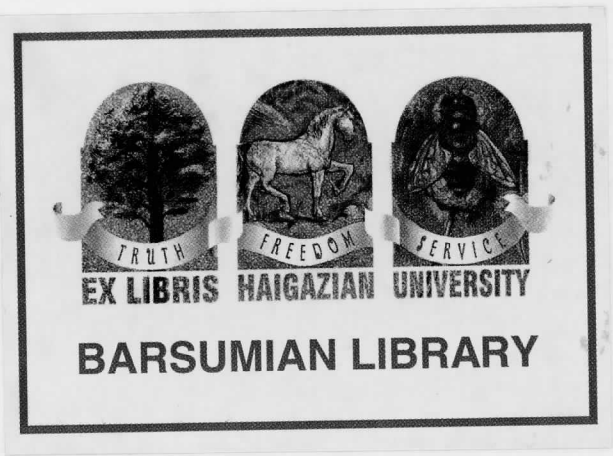

HAIGAZIAN UNIVERSITY

THE RELATIONSHIP BETWEEN SCHOOL BUILDING CONDITION and STUDENT BEHAVIOR and ACHIEVEMENT IN THE LEBANESE ARMENIAN SCHOOLS

Guluzar (Vartoug) Balekjian

A Thesis submitted to

the Faculty of Social and Behavioral Sciences

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To family and friends I consider blessings
for they supported me in my academic endeavors with much care,
unconditional love and patience

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Abstract

The present qualitative study investigated if school building conditions have a relationship with student achievement and behavior in twenty Lebanese Armenian schools applying 9th the grade official program. The study relied on self-report measures, as the principals of the schools completed a 22-item and 4-question surveys (adapted from the 1993 study of C. Cash), as well as providing academic and behavior scores of their 9th grade students (n= 361) for the academic year 2009-2010. Also, the principals answered five open-ended questions on their opinion of the relationship of the school building condition and several aspects of the building with student achievement and behavior. A qualitative analysis of the obtained data showed that there is no relationship between school building conditions and student achievement and behavior Moreover, the scores for behavior were high across the schools, and the achievement scores were low, in general, for all three kinds of school buildings: substandard, standard and above standard, regardless of the school building condition.

The Relationship between School Building Condition and Student Behavior and Achievement

This research paper is a qualitative study. It investigates the possible relationship between school buildings and student behavior and achievement. The study was conducted in twenty out of twenty six Lebanese Armenian schools that have 9th grade students. The first chapter presents the background of the study, a statement of the problem, the need for and purpose of such a study, the methodology used, as well as its professional significance. It ends with operational definitions of some key terms and perceived limitations.

Background of the Study

Are schools buildings simply a place where children spend some time learning? Is there a more intimate relationship between students and the physical environment we commonly call the school building? Lackney (1999) argues that the school building is an "undeniably integral part of the ecological context for learning." He goes on to say that there is now considerable empirical support for the argument that a variety of characteristics of the school building can have a significant influence on student behavior and academic achievement. Most educational administrators and teachers would agree that a well-maintained school building is important for teaching and learning (Earthman, 1996).

Mr. Fadi Yarak, the Director General of the Lebanese Ministry of Education, in a lecture at Haigazian University (March 2010), said that school building conditions do affect the quality of learning. He was speaking about the five-year plan the Ministry has set for itself to improve public education in Lebanon. Part of the plan was to start renovations of school buildings, as the Lebanese public schools have a huge need in the areas of maintenance and infra-structure. In

addition, Yarak mentioned that the majority of the 1,390 public school buildings all over the country operate in physically challenging conditions. In the US, according to Earthman (1996), the US General Accounting Office (GAO) reported in 1995 that every state in the Union had school buildings in poor conditions. Also, Earthman (2000) cited a report of the National Center for Educational Statistics (2000) and stated that the average age of school buildings in the US was 40 years old. Moreover, the US Department of Education (2000) said that it is essential to have school buildings that provide a good learning environment and enhance student success.

The importance of school buildings and facilities can also be considered through Hoy & Miskel's (2005) presentation of the school as a social system model (Appendix E). The model has the following sections: 'inputs', 'transformation process', 'outputs', and a 'feedback loop', the latter showing it as an open system operating in an 'environment'. The input side, generally labeled as 'people, materials and finances', includes environmental constraints, human and capital resources, mission and board policy, materials and methods. In the section called 'transformation process', there are the elements of teaching and learning in a context of four systems: the structural system, the individual system, the political system, and the cultural system. The outputs, also called 'products and service,' have the following parts: achievement, job satisfaction, absenteeism, dropout rate, and overall quality. The feedback loop shows any discrepancy between the actual and the expected performance in the outputs section, while the environment is the medium with which the system interacts (Hoy & Miskel, 2005).

In short, the item, 'human and capital resources' in the inputs section of the model includes the school building and facilities. Here, the building and facilities constitute the physical

structures in which the teaching and learning processes are conducted, and are, in a sense, an important base on which the system operates.

In a study conducted in the schools of rural Virginia, Carol Cash (1993) concluded that building conditions and student behavior factors were positively related and she suggested that the cause might be a possible existence of care and control in the higher quality schools. Cash (1993) developed a theoretical model (Appendix F), which helps to examine the role of the school building condition in more details. According to this model, student achievement is both directly and indirectly affected by the school facilities. Hines (1996) was of the opinion that Cash's model showed the relation between the leadership and financial ability of a school on the one side, and the outcome of the educational processes that are conducted within its walls on the other side. He explained that the condition of the school building depends on the efforts of the school maintenance and custodial staff. These people and their work are funded and supervised by the efforts of the principal and school boards, who raise funds to maintain school buildings. So, finances, besides the leadership of the school, formed the base on which the school building condition is kept.

In the middle part of the model are the responses to the school building condition, as expressed in the attitudes of students, parents and faculty. Then the model depicts student behavior and achievement as directly related to the aforementioned responses. The reasons for this relationship are explained in Hines (1996). He said that the students get a message from the physical condition of a school. He reasoned that if a school building is well maintained, or the administration gave evidence of attempts to maintain it, then students may assume that good behavior and high achievement are expected from them. Likewise, students may assume that low

demands will be made of them if maintenance of school facilities is poor. He concluded, thus, that students can become either positively or negatively affected by what they see. Citing studies done by Eilers in 1991, Glassman, Burkhart, Grant and Vallery in 1978, Hines (1996) stated that research in the business world has found that a positive environment is related to improved production, and says that many environmental factors of the business world also exist in school buildings.

Statement of the Problem

Much is invested in schools: material and human capital; time and resources. And the expectations are that the 'output' section will justify all that goes into the 'input' section. In recent years, many teachers and principals have voiced their dissatisfaction with the grades and behavior of their students. Two of the Lebanese Armenian school principals noted that the success rate for the 9th grade official exams has fallen from around 90% in 2005 to 58% in 2010. Bullying has increased and is causing many problems; students are not motivated to do better. Unfortunately, research in this area is lacking in Lebanon. However, attempts to improve the educational sector in the country were made by the Lebanese Ministry of Education. For instance, a new curriculum was introduced in 1996. This led to numerous workshops for teachers. These workshops aimed at training the faculty towards an effective use of the new programs, and to equip them to teach their students for success in the intermediate and high school level of official exams. But no provision was made concerning school buildings and facilities. In the USA, the *No Child Left Behind* (NCLB) Act of 2001 (the Act was signed into law in 2002) urged schools to be more accountable, driving them to teach for exit examinations. In 2004, an article was published by Mike Kennedy and Joe Agron; it was titled *No Building Left*

Behind. Here the authors argued that the NCLB Act does not include funding to help local districts build or renovate school facilities. They said that children are falling behind in American schools because they go everyday to study in schools that are crowded, outdated and falling behind in maintenance.

Maintenance means funds. In Lebanon, schools are funded differently. Obviously, public schools are funded by the government. Private schools depend on tuitions and fundraising efforts carried on by the school boards, principals and parents' committees. The coordinator of one group of Lebanese Armenian schools confidentially stated that most of the schools they supervise do not designate sums for annual renovations and upgrading of facilities in their budgets, simply because those budgets are insufficient. They must wait for special donations, international aid and designated funds from outside their budgets for such necessary expenses. According to Mr. Yarak, 11% of the state budget is allocated to the Ministry of Education. Further, he noted that about 93% of the Education Ministry budget goes to payroll and only 7% remains to be used toward other expenses, including maintenance of school building, facilities and development. Private schools are funded by churches, individuals or cultural organizations that have founded them. In addition, a small number of schools are funded both by the government and by private means. In the US, local districts are financially responsible and feel the burden of paying for school construction and renovation mostly through the property tax (M. Kennedy and J. Agron, 2004).

On the parents' side of the coin, people send their children to schools with the hope of having satisfactory results (the outputs section of the model). Parents, along with teachers and administrators, are mostly interested in the behavior and achievement of their children, and when

results are deemed not satisfactory, all parties look for causes in order to find solutions. Education refers to many variables: teachers, curricula, students' background and learning abilities, administration, parents' involvement and parenting styles, to name a few. Could it be that the condition of the school buildings, in which children are spending most of their waking time, is a factor that makes a significant difference in the outputs? If yes, to what extent, and which details of the buildings matter the most?

Purpose of the Present Study

Learning is a complex activity, asserted Lyons (2001). There are many variables that relate to students' achievement and behavior. One of the variables is the school building with its facilities in which students spend most of their time (Cash, 1993). In the past 30 years, many studies have been conducted to see if there is a relationship between school facilities and student behavior and achievement.

In recent years and on the Lebanese scene, many teachers and principals have voiced their dissatisfaction with the grades and behavior of their students. Discipline problems and low achievement levels were reported in a widespread manner. "Bullying has increased and is causing many problems" and "Students are not motivated to do better" are the most often heard complaints.

The purpose of this study was to investigate if there was a relationship between the school building and facilities and student behavior and achievement with the hope of providing one possible solution to the discipline and achievement problems. The major studies done in the US have concluded that there is a positive relationship between the school building and the two

student variables that this present study is tackling (Cash, 1993; Hines, 1996). The researcher of this study hopes to find that the conclusion reached by US researchers also applies to the Lebanese Armenian schools, so that those working in the realm of education can have a view of the steps needed toward an improvement.

The researcher chose to study the Lebanese Armenian schools in relation to her topic because of personal preference. Besides being a Lebanese Armenian herself, and deeply caring for the community, she has firsthand experience in these schools: she has been a teacher in two Armenian schools at different times; has worked as a part-time secretary in the principal's office of two different schools; has been a member of a committee comprised of representatives of all Lebanese Armenian school groups, the purpose of which was to prepare a program for the Armenian language for non-Armenian schools; and presently she is a board member for one of the schools.

Study Questions

In case there was a positive relationship between the school building condition and student achievement and behavior, what special aspects of the school building are the most influential? Studies conducted by Cash (1993), Earthman et al (1995), Hines (1996) and McGowen (2007), have looked into many aspects of the school building, among them: lighting, age, noise, and the overall condition of the school building and facilities. Based upon a review of the literature, the researcher tried to answer the following research questions:

1. What impact does the age of the school building have on student achievement and behavior?

2. What is the relationship between lighting in classrooms and student achievement and behavior?
3. To what extent does external noise affect student achievement and behavior?
4. To what extent does the school building condition impact student achievement and behavior?

Methodology

This study used the qualitative method of analysis. The qualitative analysis method was chosen for two reasons: First, there was no relevant and significant research on this topic in Lebanon, and, therefore, the present study would be the first to describe the facts and analyze the data obtained in view of the relationship of the school building condition with student achievement and behavior. More specifically, this qualitative study would shed light on the present status of certain schools that were chosen, namely, 20 Lebanese Armenian schools. Second, the sample of 20 schools was considered very small for a quantitative study to be valid. The correlation results would be due to chance, rather than due to the independent and dependent variables under study.

Participants

The participants were twenty Lebanese Armenian schools that have the 9th grade in their programs. The average school building is 45 years old. Three schools are in the same village, quite far from the capital, Beirut. Seven schools are located in relatively calm and well-to-do neighborhoods, whereas the remaining ten schools are located in noisy and densely populated areas inside Beirut and in its suburbs.

The principals of the schools completed a twenty-four-item questionnaire (Appendix C). 85% of the principals have had more than five years experience in school administration. Eleven of the principals were males, and nine were females. The total number of 9th graders in these twenty schools was 361, with 147 male and 214 female students.

Materials

For the purposes of this study, a twenty-four-item survey questionnaire was sent to the principals of these schools. It was adapted from Cash's (1993) study conducted in the State of Virginia. She had used the Commonwealth Assessment of Physical Environment (CAPE). It contained 20 items to which the principal was to respond by assigning a number on a scale between 0 and 5, 0 being the least and 5 being the greatest. Besides these items, the questionnaire included four questions related to the age of the building and age of the school lab, as well as the size in meter squares and total number of students. Question number 4, which asked the school size in meter squares, was disregarded because nine out of the twenty schools could not provide the information.

Also, the researcher devised a set of five questions (Appendix D) related to the variables of the present study. The first question asked about the importance the principals assign to five factors that affect student achievement and behavior. The second question asked them to talk about the frequency of maintenance work done on the school building. The third question asked about the impact of school age, classroom lighting and noise on student achievement and behavior. The fourth was about the priority principals give to student achievement or behavior

problems. And the fifth asked the principals to talk about the importance of the overall building condition as related to student achievement and behavior.

Procedure

To ensure the participation of all twenty Lebanese Armenian schools, contact was made with the head of each school family, in case there was a head. For example, the Armenian National schools are under the auspices of the Prelacy of the Armenian Orthodox Church. A special permission was obtained from the Prelate, Arch. Kegham Khatcherian (Appendix B), and the letters Appendix A), along with the questionnaires were sent to those schools via their Educational Coordinator. For schools with no group affiliations, direct contact was made with the principals and the material was faxed, delivered by hand or by e-mail. All principals responded, but within varied time spans. Responses were collected either by fax or personally by the researcher. Some principals were personally visited by the researcher and the surveys were completed in her presence.

To answer the research questions, the researcher used two means: First, a survey questionnaire with twenty-two items and four questions was distributed to 20 school principals; the items on the survey were both aesthetic and structure related. In other words, the structural items were: windows, air conditioning, acoustics, lighting, walls, building age, density or crowding and the quality of science lab. Whereas the aesthetic or cosmetics items were: interior and exterior paint, grounds, graffiti, and floor maintenance (Cash, 1993). The present researcher adapted the list from the questionnaire used by Cash (1993), who had used the Commonwealth Assessment of Physical Environment (CAPE).

Also, each principal was provided with a chart to fill out. It had three columns: the first was for numbering the students of grade nine; no names were mentioned and only the gender of the students was asked. The second column was for the total academic grade of the students; whereas the third column was for the conduct/behavior assessment of the students. For the achievement score, it was not deemed necessary to have the students sit for a standardized test, as all Lebanese schools have the same curriculum for the 9th grade, with the governmental tests (Brevet) in view.

Second, the researcher interviewed the principals of the twenty schools. They answered five open-ended questions related to the relationship of school building condition, lighting, building age and noise factors with the student achievement and behavior.

The data on student achievement was unified across the schools, as there were three kinds of assessments. Some schools had grades over 100, others over 20, and still others used the sum of collected grades, the total score being 360. The percentile system was adopted and the other scores were unified by using the cross multiplication method (The Rule of the Three) after consulting with two conventionally chosen principals.

Also, the behavior assessment methods varied from one school group to another. Some used letter assessment: A, B, C, D, etc. Other schools used words to assess the overall behavior of their students: Excellent, Very Good, Good, Satisfactory, etc. These were unified, too, by using the percentile system and changing the other non-percentile scores obtained from the schools by using the cross multiplication method. After unifying the scores provided by the schools, a single score was obtained for each school by calculating the average of the 9th grade students' scores both for achievement and behavior.

The score for the overall condition of the school building was obtained by adding the rating numbers given by the principles. As for the lighting score, the average of the numbers given for items 5 and 18 was used. The same procedure was done for the score of climate control, where the average of rating number given to items was taken. Concerning the score for noise (item 23), the rating number given by the principal was used as the main score.

As for the score of school facility age, the researcher used an adapted form of the three categories used in Cash's study as obtained from CAPE: buildings above 50 years of age were assigned the rating 1; buildings between 30 and 50 years old were rated as 2, and buildings that were built 30 years ago or after were rated as 3.

Significance of the Study

Without effective schools, no healthy generation of citizens could be prepared, and part of being an effective school has to do with the condition of the building and facilities, as shown in Hoy & Miskel's (2005) model (Appendix E).

Hines (1996) says that while much research is done on effective schools, school building changes are mentioned as an afterthought.

Mike Kennedy and Joe Agron (2004) stress the fact that the issue of improving school facilities is more than just a question of aesthetics. According to him, poorly designed, inadequate and badly maintained facilities can prevent students and teachers from performing to their best, and might even endanger their health and safety.

Hines (1996) argues that if research can support a relationship between student achievement on one hand and facility condition on the other, then increase in funding on many levels could gain support.

Linda Frazier (1993) argues that while in times of austerity maintenance funds are slashed, deferred maintenance can affect both the health and the morale of staff and students. Some consequences of deferred maintenance are: premature building deterioration, indoor air problems, increased repair and replacement costs, and reduced operating efficiency of equipment. In the absence of research on the building conditions of the Lebanese Armenian schools, the present study might shed light on a probable cause of deterioration in student behavior and achievement. If the present study finds that there is a positive relationship between school building and student achievement and behavior in Lebanese Armenian schools, then the parties involved in upholding these schools can work together to raise funds to properly maintain the physical aspect of education in their respective schools. This study might serve as a pilot study and pave the way for other studies with the aim of finding causes and solutions to the multi-faceted problems in our schools.

Definition of Terms

Lebanese Armenian Schools: There are twenty six Lebanese Armenian schools ranging from elementary (grades 1-6) to intermediate (grades 1-9) to high schools (grades 1-12). These can be grouped into four with respect to administration and orientation: the Armenian National Schools, headed by the Prelacy of the Armenian Orthodox Church in Lebanon; the Armenian Evangelical Schools headed by the Union of the Armenian Evangelical Churches in the Near East; the School

Armenian Catholic Schools; and a fourth group of miscellaneous schools with affiliations to various Armenian cultural organizations.

School Building is defined by the general facilities that each school has provided for the students to use. For practical purposes, the words 'building' and 'facilities' are used interchangeably.

Student behavior: Behavior is defined as *manner of behaving; actions; conduct; manners* by the Webster's New World Dictionary, College Edition (1958). In Cash's 1993 study, the score for student behavior is the ratio of the total number of students in the school and the number of incidents recorded (suspensions, expulsions, and violence/substance abuse). In this study, student behavior is defined by the assessment of the school. Some schools assign grades for the overall behavior or conduct of students, others assess behavior by using 'Excellent', 'Very Good', 'Good', and 'Fair'. Still other schools use the letters A, B, C, and D to assess the overall behavior of the student. The researcher has unified the various kinds of behavior assessments, after consulting with a number of principals and agreeing upon the assigned value of each category. The average of the conduct scores of the 9th graders was used as the behavior score for the given school.

Student achievement: Achievement is defined as *something accomplished, esp. by superior ability, special effort, great valor, etc.* by the Webster's Encyclopedic Unabridged Dictionary (1994). Cash (1993) has used the scale score means of the Test of Academic Proficiency. For the purpose of the present study, student achievement of 9th grade students is defined as the average

of all of the subjects covered by the 9th grade students in the academic year 2009-2010. Because of the official exams at the end of the 9th grade, all students in that grade study the same material in preparation for the exams. Thus, there was no need to prepare a standard test for 9th graders, as the official exams are deemed standardized tests for the given grade. Again, the average score of the 9th graders was used as the score for the given school.

Delimitations

Staffing levels, budgets, parents' socio-economic status (SES), teacher efficiency and other non-facility related variables (such as school rules and regulations) were not investigated.

The evaluation of the schools buildings was done by the principals, who might have given a biased response due to school pride or due to the fact that they are used to the building and might not notice the need for improvement.

The results of this study could not be generalized, as its sample was very small, being conducted only in Armenian private and semi-private schools, which could be considered relatively homogeneous schools, whereas relevant statistical or other data, if available, would apply to public schools only.

Student behavior assessment depended on the expectations and evaluation system of the schools. Lebanese Armenian schools can be divided into four groups from this perspective: schools that are founded and run by the three major denominations (Orthodox, Catholic and Evangelical), and schools that are affiliated with cultural organizations and do not have the direct umbrella of any denomination. Each of these groups had different behavior and conduct expectations, depending on the value system of the given denomination or organization.

Another delimitation was omitting questions on the schools' finances and budget. The fact that finances are a sensitive issue has restrained the researcher. Thus budgets, which could have given an idea on the percentages allocated for maintenance and renovation, were not asked of the principals.

CHAPTER 2

Review of Literature

In this chapter, a quick review of literature on the relationship of school building condition and student achievement and behavior will be presented. The chapter will cover five major studies conducted in the USA, as well as tackle research conducted on specific components of the school building and their direct relation with student achievement and behavior, and it will end by restating the research questions.

A General Overview

While Frazier (1993) notes that no mention of the physical surroundings of students is done, when the issue of improving education is discussed, Kennedy & Agron (2004) report that the *Facilities Impact on Learning* series had conducted a survey, where 85% of the administrators have said that facilities impact learning "very significantly."

Elizabeth Jago and Ken Tanner (1999) noted that pupil disruptive behavior in USA schools has become a serious educational problem, and have suggested that school facility planners should design them in such a way that desirable and more predictable student behaviors are produced. In 2004, Mike Kennedy and Joe Agron reported that The American Society of Civil Engineers has given a 'disappointing grade' to the condition of school facilities: D minus. John B. Lyons (2001) posed the question: How do the physical conditions and design of the school facility shape a child's learning experience? He goes on to state that about 40% of schools report unsatisfactory environmental conditions, the average schools being above 40 years old.

Frazier (1993) emphasized that it has been firmly established that people are influenced by their environment, noting that it is unreasonable to expect positive results from people who work, teach or learn in adverse environments. She noted that the relationship between school building condition and student achievement and behavior has not been "rigorously studied." Almost fifteen years later Cynthia Uline & Megan Tschannen-Moran (2008), the authors of a paper, *The Walls Speak: the Interplay of Quality Facilities, School Climate and Student Achievement,* stated that there is a growing body of literature that provides evidence to a link between school building and student achievement. Mark Schneider (2002), too, concluded that there is a large literature that links the condition of school facilities to educational achievement.

The need to look into this relationship was highlighted by Schneider (2002), who held that a concern for the physical infra-structure of the school was missing from the debate of policy makers who had the issue of improving educational performance high on their agendas.

Linda K. Lemasters (1997) noted that a synthesis of 233 studies on school buildings and student achievement, performance and attitude were conducted in 1979 and 1982. In addition, many studies have been completed since the aforementioned dates.

Some Major Studies in the Field

Carol S. Cash's (1993) study, *Building Condition and Student Achievement and Behavior,* examined the relationship between student achievement and behavior and school building conditions. It was conducted in the small rural high schools in Virginia, in the USA. 120 principals out of 199 responded. To asses the building conditions, she used the Commonwealth Assessment of Physical Environment (CAPE), which is an evaluative tool. Student achievement

was determined by the scale scores of the Test of Academic Proficiency for grade 11 during the academic year 1991-1992. The ratio of expulsions, suspensions and violent/substance abuse incidents to the number of students in each of the schools was used as the student behavior score. As a basis for her study and based on previous research, Cash had developed a model design (Appendix 2) to explain the relationship of the constructs she was investigating. This model showed that student achievement and behavior are both directly and indirectly affected by the school building condition. The factors that had a direct effect were determined as: lighting, acoustics, climate control, and color; whereas the indirect affects were through student attitudes.

This 1993 study found that student achievement scores were higher in schools with better building conditions. Also, Cash reported that student achievement scores were better in buildings with better science lab facilities. On the behavior side, student discipline incidents were also higher in schools with better building conditions. She notes that cosmetic aspects of the school building appeared to affect student achievement and behavior more than structural aspects.

Glen I. Earthman, Carol S. Cash and Denny Van Berkum (1995) conducted their study (*A Statewide Study of Student Achievement and Behavior and School Building Condition*) in North Dakota with the purpose of examining the relationship between achievement and behavior of students and the condition of the school building. They had chosen North Dakota because it had a relatively homogeneous population and was mostly rural. They administered the Comprehensive Test of Basic Skills as a measure of student academic achievement of the 10th graders in the state. For behavior scores they used the number of recorded disciplinary incidents for the year. The condition of the school building was determined by using the evaluative questionnaire used by previous studies, like Cash's. They hypothesized that there is a

positive relationship between student achievement and behavior and school environment, namely, school building condition. This 1995 study was the fourth iteration of basically the same research design. Results supported previous studies, leading these researches to state that sufficient data exists to maintain that the condition of a building does result in a difference in student scores and actions. They suggested that further investigation was needed. However, a different research design must be used, as they thought that the one they used might have reached a plateau. On the other hand, there were some differences in results concerning behavior incidents. Cash (1993) had earlier found that there were more reported incidents in above standard schools than in substandard schools. In this 1995 study, it was found that only when the structural conditions of the school were considered, the results supported Cash's findings.

Eric Hines (1996) chose a similar study design to investigate the topic in urban high schools of Virginia in his *Building Condition and Student Achievement and Behavior*. He explained his reasons for choosing Virginia by citing its unique funding and the diversity of its population. Sixty-six out of eighty-eight schools responded to his survey. Hines' purpose in conducting the study was to investigate whether or not there was a relationship between building conditions and student achievement and behavior in selected urban high schools of Virginia. He found that there was such a relationship. He reported that "scale scores were improved on every subset of the Test of Academic Proficiency" when substandard buildings were compared to above standard buildings, and that the improvement "denoted a very strong relationship", thus supporting his research questions.

However, Hines (1996) reported that conclusions were not as clear in the area of student behavior, stating that suspensions did increase as the building conditions moved form

substandard to standard ratings, supporting Cash's (1993) findings in this respect. Hines then compared the results of Cash's rural Virginia schools with the results of his urban Virginia schools, and observed that the scale scores and percentile ranks in urban schools were higher than for rural schools in all three categories (substandard, standard, above standard) of school buildings. Hines concluded that whether the schools were rural as in the Cash study, or urban as in his study, test scores improved as building conditions improved.

Calvin C. Bullock's 2007 study, *The Relationship between School Building Condition and Student Achievement at the Middle School Level in the Commonwealth of Virginia,* investigated the topic taken up in the previous studies, minus the behavior component. For the school building condition, Bullock, too used the CAPE as a survey instrument, and as for academic achievement, he used the percentage of passing scores from Standards of Learning Tests (SOL). The socioeconomic status of the students was the third component of his study. Bullock concluded that the building condition (including age, windows in classrooms, overall condition) is positively related to student achievements, and that students performed better in newer or recently renovated buildings than they did in older buildings. He noted that one of the largest differences in percentage of students passing was in English. He reasoned that this is significant as, according to him, the reading ability of a student is a good predictor of his ability and affects all other academic areas.

Comparing data from his study to the results of earlier studies, Bullock (2007) found that the results of his study were consistent with the findings of those studies.

Bullock cited seven studies (some had used the CAPE as an evaluative instrument, while others had not), and noted that all studies have resulted in findings that indicated a positive

relationship between school building condition and student achievement. He suggested that school officials use the information to positively address the issue of student achievement.

Robert S. McGowen's study of 2007 (*The Impact of School Facilities on Student Achievement, Attendance, Behavior, Completion Rate and Teacher Turnover in Selected Texas High* Schools) explored the possible relationship between school facility conditions and school outcomes such as student academic achievement, attendance, discipline, graduation rate, and teacher turnover. He chose high schools in Texas with enrollments between 1,000 and 2,000. For the school facility conditions, he used a different instrument than the one used previously in similar studies; he used the Total Learning Environment Assessment (TLEA). McGowen stated that a review of the then current literature concerning facility assessment in addition to a panel of experts (two college professors and one practicing architect) established the Content Validity of the TLEA. He reported that the major findings of his study included: (1) student achievement, attendance, and completion rate measures were not found to be statistically significant as measured by the TLEA at the 0.05 level; (2) student behavior was found to be significantly related to the TLEA. The first finding was in contrast to the findings of previous similar studies, which had found that better building conditions were positively related to better student achievement.

McGowen (2007) used five research questions for his study, of which two are relevant to the present study. Research question one was about the extent to which school facility conditions impact student achievement. He reported that findings of his study (no significant impact) are in "conflict with the majority of the literature on the topic." Research question two explored the

extent to which school facility conditions impact student behavior. He reports that the TLEA sections did show "statistically significant predictors of student behavior, or discipline."

The rest of this chapter will review what studies concluded on the overall condition, as well as on some chosen factors, such as building age, lighting, and noise of the school building, as related to student achievement and behavior.

Building Age

Building age seems to be significant when considering the relationship between school building conditions and student achievement and behavior, because it can have a major impact on many other factors used to evaluate the physical condition of a school, argued McGowen (2007). He cited Earthman & Lemasters who in 1996 had noted that the age of the building had significant impact on student achievement and behavior in the cases they had studied.

McGowen (2007) used a 2001 report by O'Neill & Oates as evidence that building age had the highest correlation with student achievement in Central Texas. According to McGowen, not only the structural condition should be considered, but also the capacity of the building to accommodate contemporary educational styles. He reported that Chan had found in 1996 that many buildings had become outdated despite the fact that their structure was sound. He also noted that a study of the renovation of Syracuse city schools had found a significant difference in student achievement after the Syracuse schools were refurbished.

Hines (1996) and Cash (1993) cited a 1978 study by McGuffey & Brown, where it was found that as the age of school building increased, achievement decreased, showing a negative relationship between student achievement and building age. Cash (1993) stated that the age of the school building is a "valid proxy variable for general building condition."

According to Lackney (1999), school buildings deteriorated with age and since a building's age is a factor in building deterioration, the condition of older buildings depended, to a large extent, on the adequacy of maintenance and operations. He cited a correlational study of building condition and student achievement conducted by Edwards in 1991 in the Washington D.C. schools, where it was found that educational building conditions were hampering student performance. It was estimated that improved facilities could lead to a 5.5% to 11% improvement on standardized tests.

Christopher McMichael (2004) noted that, according to the experts in the field, the key to the effective management of structural deterioration is to catch the problem early and to protect the structural aspects before the damage becomes widespread. Consequently, he recommended, at least, random surveys on a regular basis in order to maintain the soundness of a building as its age increases.

Lyons (2001), addressing the demands on school facilities of today, maintained that having an average age of 42 years, these facilities faced demands that "were never intended or even conceived" when they were built. He pinpointed another problem in this area, when he concluded that education today is worked out in a completely new manner, and tools, techniques, and methods used now do not fit those 42-year-old school buildings.

Lighting

The importance of a properly illuminated visual environment for learning tasks deserved careful consideration. "The visual environment affects a learner's ability to perceive visual stimuli and affects his/her mental attitude, and thus, performance," conclude Elizabeth Jago and Ken Tanner (1999). They reported that Dunn (1985) had insisted that the lightning of a school

should be considered an active element of the total educational environment, arguing that good lighting "contributes significantly to the aesthetics and psychological character of the learning space." Elizabeth Jago and Ken Tanner (1999) noted that research suggested that the ability of individuals in school to concentrate on instructions was strongly influenced by factors such as lighting. According to Cash (1993), lighting is one of the factors that may directly affect student achievement and behavior. She states that lighting, in terms of the existence of natural light, has been positively related to student behavior. She cited a study by Hawkins & Lilley (1992) where it was acknowledged that potentially, a quality educational environment was increased with a minimum of one window in each classroom. Further, she saw that enough had been said to necessitate the inclusion of lighting when studying school building condition, at the same time accepting the fact that both the quantity and quality of light in classrooms are not conclusively critical for student achievement and behavior. Nevertheless, she concluded that research supported a positive relationship between student achievement and light quantity and quality.

Hines (1996), in referring to a study by Chan in 1980, emphasized that the relationship between student achievement and lighting showed that fluorescent lighting had very little effect on achievement.

Citing seasonal mood changes, Lackney (1999) stressed the importance of lighting. Further, in his review of relevant research, he stated that improved lighting conditions not only improve student's reading scores, but they also can show dramatic improvement in some children's behavior in the classroom. (McGowen (2007) asserted that a growing list of studies is discovering a relationship between classroom lighting and achievement. For instance, he noted that Nancy Ruck, in her 1989 book, *Building Design and Human Performance* had stated that

differing degrees of natural lighting can be used to stimulate productivity in offices and schools. McGowen (2007) also cites Hale's 2002 report, where an Orange County, California study showed that there was a significant correlation between natural lighting and student success. Another study referred to by McGowen (2007) is the study conducted by Rouk, who in 1997 had found that students who learned in classrooms with large windows scored higher than other students by 14 points on end-of course tests. McGowen (2007) argued that while the issue of lighting alone does not address all academic success variables, quality lighting provided comfort for students, which helped them increase their performance and get higher scores.

Lyons (2001) asserted that when classrooms had adjusted skylight and reduced glare students' learning was at a faster pace than those in more traditional classrooms. This is in accord with what Heschong Mahone Group (1999) had found. Having controlled for all other influences, this study had revealed that students with the most daylight progressed 20% faster on Math 26% on reading. Also, students in classrooms with the largest window areas were seen to progress 15% faster in Math and 23% faster in reading, than students in the least daylight and smallest window areas respectively.

Noise

Noise level is another physical factor that affects schools environment by producing either comfort or irritation, thus affecting the behavior of those who work or learn in school buildings (McGowen, 2007). McGowen (2007) noted that annoyed students often create discipline problems.

According to Hines (1996), a study in 1980 by Cohen, Evans, Krant, & Stokels found that children from noisy schools had higher blood pressure, had less success in cognitive tasks and had greater feelings of helplessness. Lackney (1999) referred to studies conducted in the US, Russia and Germany and concluded that the findings of those studies also indicated increased systolic and diastolic blood pressure in middle school children in schools close to noisy urban streets, and above usual high blood pressure in children living near airports. He reasoned that some of the possible explanations of the negative effects of noise are: interference with the teaching-learning process, thus resulting in a cumulative and progressive deficit; decrease of teaching time by forcing teachers to continuously pause or by making it difficult for the student and teacher to hear one another; influence on the ability of children's to process information, to feel in control as well as their level of arousal. He concluded that the location of schools is very important if those schools will be maintained as effective learning and teaching environments. In addition, Hines (1996) noted that violent acts were associated more highly with increased noise areas. He also stated that higher achievement was associated with schools with less external noise.

Cash (1993) found that insulation against noise was an important factor to student achievement and behavior. She used several studies (Bronzaft & McCarthy, 1975; Cohen, Evans, Krant & Stokels, 1980; and Cohen & Weinstein, 1981) to explain that noise adversely affects achievement, because it affects attention and interferes with task efficiency, thus "increasing the chance of inattentiveness." She also cited Chan's 1980 study, where it was found that there was a positive correlation between carpeted classrooms (for internal insulation of sound) and high achievement levels.

Overall Building Condition

Cash (1993) has found that school achievement scores were higher in schools with better building conditions. She also has found that student discipline incidents were higher in schools with better building conditions. She maintained that students may assume that the teachers and staff of a poorly maintained building will be satisfied with or expect lower standard of behavior, and lesser effort in academic achievement. Further, she argued that if adults at work were affected by their surroundings, then it was reasonable to conclude that "students would similarly be affected." She conducted her study in Virginia, where she referred to a survey in 1992 that had found that almost three-fourths of the schools in that state were in "need of major renovation." Based on research that supported the possibility of a relationship between building conditions and student achievement and behavior, Cash (1993) developed a theoretical model design (Appendix 2), to show the relationship between physical environment and student outcome variables. Through this model design, she explained that the building condition is a product of the maintenance, and affects student achievement and behavior both directly (through certain factors like lighting, color, noise and climate control) and indirectly (through student attitudes).

According to Hines (1996), MacKenzie had found in a 1989 study that students interpreted the low maintenance as a message that damage to the school building will be overlooked, thus increasing incidents of vandalism. Cramer's 1976 focused on three schools: Ballard A was a newly renovated school; Ballard B was a new school; and Miller B was an old dilapidated school. His findings indicate that there were major violent incidents in older, poorly maintained buildings than in newer ones. Hines (1996) posited that in 1995, the General

Accounting Office (GAO) had published a report which had surveyed a stratified random sample of about 10,000 schools. The GAO report had found that especially central city and urban schools were not maintained or equipped to support learning in the 21st century.

Hines (1996) also has found that there is a relationship between building conditions and student achievement and behavior in selected urban high schools in Virginia. He noted that there was an improvement of academic scores of the Test of Academic Proficiency when substandard and above standard buildings were compared. On the behavior side, he maintained that the findings of his study supported the findings of Cash's 1993 study, where it was found that suspensions were more in standard rated buildings, than in substandard ones. He reasons that better maintained school buildings might promote higher diligence in maintaining discipline, thus recording higher numbers of incidents. Hines (1996) then concluded that there seems to be very little doubt that the environment in which a child studies affects his/her achievement and behavior.

In light of the above mentioned research, this study will focus on the following four major research questions:

1. What impact does the age of the school building have on student achievement and behavior?
2. What is the relationship between lighting in classrooms and student achievement and behavior?
3. To what extent does external noise affect student achievement and behavior?
4. To what extent does the school building condition impact student achievement and behavior?

CHAPTER 3

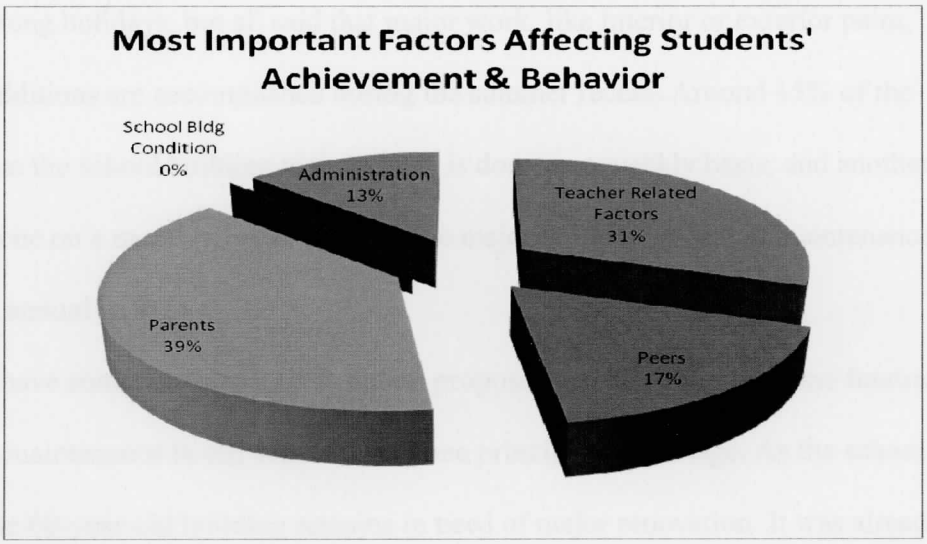
Results

To study the relationship between school building condition and student achievement and behavior, the researcher collected data from twenty Lebanese Armenian schools in two phases, having the principals as the main source of information. During phase one, the principals completed a survey as an evaluation of the school building condition, along with information on school age, size, and the total number of students of the given school. Accompanying this survey, the researcher asked the principals to provide the cumulative average, as well as a score of behavior assessment of each 9th grader. The second phase comprised of interviews. The principals answered five open-ended questions during the interviews, which were carried on by telephone. The following are the qualitative data which are organized under five headings.

Factors Affecting Students

Question 1: What factors can you mention that affect students' achievement and behavior? Of the following five factors, which is the most important according to you, which is the least important: teacher related factors, peers, parents, school building condition, and administration?

The first question of the interview asked the principals to name some of the factors that contribute to the students' achievement and behavior. They mentioned motivation, SES, parents' attitude, peers, teacher variables (teaching skills and methods), the administration, the overloaded curriculum, classroom size, and school atmosphere.



The results for the answers to the second part shown above indicate that most of the principals think that the parents are the most important factor for students' achievement and behavior, whereas none of them thinks that the school building condition has any importance as far as students' achievement and behavior are concerned.

Frequency of Maintenance

Question 2: How often do you do building maintenance work: weekly, monthly, yearly, bi-annually? What kind of works?

The second question asked the principals to mention the frequency and kind of maintenance that is done in the school buildings. Of maintenance needs they mentioned light bulbs, electricity generator, paint, window panes, toilets, student desks, water leaks, faucet changes, and office equipment. Talking about the frequency of maintenance works in the school buildings, all of the principals said some urgent needs are taken care of immediately, like light bulbs, broken faucets, or the electricity generator. They noted that some works are done during

the weekends or long holidays, but all said that major work, like interior or exterior paint, construction or additions are accomplished during the summer recess. Around 15% of the principals said that the school building maintenance is done on a weekly basis, and another 10% said that it was done on a monthly basis, whereas the majority (75%) said that maintenance is carried out on an annual basis.

"I do not have someone to write renovation proposals, so that I can do some fundraising for much needed maintenance in our school," said one principal of a village. As the school budget is tight, the 60-year-old building remains in need of major renovation. It was already rated as a substandard building by the principal.

On the other hand, the principal of one urban school said that maintenance was carried on around the clock. He said that the school has hired a full-time special employee to oversee maintenance. This latter school is 71 years old, but is rated as above standard.

Talking about the need of frequent maintenance, one principal mentioned vandalism and the fact that students are careless about property in general and specifically about school building and facilities.

Impact of school building age, classroom lighting and noise on student achievement and behavior

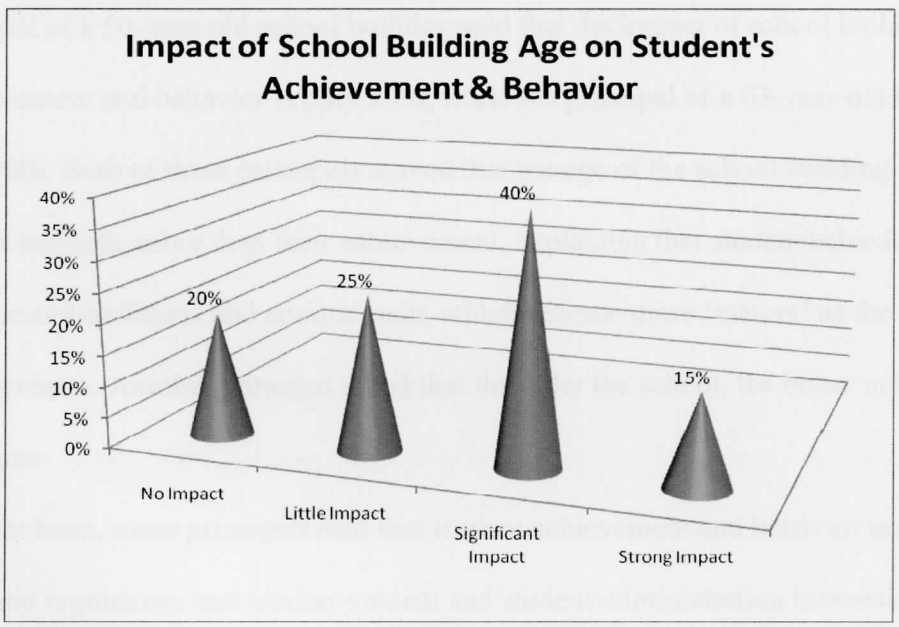
Question 3: To what extent do the following factors impact student academic achievement: school building age, classroom lighting, noise? Why? On behavior? Why?

Question 3 asked the principals to discuss several chosen structural factors of the school building and their impact on their students.

School Building Age

The average age of the Lebanese Armenian schools buildings is 48.6 years, ranging from 22 to 80. It is known that Armenians came to Lebanon in large numbers following the 1915 Armenian Genocide, when about 1.5 million Armenian lives were not only lost in the Ottoman Empire, but also the survivors were driven from the land of their forbears. As soon as Armenians arrived in Lebanon, they build churches with school rooms adjacent to them. About 80 years ago, those school rooms started to change into school buildings; hence, the age-range of 22 to 80 years of the Lebanese Armenian schools.

According to the principals' responses, the impact of school building age on student achievement and behavior ranges from 0% to 75%. Two school buildings built less than 30 years, while older schools, three were built more than 50 years ago, and the remaining 15 school buildings were built in between, close to the average age of 48.6 years.



"If it is well maintained, then the age of a school building is no problem" said the principal of a school, which is around 50 years old. Further, he noted that large spaces, especially green space with lots of benches would help decrease discipline problems, and inspire students to do better academically. "Crowded spaces breed problems on both academic and disciplinary levels," he concluded.

Another principal noted that parents and students prefer new buildings. Explaining this view, two principals said: "Our alumni do not send their children to our schools, saying that they are old." These particular school buildings are 60 and 54 years old respectively. Several principals noted that school age has an indirect impact on student achievement and behavior. They explained that old buildings create problems, like loose parts and leaking roofs, and if these happen in classrooms, they distract both teacher and students. So, valuable teaching and learning time is lost.

The principal of a 50-year-old school building said that the impact of school building age on students' achievement and behavior is only 20%, while the principal of a 63-year-old building set the impact at 70%. Both of these principals agreed that the age of the school building affects the behavior of the students, more than their achievement, explaining that student behavior is mostly related to school traditions and environment, which become more 'mature' as the age of a school building increases. Another principal noted that the older the school, the better in terms of value and experience.

On the other hand, some principals said that student achievement and behavior are affected by rules and regulations and teacher-student and student-administration interactions,

rather than by the age of the school building. They concluded that school building age has no impact on student achievement and behavior.

Lighting

The evaluation survey data indicate that no school has problems with lighting. During the interviews, the principals discussed the effect of light on student achievement and behavior. With one exception, all principals agreed that lighting was essential (imperative, necessary, definitely a must) for students to work comfortably in classrooms.

Their responses can be grouped into direct and indirect effects. The principals noted that with the use of various new technology in teaching (computers, videos, etc.) the classrooms light are sometimes low. For the indirect effects, the principals said that dim lighting of classrooms causes drowsiness, depresses, affects the teachers' and students' mood, thus hampering quality teaching and learning. At worst this may lead to discipline problems.

As for the direct effects, the principals noted that dim lighting may cause some students to make mistakes in copying from the black/green board; and may strain the eyes especially of those who sit in the back rows.

On the other hand, they said that good lighting elevates the mood, helps focus, creates a happy and lively atmosphere, helps see the black/green board and papers on own desks comfortably. They noted that good lighting means higher academic achievement, and less discipline problems. One principal noted that not only the quantity of light, but also its quality and direction were important. "Glaring light and shadows are as harmful as dim lighting," he concluded.

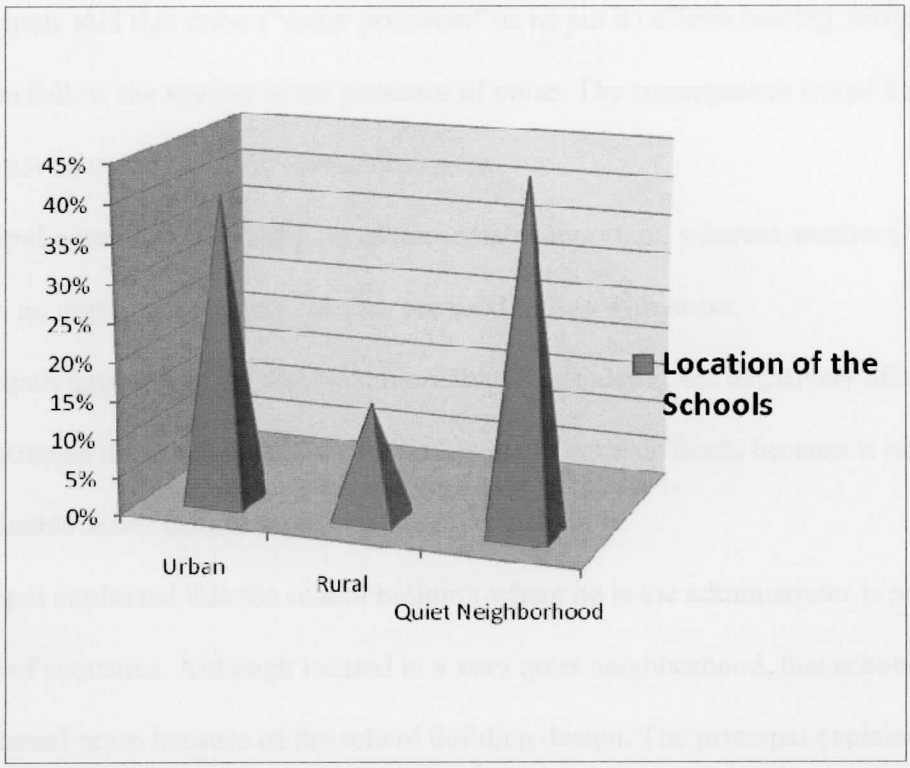
The principal who said that lighting does not make a difference in terms of student achievement and behavior, explained that lighting in the classrooms is similar to those in the homes of the students. It is a known fact that electricity in Lebanon is provided by two sources: the government and private companies, who have placed huge generators in densely populated neighborhoods and provide electricity to their subscribers when the government follows a shortage regime. Also, it is a fact that not all households can pay for both sources. This principal argued that his students came from low income families, which means that at home they might live and sometimes even study without electric light for several hours, and when the same happens at the school, it will not impact them, as they are used to study by candlelight. This argument is relevant for the winter months, when on some days daylight vanishes because adverse weather conditions.

Noise

The Lebanese Armenian schools are scattered geographically. Eight schools are completely urban, being located in densely populated areas with lots of factories, shops and traffic-laden streets all around. Others (9) are in relatively quiet neighborhoods in the suburbs of the capital, Beirut, and 15% (3 schools) are located in the same village.

This is reflected in the evaluation of the noise factor of school buildings, where 12 principals said that they are satisfied with the noise level.

At the time of evaluation, a year ago, one principal had given a high rating, 4, (5 being the highest), but during the interview last month, he said that construction and drilling have increased in the area, and the administration is forced to change exam room locations, so that students will sit for exams in the quieter side of the school building.



Concerning sources of noise, the principals cited the following: highway traffic, sports classes inside schools, and construction, vendors selling food items on carts, as well as the background noise created by busy street and shoppers (one principal said that they had the welcome noise of chirping birds!).

When asked to discuss the impact of noise on student achievement and behavior, all of the principals said that it has a negative impact in many ways. They cited distraction (both for teachers and students); less ability to concentrate on a given task; stress and nervousness. Elaborating on the issue, one principal said, that when noise distracts the teacher, and diverts the attention of the students, teaching is disadvantaged, and it is followed by impaired learning.

Four principals said that noise ("sonar pollution" as he put it) affects hearing, noting that not all students can follow the teacher in the presence of noise. The consequence would be that some students do not hear and learn the correct thing.

One principal noted that insulating the classrooms is important, whereas another principal said that noise has no impact on students, as they are used to live with noise.

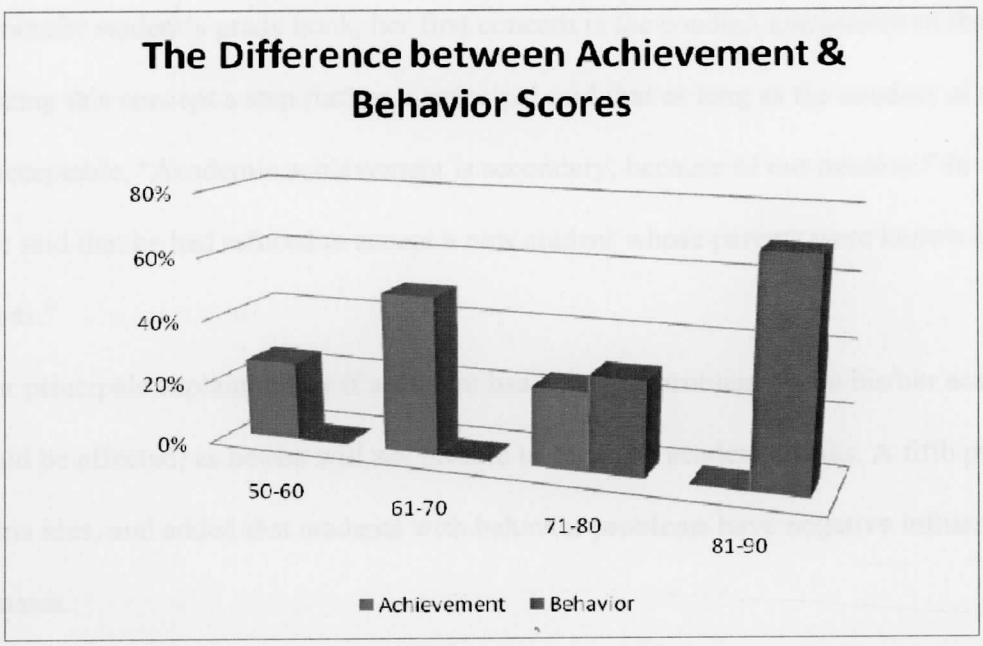
Five principals agreed that the teachers, more than the students, are negatively affected by noise. "Noise stresses the teacher, and his/her task is made more difficult, because it hurts a teacher's most valuable asset: his/her voice" as one principal put it.

One principal explained that the school building where he is the administrator is poorly designed in terms of acoustics. Although located in a very quiet neighborhood, that school has the problem of internal noise because of the school building design. The principal explained that all the noise of the first floor reaches the 4th floor, because of the way the building is constructed.

Choosing between achievement and behavior issues

Question 4: Which is a more urgent problem, academic achievement or behavior issues? Which one would you deal with first? Why?

The data on student achievement and behavior showed a large difference in the percentile scores of achievement and behavior. Fourteen schools had their behavior assessment in the 80s and 90s, while the achievement averages did not reach 80, and half of the schools had averages in the 60s. This fourth question was asked to the principals in an attempt of finding a reason for the aforementioned difference.



Only one principal said that he considered achievement more important than behavior, as behavior issues are the responsibility of the parents, as he said.

Fourteen principals said that behavior issues were more urgent, and if given the option, they would deal with behavior issues first, and then look into the academic issues, as they see those issues as more important that the students' academic grades. When asked about the reason for putting behavior first, almost all said that they believe that the mission of the Lebanese Armenian schools was to prepare the Man (with a capital M) first and foremost. They stated that conduct and character were the basis on which academics was built. Further, they noted that a high-achieving student would have problems in the future, if he/she has not learned to behave and obey rules and regulations.

"We are preparing our students for the future," said the principal of a 60-year-old school, "That is why we insist on getting a conduct recommendation letter for those students who transfer from other schools." Another principal voiced the same idea by saying that when she

looks at a transfer student's grade book, her first concern is the conduct assessment of that student. Taking this concept a step further, a principal said that as long as the conduct of a student is acceptable, "Academic achievement is secondary, because of our mission." In addition, he said that he had refused to accept a new student whose parents were known to "lead immoral lives."

Four principals explained that if a student has behavior problems, then his/her academic grades would be affected, as he/she will not be able to focus on academic tasks. A fifth principal seconded this idea, and added that students with behavior problems have negative influence on their classmates.

"Academic problems can be solved with additional work, summer sessions, or even by repeating a grade, whereas the students are growing up and behavior issues, if not taken care of immediately, can't be remedied with additional work or by repeating a grade," noted one principal, a nun.

On the other hand, five principals said that they think behavior and achievement issues go parallel, and that they would try to work on both problems simultaneously. They explained that behavior and achievement are interdependent. They noted that naturally students will not achieve academically, if they have behavior problems, and the low achieving would create discipline problems. They argued that inattentive students, and students who continually distract their teachers and peers, will not be able to focus on their classroom tasks, or the teachers' explanations.

One principal said that it was important to know the why of a student's misbehaving. Two principals cited boredom as the root of behavior problems, stating that students (including

the gifted) will create problems when bored. "That is why I keep telling my teachers to give extra work to those who have behavior problems," said one principal.

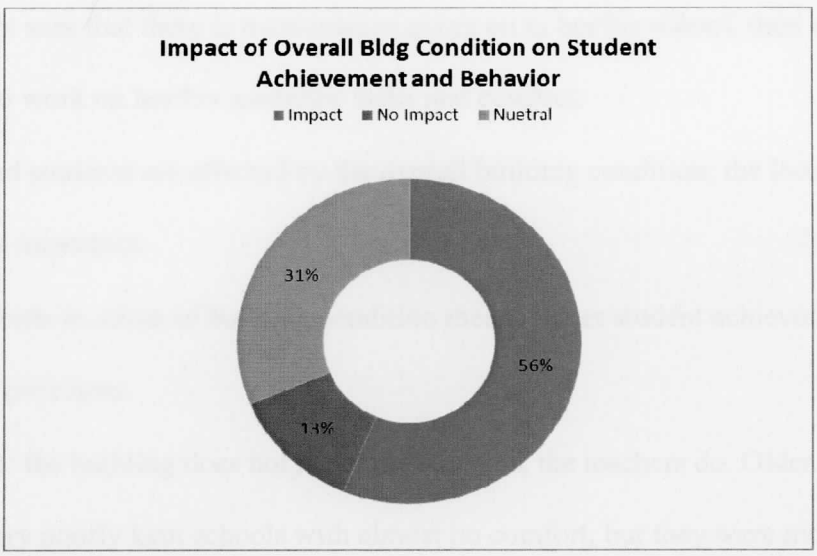
When asked about probable causes for behavior problems, one principal noted that parents "are doing nothing," leaving it all on the schools, "so, we have to give priority to behavior issues," she concluded.

These responses explain the difference between the achievement and behavior averages of the schools. If, for the majority (70%) of the principals, behavior issues have priority over achievement, then as a result, they would focus on those issues, and the behavior assessment of the students would be higher as compared to the achievement scores.

Overall building condition as related to student achievement and behavior

Question 5: To what extent is the overall building condition important for academic achievement and behavior? Why?

The fifth question asked the principals to discuss the extent to which the overall building condition was important for student achievement and behavior. When rating the importance of school building condition for the students' achievement and behavior, 75% of the principals had seen that school building condition was the least important factor. However, responses to this question revealed that 50% of the principals think that the overall condition did affect the students indirectly, whereas 25% thought that it had a significant effect on the students. Only 25% thought that the overall school building condition either has little or no effect at all.



Below are what the principals said in their own words (similar responses were joined).

- The overall condition of the school building has a positive effect on the general atmosphere of the school, because it means that the building is cared for and there is an ongoing maintenance. However, it does not follow that the poorly maintained buildings have a negative effect, because there are other and more important factors, like rules and regulations, teachers, and administration.
- Absolutely. The location and maintenance of our school is much appreciated.
- Most probably, the building condition does affect students. However, it also depends on the age of the students.
- A better overall condition means more student numbers. Well-kept buildings attract students. The entrance of our school used to give a negative impression. We renovated and saw big results.
- The overall building condition affects the students psychologically; he/she feels proud of the school, and this inspires the student to do better.

- If a student sees that there is maintenance going on in her/his school, then she/he gets the message to work on her/his academic tasks and conduct.
- Parents and students are affected by the overall building condition; the look of a school building is important.
- Better schools in terms of building condition means better student achievement and less discipline problems.
- No impact: the building does not make the students, the teachers do. Older generations went to very poorly kept schools with almost no comfort, but they were more motivated to excel than this generation.
- The school building condition greatly affects the mood of the students, the teachers, the parents and staff. Some poorly maintained buildings breed discipline problems. On the other hand, well kept buildings encourage students and make them feel appreciated.
- Poorly kept, dirty buildings have a negative effect on students. On the other hand, presentable and clean buildings inspire better achievement and better behavior. Our school has "Cleanliness Contest" and awards the cleanest classrooms.
- Well-kept buildings provide comfort and comfort enhances learning. Whereas uncomfortable conditions lead to discipline problems.
- We do not have any feedback from our students concerning the overall condition of the school building.
- This is important, but not significant for student achievement and behavior.
- Good buildings affect attitudes and these translate into better achievement and behavior.

CHAPTER 4

Discussion

This present qualitative study tried to find out if there was a relationship between school building condition and student achievement and behavior in the Lebanese Armenian schools. It used a survey and interviews with the principals. In this chapter, the results in terms of the research questions are discussed, some concerns are highlighted, as well as some limitations and recommendations for future studies are mentioned.

Age of the Building

Forty percent of the principals said that school building age has an impact on their students' achievement and behavior. This is interesting, because as the ages of Lebanese Armenian school range between 22 and 80 years, some quite "old" buildings are rated higher than newer ones. Also noteworthy are some of the principals' remarks about the age of the school buildings. They used the word "mature" to express the idea that the older the building, the better for students, as age means longer experience and maturity, according to them. However, being around a 50-year-old building implies that some of the educational requirements are naturally absent according to Earthman (2002). In other words, at the time of constructing the building, there were no considerations regarding modern teaching techniques that require certain designs and facilities. In reporting study findings on this issue, Jago & Tanner (1999) noted that older school buildings that lacked the elements of modernization were related to lower scores on achievement tests. Based on their research, they expressed the idea that it was essential for administrators to be aware of the importance attached to school building facilities that are related

to the building age. On the other hand, Schneider (2002) argued that building quality has more to do with the budget of the school rather than its age. This is consistent with what some of the Armenian school principals said about the importance of maintenance. They said that if well kept, the age of the building does not make a difference. To conclude, the researcher thinks that the age of a school building does not necessarily mean that the building is substandard in terms of providing an appropriate learning environment.

Issue of Lighting

Mangipudy (2010) conducted an empirical study, *The Impact of Eliminating Extraneous Sound & Light on Students' Achievement.* His findings indicated that lighting is important for a proper learning environment. Mangipudy (2010) asserted that such an environment can be achieved with different kinds of electric lighting that provide the best color, low glare and low flickering. He concluded that these environments will help students avoid undesired distraction, drowsiness, and "photosensitive behavior." Interestingly, only one principal in this current study had mentioned glare, or flicker concerns. In general, the results of the current study did not reveal problems with lighting, as all school principals reported being satisfied with the lighting of the classrooms. The reason for this may be the fact that none of the schools buildings in the study have problems with their windows or lighting. Several school principals stated that they are planning to change the windows, but they were not saying that they do not have windows. Almost all agreed that proper lighting in classrooms is a must for comfortable teaching and learning, as well as for saving the students and teachers from working in dim light which is depressing, as they said. The only issue that surfaced was about the electricity shortage

program of the government, which has forced schools to look for alternative sources of electricity. In wintertime, when daylight is not bright on some days, and the power is down for whatever reason, classrooms are quite darkened. So, most schools have made arrangements to solve this problem. Some have been using the power that is provided locally, by private companies. Others have purchased their own generators, adding to their budgets the cost of more maintenance work in the schools (fuel, mechanical problems and space).

Issue of Noise

External noise has to do with the location and neighborhood of schools. In discussing the impact of noise on students, Cash (1993) suggested that schools located in noisy areas do not need to relocate, but that they can lessen the negative impact of noise by implementing noise reduction devices, so that the physical environment will be more desirable.

The results of this study indicated that noise and academic achievement and behavior are not related. It is true that the principals think that noise distracts and strains both the teachers and students, as many principal said. Thus, one would assume that the schools that are located in quiet neighborhoods would have higher achievement and behavior scores. However, that was not the case when the location of the schools was compared with the achievement scores. The three schools located in a village do not have high scores in achievement. This means that other reasons for the low achievement scores should be looked for. On the behavior side of the coin, nothing much could be said, as all of the scores there were high. This could have been due to other factors than noise, like the internal rules and regulations, as some principals pointed out. Or, it might have been that the schools' assessment systems are lax. Another reason may have

been the religious affiliations most schools have. These affiliations might be applying stricter rules and close follow-up on discipline.

Overall Building Condition

Research (Cash, 1993; Earthman 2002, Lemasters, 1997; Hines, 1996) indicated there was a strong positive relation between school building condition (independent variable) and student achievement and behavior (dependent variables). And McGowen (2007) noted that recently a body of academic inquiry is growing and focusing on the physical environment in the educational process. He stated that the brain, being a physiological system, is stimulated by its physical surroundings both in negative and positive ways.

The results of this study do not clearly answer the fourth question. It is true that 75% of the principals rated the school building condition as the least important factor for their students. This might have a pragmatic reason. It may be due to the fact that maintenance costs money. The Lebanese Armenian schools have financial concerns. Since the schools will not be able to renovate and have the optimal facilities, why bother with the importance of the physical environment? However, during the interviews, around 80% of them thought that the overall building condition did have an impact in various degrees. Some said that the impact was indirect, through providing comfort and inspiring pride to students. Others noted that the students' achievement and behavior are much more affected by their parents and home values, by their teachers and by the rules and regulations of the school. So, the message is mixed. On one hand, the principals say that building condition is not an important factor for the students, and on the other hand, they think that the overall school building condition does impact students. This may

be due to the fact that there are many other variables that are essential for student achievement and behavior, and as one principal put it, buildings do not make the student. Also, it is clear from the principals' preference of behavior issues over achievement issues, that for them the human factor is more important than brick and mortar.

Another fact to note is that, when data on school building condition is compared to the scores of achievement and behavior, they do not show a clear pattern. Schools that are rated as standard or above standard do not have corresponding high scores for achievement. The scores for behavior are a different story, as discussed previously in the research question related to noise (see the table: Appendix G).

Some Concerns

Obviously, student achievement and behavior are the product of many factors. Diaz (--) groups the factors that affect students' performance into three clusters: personal (motivation and self-concept); social/family (parents SES); and academic (teachers, school administration). The relative low achievement scores of the results are a concern for the researcher. Remembering that the study has focused on the 9th grade students renders this issue into a more serious one, as these students sit for official exams. While encouraging the focus on behavior, the researcher thinks that more efforts should be invested in the area of academic achievement.

Also, the researcher noted that the behavior scores were very high, thus contradicting the widespread complaints that discipline problems are on the rise. "Why aren't the complaints reflected in the conduct or behavior assessments?" is a question that might need some attention from the school administrations. One reason may be in the fact that different school groups

assess conduct or behavior differently. Another consideration about this concern is the fact mentioned by Sevag Hagopian in his "Armenian Education in the Lebanese Armenian Community" study. Hagopian (2006) stated that Lebanese Armenian schools are inclined to expel those students who have behavior problems, instead of searching for solutions to those problems. Could it be that the behavior scores are staying high because students with behavior problems are not accepted in these schools in the first place?

Another concern is in the area of finances. Keeping the school buildings in good shape means funds. Most principals have to do fundraising in order to provide resources for renovation and maintenance. One school group receives annual allocations for face-lifting. If the allocations do not arrive on time, the maintenance is deferred to the next summer. Other schools wait for extra funds in the form of donations to be able to do much needed maintenance works. As mentioned earlier, one school principal said that she could not have someone who can write renovation proposals for her, so she could look for funds. This area needs attention, too, may be on higher levels than the principals.

Limitations

As mentioned earlier, student achievement and behavior depend on many variables. Of these, parents and teachers were not taken into consideration in this study. Their perspectives might have affected the course of the study. Parents and teachers are closely related to student achievement and behavior; so, it is important to have their input in order to obtain a more comprehensive picture of this issue.

During the course of the study it became clear that finances play a critical role as related to the topic. So, not having financial information about the schools and their budgets, as well as the budgetary percentages designated for maintenance, diluted this research.

In examining the behavior scores, it became necessary to have the rules and regulations of the school, as well as obtaining the way the assessment was made. Getting these two items would have added much to this study.

Recommendations for future studies

Based on the limitations cited above, the researcher recommends the following: (1) other studies are definitely needed that would introduce parents' and teachers' perceptions regarding this issue into the picture. A good idea might also be to consider the students' perceptions of their school buildings. (2) Considering school finances and obtaining budgetary information is also necessary; that information might prove to be an important the piece of puzzle that would complement research in the topic. (3) A thorough investigation of the rules and regulations of schools under study should be included, as well as the mechanism by which behavior or conduct assessment is achieved.

Apart from the limitation-generated recommendations, future studies should enlarge the sample. There are a variety of possibilities in the educational market of Lebanon. Interesting comparisons could be made between: private & public schools, denomination-affiliated schools, socioeconomically different schools, rural and urban schools, etc.

Also, previous related research was conducted with large samples and across many states. At present there are only 26 Armenian schools in Lebanon, among which only 20

apply the 9th grade program. The remaining 6 schools are elementary level schools. Having a very small sample obviously prevented the researcher from conducting a quantitative study. This is unfortunate, because a quantitative study would have given more reliable results, using correlation analysis and other tests. Also, a large sample would have made it possible to generalize. So, the researcher recommends that further studies have larger samples, which may help to compare the Lebanese Armenian schools with other schools in the countries of the Armenian Diaspora with respect to this issue.

Conclusion

The findings of this study indicated that the topic of the relationship between school building condition and student achievement and behavior needs further maturing in the minds of the principals, because no clear patterns emerged from the collected data. For instance, the reaction of many principals indicated that they have not seriously thought about such a relationship. They responded and discussed the issues only after some prodding. Obviously, this is a new subject to be studied. Nevertheless, if we consider education an important tool towards a better future, studies in this topic should be encouraged, so that planning and implementing better schools is done in a corresponding manner.

References

Bullock, C. (2007). The relationship between school building conditions and student achievement at the middle school level in the Commonwealth of Virginia. Retrieved on 1/6/2011 from: http://scholar.lib.vt.edu/theses/available/etd-08212007-163313/unrestricted/calvinbullock.pdf

Cash, Carol S. (1993). A study of the relationship between school building condition and student achievement and behavior. Unpublished doctoral dissertation. Blacksburg, VA: Virginia Polytechnic Institute and State University.

Cramer, J.R. (1976). Some effects of school building renovation on pupil attitudes and behavior in selected junior high schools. Unpublished doctoral dissertation, University of Georgia, Athens.

Diaz, A. L. (?). Personal, family, and academic factors affecting low achievement in secondary school. Electronic Journal of Research in Educational Psychology and Psychopedagogy, 1 (1), 43-66. ISSN: 1696-2095. Retrieved on 26/5/2011 from: http://www.investigacion-psicopedagogica.org/revista/articulos/1/english/Art_1_4.pdf

Earthman, G.I., C. Cash and D. Van Berkum. (1995). A statewide study of student achievement and behavior and school building conditions. Paper presented at the annual meeting of the Council of Education Facility Planners. Dallas, Texas, September 1995. (ED387878)

Earthman, G.I. (2002). School facility conditions and student academic achievement. Virginia Polytechnic Institute and State University, Williams Watch Series. Retrieved on 20/11/2010 from: http://www.nctaf.org/documents/ucla_2002_article.pdf

Frazier, L. M. (1993). Deteriorating school facilities and student learning. Washington D.C.: Office of Educational Research and Improvement.

Յակոբեան, U. (2006). Հայեցի դաստիարակութիւնը լիբանանահայ համայնքէն ներս-խնդիրներ եւ հեռանկարներ: Cadmus Project, Beirut, Lebanon.

Heschong Mahone Group. (1999). Daylighting in schools: An investigation into the relationship between daylighting and human performance. San Francisco, Calif.: Pacific Gas and Electric Company. Retrieved on 9/6/2011 form

Hines, E.W. (1996). Building condition and student achievement and behavior. D. Ed. dissertation, Virginia Polytechnic Institute and State University.

Hoy, W.K., and C.G. Miskel. (2005). *Educational Administration*, 7th edition. New York: McGraw Hill.

Jago, E., and K. Tanner. (1999). Influence of the school facility on student achievement: Athens, Ga.: Dept. of Educational Leadership; University of Georgia. Retrieved 9/11 2010 from: http://www.coe.uga.edu/sdpl/researchabstracts/age.html

Kennedy, M., and J. Agron. (2004). No building left behind. Retrieved on 20/11/2010 from: http://asumag.com/mag/university_no_buildings_left/

Lackney, J. A. (1999). The relationship between environmental quality of school facilities and student performance, within Energy smart schools: opportunity to save money, save energy and improve student performance, a congressional briefing to the US House of Representatives on science sponsored by the Environmental Energy Study Institute (EESI). Retrieved on 26/5/2011 from: http://www.edi.msstate.edu/work/pdf/energy_smart_schools.pdf

Lemasters, L.K. (1997). A synthesis of studies pertaining to facilities, student achievement, and student behavior. Blacksburg, Va.: Virginia Polytechnic and State University. (ED447687)

Lyons, J.B. (2001). Do school facilities really impact a child's education? An introduction to the issues. Retrieved on 31/2/2010 from: http://schoolfacilities.com/pdf/School%20Facilities%20Impact%2012-27-01.pdf

Mangipudy, . (2010). The importance of eliminating extraneous sound and light on students' achievement: an empirical study. Florida International University. Retrieved on 1/6/2011 from: http://digitalcommons.fiu.edu/cgi/viewcontent.cgi?article=1333&context=etd&sei-redir=1#search="mangipudy+sound+and+light"

McGowen, R. S. (2007). The impact of school facilities on student achievement, attendance, behavior, completion rate and teacher turnover rate in selected Texas high schools. Doctoral dissertation, Texas A & M University.

McMichael, Ch. (2004). Perspective of school planners and architects and professional educators regarding elementary school facility design characteristics. Retrieved on 26/5/2011 from: http://www.coe.uga.edu/sdpl/research/cmcmichael.pdf

Schneider, M. (2002). Do school facilities affect academic outcomes? National Clearinghouse for Educational Facilities, Washington, D.C. Retrieved on 2/12/2010 from: http://www.ncef.org/pubs/outcomes.pdf

Schneider, M. (2002). Public school facilities and teaching: Washington, DC and Chicago. http://www.eric.ed.gov/PDFS/ED474242.pdf

Uline, C. and M. Tschannen-Moran. (2008). Journal of Educational Administration, Vo. 46 Iss:

1, pp 55-73. Retrieved on 30/3/2010, from http://edweb.sdsu.edu/schoolhouse/documents/wallsspeak.pdf

Webster's New World Dictionary of the American Language. (1958). Cleveland and New York: The World Publishing Company.

Webster's Encyclopedic Unabridged International Dictionary of the English Language. (1994). New Jersey: Gramercy Books.

Yarak, F. (2010). Barsumian Library, Haigazian University, DVD # 90.

US Congress. No child left behind act of 2001. Public Law 107-110. January 8, 2002.

US Department of Education. (2000). Impact of inadequate school facilities on student learning (archived information). Retrieved on 2/6/2011 from:

Appendix A

November 11, 2010

To: Principals of Armenian Schools in Lebanon
Beirut

Dear Principal,

I am a graduate student at Haigazian University, majoring in Educational Administration & Supervision, and presently am working on my thesis.

I am doing a research on the relation of the condition of school facilities on student behavior and academic achievement at the **9th grade** level for students of all Lebanese Armenian schools.

For my research I need the **conduct grade or assessment** and **mid year academic average** of 2009-2010(one grade) of the 9th grade students of your school, **without names**, just mentioning their gender. For the school facilities condition, I kindly ask the principal to fill in the attached chart. Please note that no school name will be mentioned in the paper.

I would appreciate your cooperation in this, noting that the results of the research might shed light on the issues tackled by our schools in Lebanon. Please send back the completed charts by fax to Haigazian University, President's office, Tel: 01- 350 926.

Thank you in advance.

Vartoug Balekjian
Haigazian University
vartoug.balekjian@haigazian.edu.lb

P.S. The second attached chart might help you in providing the needed student data.

January 20, 2011

Principal

Dear ----------,

Thank you for responding to my request, concerning a thesis on the relationship of school facilities and student behavior and achievement in the Lebanese Armenian schools.

It is my hope that the information you provided will be of great help in suggesting a possible cause of student behavior and low achievement problems, thus showing the way to possible solutions as well.

With best wishes of success,

Vartoug Balekjian
Haigazian University

Appendix B

9 Ապրիլ, 2010-04-06

Գերաշնորհ Տէր Գեղամ Եպիսկոպոս Խաչերեան
Առաջնորդ Լիբանանի Հայոց Թեմի
Պէյրութ

Ողջոյն Հայկազեան Համալսարանէն:

Ձեզի կը յղեմ Ազգային վարժարաններու տնօրէններուն երթալիք նամակները, առնչուած լիբանանահայ վարժարաններուն մասին կատարելիք մէկ սերտողութեանս՝ մագիստրոսի աստիճանի թէզիս համար: Ըստ մեր համաձայնութեան՝ Ազգային վարժարաններու կրթական խորհուրդին միջոցով պիտի հասնին տնօրէններուն:

Շնորհակալ եմ որ արդէն Ձեր հաւանութիւնը տուիք մեր հեռաձայնային խօսակցութեան ատեն: Եւ կը յուսամ որ կատարուելիք աշխատանքը կը նպաստէ լիբանանահայ վարժարաններու վերելքին:

Յարգանօք՝

Վարդուկ Պալըգճեան
Հայկազեան Համալսարան

Appendix C

Principals' evaluation of school building condition of Armenian schools in Lebanon

Kindly provide the information asked (1-4). Then evaluate each item from 5-24 by giving it a number from 0 to 5, the least being 0 and the greatest being 5, where applicable.

1. the year the building was built ----------
2. when the school was started ----------
3. total number of students ----------
4. school site in meter squares ----------
5. windows 0 1 2 3 4 5
6. floors 0 1 2 3 4 5
7. heating 0 1 2 3 4 5
8. air conditioning 0 1 2 3 4 5
9. interior wall paint 0 1 2 3 4 5
10. exterior wall paint 0 1 2 3 4 5
11. roof leaks 0 1 2 3 4 5
12. floors swept regularly 0 1 2 3 4 5
13. floors mopped regularly 0 1 2 3 4 5
14. drawings on walls (graffiti) 0 1 2 3 4 5
15. ceiling covering 0 1 2 3 4 5
16. school lab equipment 0 1 2 3 4 5
17. audio visual equipment 0 1 2 3 4 5
18. lighting (lamps) 0 1 2 3 4 5
19. daylight 0 1 2 3 4 5
20. classroom furniture 0 1 2 3 4 5
21. playground(s) 0 1 2 3 4 5
22. wall color 0 1 2 3 4 5
23. exterior noise (neighborhood) 0 1 2 3 4 5
24. corridor space 0 1 2 3 4 5

Appendix D

Interview Questions

1. What factors can you mention that affect students' achievement and behavior? Of the following five factors, which is the most important according to you, which is the least important: teacher related factors, peers, parents, school building condition, and administration?

2. How often do you do building maintenance work: weekly, monthly, annually, bi-annually? What kind of works?

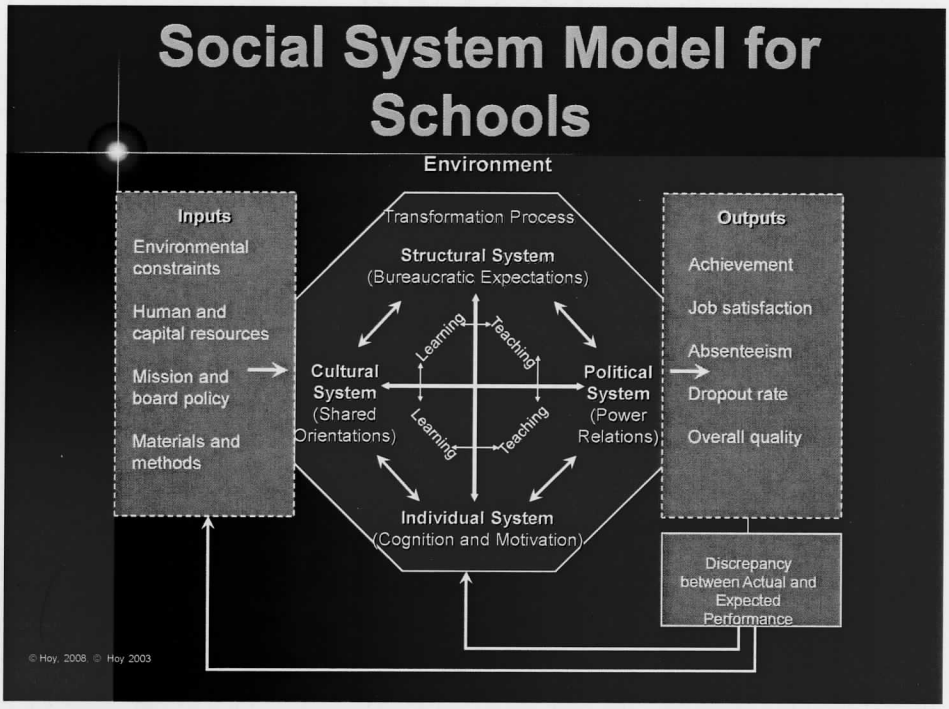
3. To what extent do the following factors impact student academic achievement: school building age, classroom lighting, noise? Why? On behavior? Why?

4. Which is a more urgent problem; academic achievement or behavior issues? Which one would you deal with first? Why?

5. To what extent is the overall building condition important for academic achievement and behavior? Why?

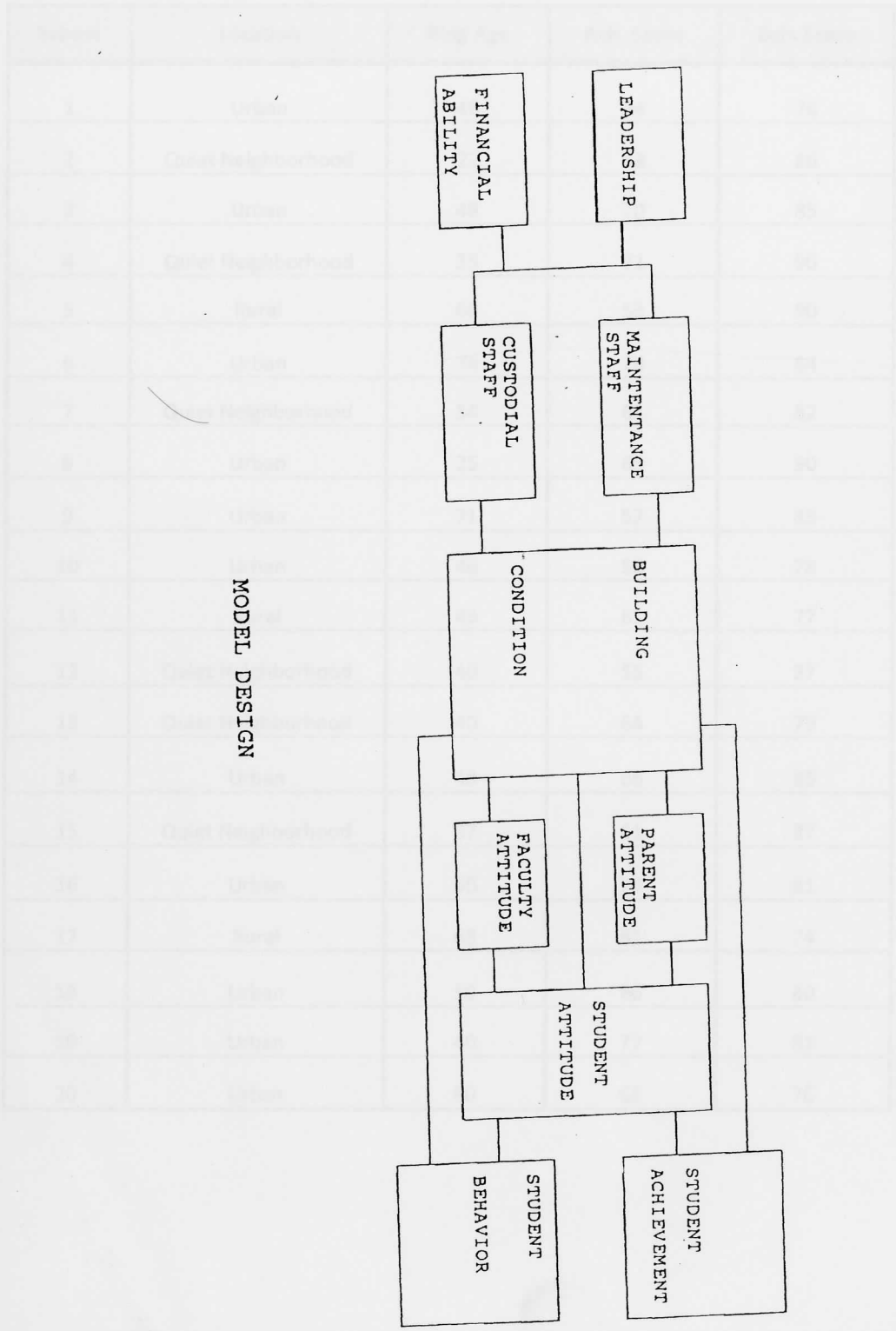
Appendix E

Social System Model for Schools



Appendix F

Cash's Theoretical Model



Appendix G

Table: Summary of data from the Lebanese Armenian Schools

School	Location	Bldg Age	Ach. Score	Beh. Score
1	Urban	46	64	76
2	Quiet Neighborhood	22	58	86
3	Urban	48	70	85
4	Quiet Neighborhood	35	71	90
5	Rural	60	53	90
6	Urban	74	78	84
7	Quiet Neighborhood	54	61	82
8	Urban	25	65	90
9	Urban	71	57	83
10	Urban	46	56	78
11	Rural	43	61	77
12	Quiet Neighborhood	40	58	87
13	Quiet Neighborhood	40	64	79
14	Urban	48	66	85
15	Quiet Neighborhood	37	61	87
16	Urban	50	70	81
17	Rural	63	61	74
18	Urban	50	66	80
19	Urban	40	77	81
20	Urban	80	68	76