0% for Hispanics, 0% for Black/African Americans, and 6.4% for Whites (Nevada Department of Education, n.d.).

*Parent/Community Involvement*

The school hosts parent orientations and nights to inform parents on school programs and activities. It has an Active Parent Teacher Club provides parents with opportunities to get involved in school activities. The school's teachers do home visits to increase home-school relationships. Quarterly newsletters inform and educate parents about school programs and activities.

The school hosts a web-based communication tool called ParentConnectXP, this program provides immediate feedback on student academic progress and attendance. SchoolReach makes automated telephone calls to parents and staff about important events.

The school encourages parents to e-mail their children's teachers on a regular basis for updated information on grades and missing homework. It also encourages teachers to contact parents with positive reports on students as well.

The school holds special events and several open houses during the year for parents, families, and the general public to visit the facility and talk with teachers (Nevada Department of Education, n.d.)

*School and Class Environment*

The campus's facilities were not originally designed as a school. In total there are six buildings: three portable/bungalow/trailer classrooms with five classrooms; one non-attached building that contains one classroom; a "north" building with five classrooms, a student bathroom, a faculty bathroom and two other rooms which are offices that have not been

converted to be classes and the “main” building with 19 classrooms, four administrative offices, a library, a clinic/attendance office, a lunchroom with a kitchen, the faculty lounge, a large conference room, a storage room, two sets of faculty bathrooms, the student bathrooms, and a gym with changing rooms for the students. The majority of the open area between the buildings of the campus is asphalt black top. As it is a combined High School and Middle School there is student on-campus parking, but most of the parking of the school is used by teachers. The only areas of the campus that have any kind of plant life are near the “non-attached” building and “main” building and found in an area with sand and small pine trees.

The “main” building was originally designed as a governmental office and until the school purchased the building, it was used as offices. The rooms currently used as classes in both the “main” building were converted to be classes and in no way uniform. Most of the classes in the “main” building have windows that cannot be opened and have safety bars on them. However, there are five classes in the “main” building that do not have windows at all. Since the rooms of the “main” building were originally offices, they are of irregular size and area and the temperature controls of many of the rooms are controlled from another. The hallways and all the rooms of the “main” building have white tile floors, apart from the library, the main office, and the administrative offices which are carpeted. The hallway of the “main” building contains the lockers for most of the students, which creates crowding problems between classes as students attempt to get their books and supplies for their next class as other go to their other class.

The north building was originally designed as offices for a hospital. Much like the “main” building, the “north” building’s rooms were all converted to be classrooms, but they are more or less of similar size and shape. The rooms have their own thermostats and the temperature is able to be controlled. All rooms in the “north” building have windows, but they

are unable to be opened and they near the ceiling level in each room. At the center of the "north" building there is an atrium that could be used for plants or a garden but has gravel in it. According to Merriam-Webster's 11th Dictionary an atrium is: "a rectangular open patio around which a house is built." (atrium, 2001) Around the atrium are that are outside and protected only by the atrium's overhangs.

The "non-attached" building is by itself and houses classes from one department. It is a cinderblock building that has its own lighting and temperature control independent of all the other buildings. It has only one entrance and is the only opening for this building, which has no windows at all. The "non-attached" building is carpeted.

The three portable/bungalow/trailer classrooms are similar. All three of the trailers are double wide trailers with measurements of twenty feet by ninety feet. Two of them are divided in half classes in each half and the third has one class in the entire trailer. The three trailers are all irregularly placed and put in different configurations. The two trailers that are divided into two classes have one room that controls the temperature of both classes and the third has its own thermostat. All trailers have normal windows that can be opened and closed. The trailers have rugs that are in disrepair and need to be fixed.

### *Research Participants*

The survey received 620 replies to the survey from 112 seventh graders, and the entire high school population of the school—149 students.

A focus group of five teachers in Northern Nevada was asked the same questions as the students, including two other questions about teaching in school environments.

## *Instruments Used in Data Collection*

One instrument was used in collecting the data for the survey. Qualitative data was used in surveying the students. Qualitative data was also used in surveying the teachers.

### *Qualitative Research*

Qualitative research was used for the individual student surveys. The survey took place during the students' normal class time, at the start of class as their journal assignment. The author of this study proctored the surveys in the seventh grade classes, while the English teachers for the high school classes proctored the surveys there. The same procedure was followed: the questions were read out loud to the students and they were to answer the questions, if students had questions regarding the survey, the author or teacher would answer them.

The student survey was a self-reporting survey that reported on five items. The survey directions read: "Please answer all these questions seriously and honestly. Please write your name on this sheet, but do not use names when answering these questions. There are no wrong answers for these questions- just write your opinions! If you need more space, use a separate sheet to write or write on the back." The five questions were:

1. Have you ever been in a classroom that it was difficult for you to learn and work?
2. Why were you unable to work in the classroom where it was difficult for you to learn? What distracted you?
3. If you could design a classroom, what would it look like? What would be the major difference between how classrooms are today?
4. If you could design a school, what would it look like? What would be the major difference between how schools are today?
5. Do classrooms change the way you work and learn?

The five items were answered individually and in the students' own words.

The teacher focus group was survey was a self-reporting survey that reported on six items. The survey directions read: "Please answer all these questions seriously and honestly. Please write your name on this sheet, but do not use names when answering these questions. There are no wrong answers for these questions- just write your opinions! If you need more space, use a separate sheet to write or write on the back." The six questions were:

1. Have you ever been in a classroom that it was difficult for you to learn and work?
2. Why were you unable to work in that classroom? What distracted you?
3. If you could design a classroom, what would it look like?
4. If you could design a school, what would it look like?
5. Do classrooms change the way you work and learn?
6. Have you ever had to change your classroom in any way to help your students learn?

The six items were answered individually and in the teachers' own words.

## *Procedures Used*

In performing the research project, several procedures were used including determining the goal of the research, what the focus of the research was to be, the role of the researcher, procedures used to solve the problem, procedures to document and evaluate the problem, and the role of researcher bias.

### *Goal of the Research*

The goal of the research was to determine student and teacher attitudes toward their class and school environments and how it affected them. Specifically, if classrooms changed the way that the research subjects worked and learned.

*Research Focus*

The research's focus was to be aimed at several things. First, to determine if the subjects had ever been in a classroom where they had difficulties learning; then, if they had been, to learn what distracted the subjects. Next, the subjects would explain how they would design their own classroom and then their own school. Finally, subjects were asked if classrooms, the way they already existed, changed the way the worked and learned. The focus group of teachers were asked an additional question, if they had to change their classroom in any way to help their students learn.

*Role of the Researcher*

The role of the researcher in this research project was to take the information from the study's subjects, read it, collect the raw data, and put it into categories.

*Procedures to Solve the Problem*

The surveys from the teachers and students will give the From this information, the author will make suggestions and changes in his own classroom as well as urge others in the educational field to make positive changes to help students.

*Procedures to Document and Evaluate the Problem*

Using the data gathered from the subjects, the study will document and evaluate the problem of how classes and schools have been designed from the perspective of students and teachers, the people who use them everyday and learn and work in them.

## *Data Analysis*

Data from the surveys was analyzed in two ways, quantitatively and qualitatively.

*Quantitative*

Tallying the responses from certain answers from both the student survey and the teacher focus group was done to make the data more understandable and usable. The first question, "Have you ever been in a classroom that it was difficult for you to learn and work?" was noted if the subject had answered it with a yes or a no. The second question's first part, "Why were you unable to work in that classroom?", was noted if the subject answered with a yes or a no. The second part of the second question, "What distracted you?" was categorized by the source of the distraction: the classroom environment, the teacher, other students, the student themselves, other things not commonly mentioned, a combination of everything, or if the subject answered question one with a no, N/A or not applicable. And the final question on the student survey and the fifth question of the teacher focus group, "Do classrooms change the way you work and learn?" was noted if the subject answered with a yes or no.

*Qualitative*

Certain responses from both the student survey and the teacher focus group were approached in a qualitative way. The third and fourth questions- "If you could design a classroom, what would it look like?" and "If you could design a school, what would it look like?" was examined individually from each subject. Many subjects answered in similar ways, but each answer was qualitatively analyzed. The sixth question from the teacher focus group was also a qualitative question. All seven teachers answered it in similar ways, but all had individual answers.

*Summary of the Methodology*

This chapter has explained the methodology used in this action research project in studying school architecture. The following chapter presents the results from both the students and the teachers from the methods discussed in this chapter.

# CHAPTER IV

## Results

This chapter is arranged by reporting the results for first the student survey (Appendix A) and then the teacher focus group (Appendix B). The results will be reported in the order the questions were given in the surveys.

### *Qualitative Data*

#### *Student Survey - Question One*

The first question was: Have you ever been in a classroom that it was difficult for you to learn and work? Table 1 displays the results for Question One of the student survey.

Table 1. *Student Survey- Question One*

| Students | Yes | No | Not Applicable |
|---|---|---|---|
| 7th Grade | 67 | 15 | 0 |
| 9th Grade | 43 | 11 | 2 |
| 10th Grade | 32 | 6 | 0 |
| 11th grade | 27 | 6 | 0 |
| 12th grade | 17 | 3 | 1 |

Out of the 230 answers 186, 81%, said they had been in a class where it was difficult to learn. Only 41, or 18%, said that they did not have any difficulties, while 1% did not answer the question. One hundred and nineteen high school students said they had difficulties, or 82% of the total of 145, while 26, or 17.9%, said they did not. Sixty-seven seventh graders, or 81.7%, of the 82 seventh graders, said they had difficulties and 15 students, or 18.2%, said they did not.

*Student Survey - Question Two*

The second question was: Why were you unable to work in the classroom where it was difficult for you to learn? What distracted you? Of the students who said they were distracted, the responses were divided into the categories of distracted by their environment and the classroom, distracted by the teacher, distracted by other students, distracted by self, distracted by other things, and if the respondent wrote at least three things that distracted them, distracted by everything.

Table 2. *Student Survey - Question Two*

| Grade | Yes | No | Not Applicable |
|---|---|---|---|
| 7th Grade | 79 | 9 | 3 |
| 9th Grade | 44 | 8 | 4 |
| 10th Grade | 32 | 2 | 4 |
| 11th Grade | 28 | 1 | 5 |
| 12th Grade | 19 | 1 | 1 |

Out of the 250 answers to the second question, 215, or 86%, said they were unable to work in a classroom, 21, or 8%, said they never experienced that, and 14, or 6%, did not answer the question. One hundred and twenty-three high school students, or 82%, said they had been distracted. Twelve of the high school students, or 8%, said they had never been distracted, and 27, or 18%, of the high school students did not answer the question. Ninety-two seventh grade students, or 91%, stated they had been distracted, and 9, or 8.91%, said they had not been distracted. The 215 responses that said they were unable to work in a class were further divided by how they were distracted.

Table 3. *What Distracted You? Middle School Results*

| Sources | Classroom | Teacher | Other Students | Self | Other | Everything | Not Applicable |
|---|---|---|---|---|---|---|---|
| | 15 | 6 | 44 | 8 | 0 | 8 | 0 |

In total, 48, or 22.3%, were distracted by their classroom environment. Fifty-four students, or 25.11%, were distracted by their teacher. Eighty-three, or 38.6%, were distracted by other students, while 16, or 7.4%, were distracted by themselves. Two students, or .093%, were distracted by things not categorized by the survey. Twelve students, or 5.58%, were distracted by three or more things, so they were categorized to be distracted by everything.

Table 4. *What Distracted You? High School Results*

| Sources | Classroom | Teacher | Other Students | Self | Other | Everything | Not Applicable |
|---|---|---|---|---|---|---|---|
| | 25 | 45 | 39 | 8 | 2 | 4 | 16 |

Twenty-five high school students, or 16.66%, were distracted by their class environment, 23 seventh graders, or 22.77%, were distracted by their class environment. Forty-five high school students, or 30%, were distracted by their teacher, and 9, or 8.91%, of seventh graders were distracted by their teacher. Thirty-nine high school students, or 29.06%, and 44 seventh grade students, or 43.56%, were distracted by other students. Eight high school students, or 5.33%, and 8, or 7.92%, of seventh grade students were distracted by themselves. Two high school students, or 1.3333%, and zero (0) seventh grade students were distracted by other things not mentioned in the survey. Four high school students, or 2.666%, and 8 seventh grade students, or 7.920%, were distracted by everything. Sixteen high school students and zero (0) seventh grade students were not distracted by anything.

*Student Survey - Question Three*

The third question was: If you could design a classroom, what would it look like? What would be the major difference between how classrooms are today?

Table 5. *Student Survey - Question Three*

| Question | Answered | Not Answered |
|---|---|---|
| | 191 | 14 |

One hundred and ninety-one students had a response to this question; 14 students did not answer this question. Some sample answers from the high school students were:

"If I could design a classroom the desks would be able to rotate to face whichever direction and there would be a touchscreen in the desk that could only be used when Internet research had to be done. The classroom would look basically the same, except they would be painted other colors."

"I don't think I could design one myself."

"It would have enough room for everyone and smaller class sizes."

"High walls with windows, alot (*sic*) of painted rooms with inspiration words/posters."

"Um ... It'd be nice to have softer chairs, but otherwise, it'd be pretty similar."

Some sample answers from the Seventh grade students were, many of whom provided illustrations of their class:

"My class would be very fun. PSP or Xbox time only when done. Rock Band Time when done."

"If I could design a classroom, I would have it be a room with many windows, and I would have tables not desks. The tables would be arranged in a group format. We would only need one classroom because the teachers would come to the students! I would also have a fountain, plants, and a class pet. I think the major difference would between now and my classroom is that the teachers come to the students."

"If I could design a classroom it would probably be really big and the walls would be all different colors and there would be beanbags as chairs and there would not be any desks or tables."

"If I could design my own classroom it would be very large. I like big classrooms because you get a lot of room to spread everything out. I would have the desks as tables because I think people work better in groups. I would put in a lot of windows because I like light. The walls would be all different colors because I like colorful things and I think that other people do too."

"My classroom would be fairly large with lots of windows. The classrooms I design would vary depending on what subject was being taught in it. Everyone, including the teacher, would have bean bag chairs that would be place in front of many low to the ground tables that would be situated into groups.

The major differences between the classroom I designed and how classrooms are today is the seating arrangement and the also the large amount of windows. Nowadays, if a classroom has windows, there are usually bars on them due to the neighborhood around the school. Sunshine makes me happy and helps me think clearly!"

*Student Survey - Question Four*

The fourth question was: If you could design a school, what would it look like? What would be the major difference between how schools are today?

Table 6. *Student Survey - Question Four*

| Question | Answered | Not Answered |
|---|---|---|
| | 204 | 13 |

Two hundred and four students had a response to this question; 13 students did not answer this question. Some sample answers from the high school students were:

"I would feel better if it looked better. Cleaner."

"The school's hallway wouldn't be so crowded and every school would be at least four stories, so more classes could be in the school and there could be a lot of electives to choose from."

"High Schools need maintenance, but with our budget cuts, we will not be able to do this."

"An open campus with more landscaping (mainly grass) would be nice. More open area and landscaping."

Some sample answers from the seventh grade students, many of whom provided illustration of their school were:

"My school would have LOTS (*sic*) of grass, trees, ect. There would be A LOT (sic) of windows throughout the building. The cafeteria would have wooden picnic tables, a skylight, trees in pots around the perimetere (*sic*) of the room, and a clean wooden floor! The main difference would be the windows and the greenery!"

"The major difference is that it's devoted to magic."

"An ice cream factory school. Kids get free wait losing (sic) low fat ice cream. ya"

"My school would be made of stone and everything in it or around it would be environmentally friendly. There would be lots of plants, like fern, Virginia Creeper, moss, and all kinds of flowers. Each classroom would hve an animal in the room: bird, fish, and gerbils. There would lots of grass for the children to play sports and sit and talk. There would be no blacktop. Every class would be in their own gym during the winter. There would be windows in

every classroom that would look out on the field. All the rooms would be brightly lit and the cafeteria would be big. The bathrooms would be very nice and they would be cleaned everyday. Kids would love this school!"

"If I could design a school, the main difference would be solar powering and LOT (*sic*) of windows. My school would be small and in a meadow so that all the windows would get natural light. There would only be one big classroom where the students would be taught all their lessons..."

"I would have a two story modern school with no graffiti, they would not have uniforms. It would be high tech and earth friendly. With a garden on the roof. With veggies, trees, and flowers. We would have solar panels and windmills to collect energy. Bright colors."

*Student Survey - Question Five*

The fifth question was: Do classrooms change the way you work and learn?

Table 7. *Student Survey - Question Five*

| Grade | Yes | No | Not Applicable |
|---|---|---|---|
| 7th Grade | 69 | 26 | 3 |
| 9th Grade | 38 | 16 | 3 |
| 10th Grade | 30 | 8 | 0 |
| 11th Grade | 24 | 9 | 0 |
| 12th Grade | 13 | 7 | 1 |

One hundred and seventy-four students, or 70.44%, answered yes to this question, 66 students, or 27%, said no, and 7 students, or 3%, did not respond to this question. One hundred and five high school students, or 70%, said yes, 40 students, or 26.66%, said no, and 4 students,

or 2.66%, did not respond. Sixty-nine seventh grade students, or 66.34%, said yes to question five, 26, 25% said no and 3, or 2.88%, did not respond to the question.

*Teacher Focus Group - Question One*

The focus group study of seven teachers was conducted between January and February 2009, with teachers located in Northern Nevada. All seven teachers teach in public schools and have had at least one year of experience in teaching. The seven teachers answered all questions. The results are presented next.

The first question was: Have you ever been in a classroom that it was difficult for you to learn and work?

Table 8. *Teacher Focus Group - Question One*

| Question | Yes | No |
|---|---|---|
| | 7 | 0 |

All seven teachers replied yes.

*Teacher Focus Group - Question Two*

The second question was: Why were you unable to work in that classroom? What distracted you?

Table 9. *Teacher Focus Group - Question Two*

| Question | Yes | No |
|---|---|---|
| Teachers | 7 | 0 |

All seven teachers replied yes.

Table 10. *What Distracted You?*

| Sources | Classroom | Teacher | Other Students | Self | Other | Everything | Not Applicable |
|---|---|---|---|---|---|---|---|
| | 2 | 0 | 3 | 2 | 0 | 0 | 0 |

The answers the teachers gave could be categorized into three types. Two of the 7, or 28.57%, said they were distracted by their class environment. Three of the 7, or 42.85%, said they were distracted by other students, and 2 of the 7, or 28.57%, were distracted by themselves.

*Teacher Focus Group - Question Three*

The third question was: If you could design a classroom, what would it look like?

Table 11. *Teacher Focus Group - Question Three*

| Question | Answered | Not Answered |
|---|---|---|
| | 7 | 0 |

All seven teachers answered this question in similar ways: smaller classes, larger rooms, separate areas for different activities, individual student terminals/computers, Smartboards for class, windows, access to outside, natural lighting, and easily changed seating configurations.

*Teacher Focus Group - Question Four*

The fourth question was: If you could design a school, what would it look like?

Table 12. *Teacher Focus Group - Question Four*

| Question | Answered | Not Answered |
|---|---|---|
| | 7 | 0 |

Again, all seven teachers answered in similar ways: larger rooms, smaller classes, student-run garden, and student-run cafeteria.

*Teacher Focus Group - Question Five*

Question five was: Do classrooms change the way you work and learn?

Table 13. *Teacher Focus Group - Question Five*

| Question | Yes | No | Not Applicable |
|---|---|---|---|
| Teachers | 7 | 0 | 0 |

Again, all seven teachers answered yes to this question. And 6 of the 7, or 85.71%, said that the class environment changed the way they learned and worked while one did not answer this question specifically.

*Teacher Focus Group - Question Six*

The sixth question was: Have you ever had to change your classroom in any way to help your students learn?

Table 14. *Teacher Focus Group - Question Six*

| Question | Yes | No | Not Applicable |
|---|---|---|---|
| Teachers | 7 | 0 | 0 |

Yet again, all seven teachers replied yes. All seven respondents stated that adjustments in seating arrangement was the main change to help their students learn.

*Teacher Focus Group - Question Seven*

The last question asked of the teachers was: If you could change one major thing about your school, to help teaching students, what would it be?

The teachers responded saying: smaller classes, larger rooms, more windows, real walls instead of partitions, more computer access for students, more student activity from more grades, and discipline.

### *Summary of the Results*

The results from the study show that both students and teachers have very similar results and similar concerns. Both their suggestions for improving schools follow the suggestions that experts give. The following chapter will further explain and detail the results.

# CHAPTER V

## Reflection on the Study

### *Summary and Discussion*

The final chapter of this action research study reflects on the study, problem, and methods of the study. It also summarizes the results and discusses the implications of the study's results.

### *Restatement of Problem*

As it was described in Chapter II, schools in earlier times were typically in very beautiful and aesthetically pleasing locations and places and designed as their primary concern to stimulate both the mind, body and spirit to learn. As time has progressed, schools have appealed less and less to these instincts and have tended to be built as cost effectively as possible or to the whims of architectural or educational whims, without considering students and teachers.

Classes and schools have generally been constructed without regard of their main users, teachers and students. They have been built for changing reasons through time, and usually without consultation of their users.

### *Methodology*

Both the study and the focus group, while very interesting, has some fundamental problems, which was inherent after reading all the results. The main flaw with the study is that it is probably too small a sample of both students and teachers to get a real feel for even just the current situation in Reno, Nevada. Two hundred and sixty-five High School and Middle School students is enough to get an idea of the sample of one area, but not enough to judge trends and the opinions of students. And with only seven teachers, the study's focus group probably too small.

### *Researcher Bias*

The survey, as put to the subjects could bias them to say that they had been in a classroom where it was difficult for them to work, as that is the first question. Since the researcher's assumption was that class environment would change how the study subjects worked and learned, this is a factor to be considered for researcher bias.

The second question could also be considered a leading one as it assumes that the subject has answered question one with a yes and assumes that something has distracted the subject. If this is not the case, then the first two questions would lead subjects to give answers that they were led to by the questions.

### *Summary of Results*

Even with the flaws in the study, some trends become apparent. The trends in the students questioned were surprising to the author while the trends in the focus group of teachers were not as surprising since the author shares many of the same concerns. Was it because of the difference in age and maturity between the author and the students? This would be better answered with the study with many different groups of students, as was discussed above. But what was the most surprising part of the student study? What distracted them and how the results differed from what the author believed they would be.

Even with the author's focus on the class environment and how it affected students, only 19% of the students were affected by the class environment. Many more were affected by their teachers, 22%, and the majority were affected by other students in the class, 33%. Again, this could be a problem of the sample as stated above. With some thought, it could be that the premise of the study is not as true as the author would have liked it to be. It would seem that

teachers exercise more power over students in class than the class itself, but this does make sense if one ponders this a moment.

*Reflections on the Study*

Consider this example: a group of average students could be put into the most modern classroom, complete with laptops for every student and the teacher, the fastest Internet access possible, the most comfortable ergonomic desks and chairs, a Smartboard, a wall full of windows to allow natural light at all times of the day, the most advanced lighting technology using LED lights that mimic sunlight, the latest books, materials, and educational devices, water fountains and bathrooms for the students in the classroom and a dozen other things students and teachers dream about.

With a teacher that does not have classroom management skills and either does deep and fundamental understanding of the material they are supposed to teach or cannot effectively and interestingly teach that material, the students would very quickly become restless. Instead of focusing on their lesson, they would play around and distract other students, cause trouble, or simply tune out the teacher. The most important part of a classroom is the teacher and how they run it.

Of course, the classroom does matter. It would do to listen to the main comments of the students: enough room for each student, not the class not cluttered, the walls painted a good color and not just white, open windows to let in natural light, live plants, close to sunlight lighting, and interesting posters or art that have to do with the subject taught. With just a few minor things like these, a classroom can be help to a teacher. But above all, the teacher must be the most important part of a classroom.

It is also important to compare the results to current literature on how to improve classrooms and schools. Both the teachers and students were very much in line with the experts on how to improve their school environments. The experts suggest repainting classrooms and schools with light colors to improve moods and attitudes of the people who use them. Also, they suggest opening windows and using as much natural light during the day as possible as well as adding plants and greenery to the room to add oxygen to it. If the room does not have windows for light, it is suggested to use fluorescent or other type lights whose output is as close to natural light as possible to compensate for the lack of natural light. More room and less crowding is another suggestion that the experts give, that is difficult in practice but can be achieved with creative use of space and desks. They suggest changing desks to the most comfortable and ergonomic, but that too is difficult as desks are something in schools that are used until they are totally broken. Just using some of these few suggestions, the author changed his classroom and this is discussed below in the final part of Chapter V.

### *Implications for Practice*

The physical environment of our classes and schools must be considered and improved. If educators are to raise the teaching standards of our students, the physical environment where our students learn must be improved and created with care. Students and teachers must be involved with the design and construction of newer schools as well as the renovation of older schools to allow them to continue to be used in the future.

### *Recommendation for Further Research*

To get a better idea of both student and teacher attitudes toward their school environments, one would need to conduct this survey in public, private, and charter schools of all socioeconomic groups and geographical locations throughout the United States. For a good

sample, it would be necessary to have at least 10% of the schools and teachers contacted and surveyed. To properly convey and report the results of such a study would require a dissertation and many years of study. This, unfortunately, is very much beyond the scope of the current study, whose results will be discussed next.

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Appendix A: Student Survey

**Please answer all these questions seriously and honestly. Please write your name on this sheet, but do not use names when answering these questions. There are no wrong answers for these questions- just write your opinions! If you need more space, use a separate sheet to write or write on the back.**

Have you ever been in a classroom that it was difficult for you to learn and work?

Why were you unable to work in the classroom where it was difficult for you to learn? What distracted you?

If you could design a classroom, what would it look like? What would be the major difference between how classrooms are today?

If you could design a school, what would it look like? What would be the major difference between how schools are today?

Do classrooms change the way you work and learn?

Appendix B: Teacher Focus Group Survey

**Please answer all these questions seriously and honestly. Do not write your name on this sheet or use any names when answering these questions. There are no wrong answers for these questions- just write your opinions! If you need more space, use a separate sheet to write or write on the back.**

Have you ever been in a classroom that it was difficult for you to learn and work?

Why were you unable to work in that classroom? What distracted you?

If you could design a classroom, what would it look like?

If you could design a school, what would it look like?

Do classrooms change the way you work and learn?

Have you ever had to change your classroom in any way to help your students learn?

If you could change one major thing about your school, to help teaching students, what would it be?