# The Writing on the Wall: Environmental Meaning, Academic Success and Social Reproduction in Urban Public Schools in New Jersey

by

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## Abstract

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ACADEMIC SUCCESS AND SOCIAL REPRODUCTION IN URBAN PUBLIC SCHOOLS IN NEW JERSEY

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This dissertation examines the role of the physical environment of public urban school buildings and the ways in which in contributes to the production of academic outcomes and social reproduction. There is empirical evidence of the relationship between school building quality and measurements of academic achievement. The main goal of this study is to learn *how* the physical environment of the school affects academic achievement. In addition, this dissertation explores the role of school building condition in the reproduction of social inequalities. A theoretical framework crafted from ecological psychology and Pierre Bourdieu's critique of everyday life was used. Two high schools housed in new buildings and two housed in old buildings in a low income community in New Jersey were studied. The final analysis uncovered five types of school affordances: Functional, social, emotional, communicative, and identity affordances. In addition, the role of *habitus* in the transmission of social structure at schools was described.

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This dissertation is dedicated to the memory of my brother Alvaro Durán Ribas.

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Chapter One: **Introduction & Literature Review**

## 1. Introduction

Empirical research has shown a connection between the quality of the built environment and academic outcomes (Berner, 1993; Cash, 1993; Duran-Narucki, 2008; Hines, 1997; Kumar, O'Malley & Johnston, 2008; Lemasters, 1997; Lewis, 2001; Maxwell, 1999, 2007; O'Neil & Oates, 1998). In 2008, while doing graduate school research, I found that one of the reasons why the condition of school buildings affects academic outcomes is due to its effects on student attendance (Duran-Narucki, 2008). My study of New York City elementary schools showed that in schools in disrepair, children attended less days on average and had lower scores in standardized Mathematics and English tests. These results make sense intuitively and it may be enough to consider fixing school buildings a worthwhile effort. However, the question of *how* attending a school in disrepair affects academic outcomes is still unanswered.

There has been a fissure in the study of the built environment of the school that stands between the condition of the school buildings and its effects on academic outcomes. How do the physical environment of the school and school users interact and produce academic outcomes? How is the quality of the school building related to the quality of academic outcomes? What transpires between students, teachers, and other school staff when they interact with the physical environment of the school is not yet clear. There are mediating processes that have not been sufficiently explored in the case of schools. The lack of studies on processes mediating between people and environment has been recognized and requires the attention of researchers in environmental psychology (Winkel, Saegert, & Evans, 2009).

The following dissertation strives to describe the ways in which people and the built environment of the school interact to affect academic outcomes. In addition, this dissertation attempts to expand the inquiry in two ways. First, the study of school buildings will be undertaken using an ecological psychology framework. This perspective will provide a

theoretical reference that views person-environment processes as transactional and mutually constructed and not as separated entities (Altman & Rogoff, 1987). Second, this dissertation develops the ecological framework to include a socio-historical perspective. Using Pierre Bourdieu's theorization of everyday life, the study of school buildings is expanded to look at social structure and the way in which reproduces itself in schools (Bourdieu & Passeron, 1977).

This dissertation focuses on urban public schools with different levels of school building quality. Four schools located within a low income urban area that are mostly attended by minority students were selected. Two of these schools were located in new buildings and two in old buildings. Of those schools located in new buildings, one was a magnet school (it has restricted admission based on performance) and the other was a comprehensive school (admits all students living within an established zone). Of the schools housed in old buildings, one was also a magnet school and the other a comprehensive school.

Ultimately, the goal of this dissertation is to draw attention to school building condition as a problem of social justice and to provide researchers, policy makers, architects, and school practitioners with points of entry for their efforts in making public schools a place where real choices are available to students. This study fits in a larger research program on the subjects of school buildings, public education, and, more generally, the meaning of the built environment and environmental knowledge. A dissertation study presents a unique opportunity to undertake qualitative research and understand an issue in depth. More specific projects will grow from this initial endeavor. The findings of this dissertation will inform the creation of instruments such as questionnaires or observational guides, as well as recommendations for school administrators and teachers, and interventions at different levels.

In this first chapter, I have introduced the dissertation problem and will now explain the theoretical framework supporting this inquiry. The second chapter describes the study in depth. The third chapter describes the schools participating in the study. The fourth chapter describes the study findings in terms of what the schools afford their users. The fifth chapter describes

social reproduction in public urban schools. The sixth chapter lays out study conclusions, describes its limitations, and points to future research directions.

## 2. Studying school buildings from an ecological perspective

*"This (school) renovation just gives us the opportunity to show everybody who we really are, to show everybody around the country who we really are as a community, as individuals, as students"*

*Lauren, 8th grade Student Hollenbeck Junior High, Los Angeles, CA.*

*" It makes the students feel like they are cared for"*

*Enrique Legaspi, History and Leadership Teacher*

*Hollenbeck Junior High, Los Angeles, CA.*

The quotes above were extracted from a television "reality show" broadcasted in November of 2010 by the NBC Network. The show called "School Pride" is the latest in a series of renovation shows, currently abundant in the media, which intend to provide "deserving people" with an adequate environment in which they can thrive. The premise of "School Pride", according to its web site, is that the series:

"Tells the stories of communities coming together to renovate their aging and broken public schools. While transforming the school, the community also restores its sense of value and school pride. The cameras follow students, teachers and parents as they roll up their sleeves and rebuild their own schools, concluding with the unveiling of a brand new, completely transformed school." (http://www.nbc.com/school-pride/about/).

Although it seems to be "common sense" that the quality of school buildings matters for education, we still don't know how it matters. How does it matter attending a school in

disrepair? Are there environmental meanings associated to the condition of school buildings? How are students' perceptions of their selves, their possibilities, or their communities linked to the condition of the school building they attend? How does a clean and new school affect students and their academic outcomes differently than an old school in disrepair or outdated? The answers to these questions are not simple or monolithic. They require a careful consideration of the multiple variables involved in the everyday life of the school.

According to Heft (2001) the ecological approach in psychology embraces dynamic, ongoing, environment-person relations. It understands psychological processes as situated, relational, and nested within a hierarchy of relations. Public schools house a manifold of relationships between people and with the physical environment. As social institutions, schools also represent a convergence of social relations that translate into specific practices and routines. What is at work in this intricate dynamic structure when students who attend schools in disrepair produce negative outcomes like lower attendance or lower test scores?

Moving in a world that is physical, our senses inform us of changes in light, temperature, surfaces, and other information that is continually processed, analyzed, recreated, and acted upon. The physical world of the school is a very concrete part of the complex set of systems in which we live. Urie Bronfenbrenner (1979) lead the study of people as embedded in what he represented as concentric circles of social organization and influence. Both as individuals and collectively, we stand within many socially organized systems of influence. The closest level of influence is that in which our body is located. According to ecological theory, even this intimate level is inseparable from higher levels of social organization, such as governments or economic systems. In practice, we are constantly interacting with close and tangible objects or spaces which are also being affected and transformed by higher levels of organization. This is the first clue to what may be happening in schools in disrepair. The material condition of school buildings reflects the influence of higher order social organizations (Bronfenbrenner's macrosystem). Run down school buildings do not "symbolize" the socioeconomic status of a

community, they are themselves indicators of the socioeconomic status of that community. The school building is a solid measure of the kinds and amounts of investments that a local government is able to make in the education of its children. When students, teachers, and staff are at school, they are being directly affected by the material conditions resulting from all these levels of social organization. School buildings and their characteristics can be affected by variables such as the administration of a specific building, parental involvement, district wide policies, and even the weather. How are these variables that are directly responsible for the condition of the building related to the production of positive or negative academic outcomes?

The view of psychological phenomena as holistic events was originally proposed in the transactional paradigm laid out by Altman & Rogoff (1987). The implication of viewing psychological phenomena as dynamic and comprised of socio-cultural factors that are inextricably intertwined is that the actions of one person can only be understood as they relate to the actions of other people and to spatial, temporal, and situational circumstances. To fully understand the environment of public schools, it is then necessary to examine its different elements and the ways in which they interact with each other. It means looking at the school building, the social relations that it houses, the people who use it, the way time is structured, the cultures of the building and of the community, and socioeconomic forces. This is another clue about how school building quality matters; its inseparability from psychological processes on the one hand and social forces on the other can potentially explain how is it that building users are affected by school building condition.

Historically, the environment of the school has been studied using individual variables such as noise, light, air quality, crowding, etc. For a considerable time, however, there have been calls to researchers to "not only acknowledge the complexity of environment-behavior relationships but also design and interpret studies to reflect this complexity." (Weinstein, 1979, p.600). There is a need to examine the whole experience of people as they become educated in school buildings.

The emphasis on understanding the whole experience of people as they interact with the environment poses the question: What is experience made of? What are the constituting parts of human experience? Heft (2001) defines ecological psychology as a science that aims to understand the immediate experience of humans. In doing so, Heft singles out theoretical constructs by James, Gibson, and Barker, among other theorists; that clarify the ecological understanding of psychological phenomena.

School buildings "afford" certain activities. A school gymnasium, for instance, affords athletic activities. What is afforded by a building depends on its available environmental elements. Gibson proposed the concept of affordances to study those properties of the environment that have perceived functional significance for an individual (Gibson, 1979, p.174). He stated that the characteristics of a milieu "afford" certain types of collective behaviors while hindering others. Affordances have two distinct and apparently contradictory characteristics: First, they exist whether or not they are presently perceived because they are inherent to the structure of the environment, (e.g. an opening can afford entering or exiting whether an individual perceives it or not). Second, they are potentially there to be selected by an individual as an intentional agent (e.g. an individual can choose to use the opening or not). Affordances are thus relational in nature (Heft, 2001). Gibson's concept of affordances highlights a fundamental aspect of human perception and cognition which is that the information needed for perception and action is in the environment and can be picked up directly by the perceiver. In his model, Gibson eliminates the abstraction of thought as a precursor to perception. It is in this sense that schools directly inform their users. Gibson's concept of affordances highlights the possibility of information available in the environment that can also inform meaning making experiences. What objects or surfaces can afford, is determined in part by the physical characteristics they posses, and in part by the surrounding culture and processes of socialization.

Even though Gibson's notion of affordances was developed primarily for the study of visual perception, Gibson hinted that affordances are not only for visual perception but also for

biological and cultural processes (Zhang & Patel, 2006). Part of what environments afford comes from other individuals. The social aspect of affordances has been studied by authors other than Gibson. Gaver (1996) studied the social aspects of affordances in the design of technologies that support collaboration. Loveland (1991) studied the failure to perceive social affordances in disorders like autism.

The social aspect of affordances is layered in that "every object, event, and person, and so on, simultaneously presents different kinds and levels of meaning to the human perceiver" (Loveland, 1991, p.100). Loveland proposes three categories of affordances. First, affordances allow physical interaction with the environment as in actions such as walking, eating, and grasping. Just as babies learn to use surfaces to grasp, pull themselves, and eventually walk, the design and condition of public schools indicates to adolescents what kinds of physical interactions with the environment are possible. A large lobby at the entrance of the school allows students to gather, tables in the cafeteria allow students to sit in groups. Second, affordances reflect specific culturally preferred, but not necessary, interactions with objects, animals, persons, and events. Round tables that seat multiple students at a cafeteria encourage interaction during lunchtime but single cubicles at the library encourage individual study. Third, affordances reflect the meaning of human activity for other humans. The language and facial expressions or body gestures that are used in the everyday life of the school provide information about the actor and about other aspects of the environment. Role modeling is a well established component of learning and students can learn appropriate behavior from teachers, other students, and staff members.

This encompassing reconceptualization of affordances leads the question of what is being afforded at schools with different environmental qualities. The spaces available and the way they are used influence what can and cannot be done at a school. Moreover, an aggregate of affordances constitutes a higher level of interaction between people and environment. People rarely participate in individual stimulus-response interactions unless, perhaps, in a laboratory

setting. Normally people interact with whole spaces full of affordances. The consideration of "whole space" as the medium in which a person is located more accurately reflects human experience. Barker and Wright (1949) studied what they called the "habitat of behavior". They discovered patterns of actions or behaviors (such as those that occur at a baseball game) and they theorized that these patterns of action pointed to higher order environmental structures. Different individual's behavior tends to be congruent with respect to this higher order structure. They developed the concept of behavior setting which defines environmental structures that are extra-individual, have regularity, and constrain behavior in predictable ways (Heft, 2001, p.253). A school's football field is usually used to play football and a school cafeteria is usually used for having lunch. According to Barker (1968) "behavior settings are a function of collective actions and have a specifiable geographical location and temporal boundaries. They are self-generated and maintained by the dynamics of its occupants and are discriminable. They also have means to preserve their stability and they exist independently of any single person's experience of them. Their defining characteristic is the interdependence of the actions of the individuals within the setting" (Barker, 1968, pp. 16-17). What are the behavior settings of urban public schools? Do these settings differ in buildings with different physical quality?

The concept of behavior settings moves the study of schools forward because it helps to distinguish and study ecological units. Schools are complex environments that comprise many overarching behavioral patterns that can constrain or enable specific individuals' action. The theory of behavior settings relies on the notion of synomorphy which means that there is congruence between the features of the setting and the activities that take place within it. What a behavior setting is and what kinds of activities are appropriate in it resides in the perceived synomorphic relations between milieu features and action (Heft, 2001). School buildings need to be evaluated in terms of these synomorphic relationships to determine whether there is a good fit for their pedagogical goals and whether they provide students with the tools they need to perform academically and advance socially.

## 3. Environmental meaning and its role in the everyday life of a school

The concept of environmental units implies a vision of the person as constantly interacting with environmental features. But, how do people "know" how to interact with the environment? Through the process of socialization, we learn about the meaning of different places and the uses for objects and surfaces. Meaning is what enables the interaction between people and environment. The study of meaning has been avoided in psychology because of the field's historical adherence to mechanistic views of science (for a discussion, see Heft, 2001). Meaning is pertinent to the study of environmental processes because of its role in the behavior of people, matching individuals' actions when entering a setting with the setting's functional character. As people move through different settings, they are able to "read" which kinds of behaviors are desirable, possible or discouraged. Meaning exists in the structure of the environment. Individuals perceive a common, meaningful environment because the structure is carried in the intrinsic, structural relations in environmental information (Heft, 2001). We directly experience an environment that is meaningful. This perspective is different from the traditional view in psychology in which meaning is created individually and separated from the physical world. The built environment is shaped by the collective action of individuals and built environments embody historical, located, knowledge that is filled with expectations, practices and values. What we *read* from the environment informs us of possible behaviors. When entering a school building, for instance, there are many cues in the building that indicate expected behaviors. The ease of access to the school, the quality of lighting, the presence of art, and the cleanliness of the school are all meaningful features of the built environment.

The unique contribution of the ecological psychology framework to the study of schools lies in its integrative vision of a dynamic person constantly interacting with its surrounding physical and social environment. People as information seekers interact with features of the environment to achieve individual goals, decode social expectations, create patterns of

interaction, negotiate behaviors and procedures, etc. Individuals organize their lives through what Heft (2001) calls ecological knowledge. This knowledge is acquired in daily experience. Because environments are already structured when individuals are born into them, the process of acquiring knowledge is mostly of discovering structure in the environment. This notion differs markedly from the traditional psychological view of the environment "in the head" or the imposition of meaning by an individual onto the physical world. The notion of ecological knowledge assumes that individuals "know" by interacting directly with meaningful features of the environment.

The ecological knowledge available from schools in new buildings might differ from that available in schools in disrepair. What meanings are implicated in the physical environment of the school? What is there to know at school buildings? School settings should be analyzed in terms of their environmental features, the meanings encoded in these features, how they are perceived and transformed by their students, and the characteristics and outcomes of the sociocultural practices that take place in them. Studying the environmental meaning of urban public schools and understanding the human experience of its users is vital to the analysis of the schools as a tool of social advancement. The theoretical proposals of Gibson on the one hand, and Barker on the other, are not only compatible but also offer a nested structure within which it is possible to study ecological meaning and environmental knowledge.

## 4. Research on school environments and adolescent development

There are many studies in psychology that document the effects of the physical environment on children's development (See Evans, 2006 for a review of the literature). Many of these studies involved single environmental factors such as noise, lighting and crowding and some looked at the quality of the home, neighborhood, schools, and child care centers. In his review, Evans (2006) concludes that the physical environment can affect children's development directly as well as through adult caregivers. Young people living in poor urban

environments may be particularly affected by environmental conditions Studies have shown that children living in poverty are at higher risk for socioemotional difficulties and that this risk can be partially explained by exposure to suboptimal environments. Evans (2006) found that, in studies done in schools and day care centers, many environmental factors such as school size, school building quality, open plan design, lighting and indoor climate had measurable effects on children that range from test performance and concentration to absenteeism. Evans & Stecker (2004) also found that chronic and acute exposure to environmental stressors is linked to deficits in task performance and to experiencing learned helplessness.

Research on the condition of educational facilities and its relationship to academic achievement is more limited and has mostly been conducted within the perspective of school planning and design. Some unpublished studies have connected deficient facilities to educational outcomes (Cash, 1993; Hines, 1997; Lemasters, 1997) but they have conceptual or methodological problems. The studies relied on school personnel reports regarding the condition of the buildings (Cash, 1993; Hines, 1997), did not include measures of teacher quality, ethnicity, or school size in their assessment (Hines, 1997) or lacked statistical testing of their hypotheses (Lemasters, 1997).

There are a few studies that take a more rigorous approach. In a 1993 study, Berner found that the condition of school buildings in Washington, DC was predictive of students' achievement scores. Berner's model looked at how parental involvement predicted the condition of school buildings, which in turn predicted academic achievement. One limitation of this study, however, was the lack of control of other variables that could also have an impact on achievement. Maxwell's (1999) examination of student performance in 21 public schools that were renovated in Syracuse, N.Y. found that, after the renovations, Mathematics test scores improved for 3rd and 6th graders but reading scores did not. In a more recent study, Maxwell (2007) found that the quality of a classroom's physical environment affected preschool children's cognitive competence. In classrooms that were rated higher on physical

characteristics related to attributes such as control, privacy, complexity, etc., children scored higher on a measure of cognitive abilities than did peers in classrooms with lower ratings.

O'Neil & Oates (2001) investigated the impact of school facilities on student achievement, behavior, attendance, and teacher turnover. The authors found a positive relationship between building condition and achievement on standardized tests. Student achievement was higher in newer buildings and in buildings with higher condition ratings. This study however, was limited in that it relied on school principals' reports as a measurement of the condition of the school facilities and in that its analyses were correlational. In her study of Milwaukee public schools, Lewis (2001) found that facility condition impacted student performance in Mathematics, Language, Science, and Social Studies in fourth, eighth and tenth grades. This finding is important because this study controlled for individual differences such as individual ability in reading tests, SES, attendance, ethnicity, truancy, mobility and suspension rates. The study did not control, however, for social environmental variables such as teacher quality or school size.

A study by Kumar, O'Malley, & Johnston (2008) found that students are in fact sensitive to the building's physical environment affecting in particular their behavior regarding truancy and substance abuse. This study looked into physical aspects of the school building such as the attractiveness or unattractiveness of the classrooms, graffiti on the walls, displays of student artwork and trophies in the hallways, broken lighting fixtures among other variables.

Empirical evidence of the relations between the condition of school facilities and academic outcomes is important because school success is related to social mobility. Students who are attending schools in low income neighborhoods need to obtain an academic degree to attain a better socioeconomic situation. What has been consistently missing from most studies is a focus on the experience of school building users. Experience understood as a summation and complex interaction of environmental, personal and social factors. Understanding these experiences would shed light on the environmental meanings of the building(s) and on the

behavioral implications for the building users. As stated earlier, existing studies do not tell is *how* does the condition of school buildings affects academic outcomes.

Currently, a significant portion of a human life is spent in an educational setting. In the US, students are expected to attend a total of 12 years of basic education. These years are often spent in buildings that are in less than optimal condition (NCES, 2000). The significance of the physical environment of the school for people's environmental experiences and specifically for adolescents is related to how the building affords adequate developmental experiences. Erikson (1980) defined identity formation as the main developmental goal of adolescence. The microsystem of the school is the place in which proximal processes occur (Bronfenbrenner & Morris, 1998, Maxwell, 2009). The school building that students attend plays a role in the identification processes of young people as they interact and learn in a physical environment that is rich in socially produced meaning. It is at school where adolescents learn social practices that may be different from those learned at home. The school is the first formal social organization where young people can distinguish themselves from their social group of origin and their family.

School buildings house young people at a time when they are exploring possible selves. Schools are also places in which socially sanctioned practices are enacted and revised. As such, schools are places for identity formation in two ways. First, schools collaborate in the individual search for fitting identities where adolescents discover, establish, and recreate their developing selves. School can present adolescents with role models, activities, or skills that might help them identify who they are and who they want to become. Second, schools present students with social practices that tell them about how to learn, how to advance socially, and/or how to be a successful person. Schools are a legitimate place in which adolescents can learn to thrive in a society. Schools are relevant to who adolescents are and who they will become because of the way they enable or limit their actions, goals, aspirations, and opportunities. Not yet known is what kinds of behaviors, routines, and attachments school buildings afford that will direct

students into paths of opportunity and to move to a better socioeconomic status or, alternatively, to drop out of school.

Not many empirical studies examine identity formation in adolescents living in low income neighborhoods (Murry et al., 2011). Phillips & Pittman (2003) theorize that correlates of poverty such as derogatory self-relevant information, limitations in opportunity structures, and excessive stress circumscribe identity process in poor adolescents. The role of school buildings in the negative effects of poverty and the role of environmental knowledge is still an unanswered question.

Neighborhood and economic well being have been found to have profound impact on youth development particularly during specific developmental stages such as late adolescence (Brooks-Gunn et al., 1997). Environments matter when it comes to performing academically. However, according to Murry et al. (2011), we do not fully understand from the existing research how it matters.

One possibility that has recently been proposed by some is that it is the experience of "chaos" that may prevent engagement with the school setting. Lorraine Maxwell (2009) proposed that chaos exists when individuals perceive lack of control over the activities or outcomes of the setting because of certain environmental or social factors. Some of the factors that contribute to this lack of control come from the physical environment like noise, crowding, overstimulation, a lack of continuity of relationships with people, as well as a lack of reliable routines. These are all factors found in public schools due to multiple and diverse variables that range from district policies to a lack of functionality in the school's infrastructure. How are these effects of living in a low income community felt in the quality of school buildings? How are they a part of the environmental knowledge available in the building?

## 5. Environmental knowledge and its role in the transmission of cultural characteristics

The environmental knowledge available at a school is deeply engrained in the culture of the community and its history and it materializes in the school building. Ingold (2000) proposed that there is a circularity of cultural knowledge which is transmitted across generations and is encoded in material artifacts such as buildings. Individuals acquire cultural knowledge through the interactions that they have with other people and the environment in their normal development. Children are educated to focus on certain things over others in a process of guided or joint attention (Heft, 2001; Rogoff, 2003). This education of attention occurs in school buildings in both explicit and implicit ways. Explicit ways to focus student attention occur in the interactions that students have with teachers, with educational materials, in the activities in which they are engaged, etc. Implicitly, students learn the value and usefulness of objects, practices, and skills through observation and through interaction with peers, teachers, and staff.

Many schools are able to foster the experiences that students need in order to be successful in their society. Other schools are unable to do so and may even discourage students from attending school altogether. But, it is not an automatic process - there are many mediators that intervene. Schools in low income communities are often times inadequate and therefore have trouble attaining outcomes similar to those of schools in wealthier communities. The inadequacy of the schools is manifest in the lack of books or desks, in the broken toilets and leaking roofs, or in the halfhearted manner that teachers may use in interacting with students and their parents. Schools in poorer communities are less able to provide the knowledge or skills that the new generation needs in order to achieve a certain ideal citizenship. That is why it seems that schools mostly reproduce the outcomes that the communities in which they are located come to expect. It is not hard to argue that there is a relationship between the condition of a building and the feelings of those who use that building. Instinctively, people adjust their

emotions and thoughts to the places where they are. There is culturally shared knowledge about what a "nice school" looks like and what a "not-so-nice school" looks like. Students that believe that they are not attending a nice school might adjust their behavior to match what is expected of students that attend that kind of school.

## 6. School buildings and social justice: The reproduction of social structure through environmental transactions

Heft (2001) offered a syncretic vision of what ecological psychology is and what it can provide to the analysis of psychological phenomena. He concludes his theorization by articulating ecological knowledge and cognition as socioculturally constructed. To understand the school's physical environment more fully, it is necessary to expand Heft's theorization to include an analysis of power. Schools are immersed not in a neutral sociocultural space but in a space that is charged with power differentials. The dynamic between teachers, administrators, students, parents, local politicians, and governments is characterized by power struggles. Where Heft ends his conceptualization of the social construction of affordances and behavior settings, it is possible to interject Bourdieu and his analysis of everyday life (Bourdieu, 1977). Schools in disrepair maintain a status quo in which low income young people who attend schools in disrepair normally produce poor academic outcomes. The knowledge that is acquired in the everyday of the school is not neutral, value free, or inconsequential. The problem school facilities in disrepair present is one of denying social opportunity to those that it is supposed to serve.

Bourdieu defined "habitus" as a system of lasting and exchangeable "dispositions" or acquired schemes of perception, thought, and action (Bourdieu, 1972). The person develops these dispositions in relationship to structures such as class, family, and education and the environments they encounter. The term habitus is used to study societies and denotes a structure of inclinations or tendencies acquired in specific cultural settings and that help

individuals to adopt the established practices of their social group (Nash, 2005). The habitus mediates between "objective" structures of social relations and the individual "subjective" behavior of actors because it does not imply complete determination by social factors nor individual autonomy. If affordances are qualities in the environment that are perceived by an individual, the habitus is the pattern of actions that individuals come to expect at specific times and places. The habitus is a socially validated practice.

Before moving on, it is important to clarify the singular and shared elements of the concepts of affordances, behavior settings, and habitus. Affordances are meaningful features of the environment. They are constituted by the physical characteristics and materials of the physical world but are relational in that they are selected by individuals. Affordances are also shaped socially and historically and are learned through observation and socialization. Behavior settings are higher order constructs and describe coherent, dynamic systems or patterns onto which behavior is mapped. Just as affordances, they have a physical base because they are supported by the structure of the environment. The concept of habitus, on the other hand, is the embodiement of social structures. It takes the shape of "dispositions" to act and, unlike the other two concepts, it implies a directionality or distribution of power. The way that people act and think is affected by the habitus and its relationship to a space (field). The concept of habitus evidences what practices or demeanors are promoted and validated in certain spaces. Habitus is linked to social reproduction because of its role in sustaining cultural practices. In Heft's terms, habitus would be affordances that have been historically validated. People are both constrained and enabled by the habitus and therefore reproduce the environmental knowledge acquired in the spaces in which they spend time.

In his theory, Bourdieu describes how objective social structures make their way into the subjective mental experience of agents. The notion of habitus is vital for both the study of schools as agents of social reproduction and for the sustaining of the multilevel explanations of inequality in the sociology of education (Nash, 2003). In trying to understand the relationships

of people and their environments, the ecological psychology approach described in the previous section falls short of explaining the macro-social forces that shape and reshape human environments and the notion of habitus can provide the link to the those forces. In fact, the concept of habitus provides a method for simultaneously analyzing "*the experience of social agents and (…) the objective structures which make this experience possible*" (Bourdieu, 1988, p. 782, cited by Reay, 2004).

Bourdieu provides an explanatory scheme to analyze the social reproduction of inequalities. In the case of schools as environments for educating, and in looking specifically at the characteristics of school buildings, it is easy to see how everyday life can both show and mask social meaning and the status of those who study there or work there. In the case of an overcrowded old building, which is the common reality of many low-income urban districts in the U.S., there may be aesthetically pleasing architectural details in the building inherited from an era when schools were built as architectural gems. The overcrowding and lack of funding of schools, however, might be making these beautiful buildings inhospitable places that are unfit to prepare students for a successful future.

Structuralist thinkers agree on the fact that the social structures in which individuals are implicated are at the same time maintained by those individuals. Social structures, together with the physical world, reproduce inequalities because of the historical reenactment of social relationships and the exercise of power. This idea provides a starting point for analyzing the social dimensions of environmental transactions. Heft (2001) provides a clear link between the tenets of ecological psychology and a social analysis of the forces that individuals and groups engage. By establishing that knowledge is already in the environment, Heft describes the interrelation of the social and the physical through concepts such as ecological knowledge. Heft highlights that the transmission of cultural knowledge cannot occur merely by direct social contact. In order to preserve knowledge through several generations, this knowledge must take a shape that is "extra-somatic" or outside of the body. This is ecological knowledge. Durable tools

and artifacts that have information relevant to some task built into their structure and the creation of means to express information symbolically in such a way that can be preserved in some relatively durable form as a representation (Heft, 2001, pp.340). The emphasis on the discovery of environmental structure, rather than on the imposing of mental structure on the everyday world is uncommon within the field of psychology. Students attending high school every day enter a building imbued with explicit and implicit knowledge with which they interact to recreate it or modify it.

The transmission of cultural knowledge occurs within the regular experience of life and it is critical for transmission of cultural capital. As current research on cultural psychology demonstrates, the development of children cannot be separated from the contexts of their activities. Children learn by actively participating in the ongoing activities of their surrounding environment (Rogoff & Morelli, 1989; Rogoff, Paradise, Mejia Arauz, Correa Chávez & Angelillo, 2003). Gibson calls this process the "education of attention" and it is analogous, at the individual level, to the transmission of cultural capital.

Placing the acquisition of knowledge in the interaction with the environment, Heft and Bourdieu agree that capital exists in people's environmental transactions. Indeed, Pierre Bourdieu initially conceived the notion of cultural capital in order to explain the "unequal scholastic achievement of children originating from the different social classes" (Bourdieu, 2001). In its embodied state, cultural capital cannot be purchased or transmitted without the investment of time and or effort on the part of the receiver. A common example is the ability to read or the learning of a second language. Students attending inner city schools can be sometimes identified by the way they speak, the way they dress, or the way they behave in certain situations. In its objectified state, capital can be easily transferred in that it is material, however, the real wealth of it can only be appreciated by those who have embodied capital, those who can decode the worth in the object beyond its monetary value. Examples include books, technology, and other cultural objects. Technological equipment at a high school, for example,

might require specialized training that teachers can sometimes lack. The mere provision of the object computer, for instance, does not automatically transfer its latent capital. In its institutionalized state, a form of objectification that Bourdieu sets apart, because it grants different properties on the cultural capital that it provides. The institutionalized form of cultural capital is that of academic degrees or qualifications. This form of capital "certifies the cultural competence of its bearers" (Bourdieu, 2001, pp. 245). Through the institutionalized form of capital, the value of the other forms of capital is certified as good. A degree, for instance, certifies that a person has obtained or is able to obtain the embodied and the objectified types of capital. The value of the institutionalized form of capital resides partially in its scarcity. If everyone could get an ivy-league education, for instance, then a degree from such a school would not be so valuable. If public schools are equally or equitably funded by the state, it would be the case that all high school diplomas confer the same value or status. Nonetheless, this is not the case. Students from high schools in low-income neighborhoods struggle to access the same options that peers in higher-income neighborhoods have because of their degrees might come with less institutional capital. The study of schools as reproducing social inequalities is also a study of how cultural capital is transmitted.

There has been deliberation regarding the role of family and specifically parenting in terms of the transmission of cultural capital. This is a rich and complex area of study that falls outside the scope of this investigation. However, it is appropriate to state that, within the paradigm embraced in this theoretical posture, the role of family, as crucial as it is to the development of capital for the new generations, does not completely determine it. In the constant transaction of people and environments there is always opportunity for acquiring and re-signifying experiences thereby acknowledging the agency of individuals and schools.

Schools as social institutions can sustain symbolic wealth without agents having to recreate it constantly (Bourdieu, 1990). This removes the focus of the power struggle between individuals and places it in the larger realm of social interactions in situ. Bourdieu theorizes

beyond the historical paradox between the objective and subjective views of social reality. To him, there needs to be a more complex conceptualization, one that includes both experiences of the world (Baert, 1998). Bourdieu believes in the interplay of the individual mind and the social world. This is not only akin to the transactional paradigm -described in the previous section- but it also furthers the study of schools as reproducing social structure. Many have criticized this approach by stating that it limits individual agency. However, as Bourdieu himself puts it, structures are not only constraining, they are also enabling in that they allow agency to be exercised.

Bourdieu links structural analysis to shared practical knowledge. In the case of schools, he states that pedagogic action may lead to cultural reproduction and ultimately to the reproduction of underlying power relationships. It is through the notion of habitus, as a generative scheme of dispositions tacitly acquired that people's practices, improvisations, attitudes, or bodily movements are generated. This is a useful notion to study and describe the everyday life of a school because these dispositions are adjusted to the constraints of the social surroundings and generate people's practices (Bourdieu, 1990).

Habitus is a concept central to the reproduction of social inequality because it highlights the automatic nature of the mechanisms that maintain a societal order. Once the members of the less privileged classes enter the struggle for status, the differences in habitus make for an unequal fight and hence for the reproduction of inequality. That inequality is both the medium and the outcome of their practices (Baert, 1998). Schools are at the core of the reproduction of social structure because they normalize the existing person-environmental transactions and present them as a natural way to be in the world.

Pedro Noguera, who has done extensive research on urban schools, describes how, by spending time in urban schools, he has learned to discern how the aesthetic of the physical surroundings and the subtleties of the social interactions relate to the character of a particular school and the cultural norms that operate within. He writes that "the lighting of the hallways,

the cleanliness of restrooms, the positioning and demeanor of secretaries in the front office, the absence of prevalence of greenery on the playground (…) are just some signs I take note of to obtain insights into the culture and atmosphere of a particular school" (Noguera, 2008. pp. 218). Noguera is one of the many educators who propose to transform urban schools through investing in social and cultural capital.

## 7. Problem Statement: Schools at the intersection of environmental meaning, academic achievement and the reproduction of social inequalities

Stepping into Grand Central Station in Manhattan or the New York Public Library on 42nd street in New York City means experiencing grandiosity and elegance. Regardless of individual or cultural differences, it is clear to the building user that this space is imbued with a certain status. The same can be said of other buildings around the world. There is a demeanor and behavior that is expected of the user suggested by the architectural qualities of the design and the way the space is maintained. These environmental meanings are present in all buildings and spaces that we inhabit. As stated before, spaces convey the behaviors that are afforded as well as the regularities that can be found. What is then conveyed when a space is in disrepair?

In this dissertation, I single out the role of school buildings in the study of environmental meaning because I believe that schools can be spaces in which young people are allowed to imagine and recreate themselves. More so than the home, where a particular set of values, family configuration, socioeconomic status, and education level might be more permanent, schools are the first place where children can imagine, experiment with, get induced to, and create alternative selves. In developing a sense of self, high school students have to contend with the dynamic influence of environments. According to Marcus & Kitayama (2010) selves incorporate the patterning of their various environments and therefore confer particular and culture-specific form and function to the psychological processes they organize. In turn, as

selves engage with their sociocultural contexts, they reinforce and sometimes change the ideas, practices, and institutions of these environments. Schools are connected to the particular characteristics of the community. In the US, where local taxes are connected to local schools, this is a connection particularly clear. Nevertheless, as Fine, Payne, & Torre (2004) point out, schools can function as places of transformation or reproduction. There is a tension between the possibilities that schools can bring into the lives of adolescents living in low income neighborhoods and the reproductive force of social forces. A goal of this dissertation is to highlight this tension and offer possible points of entry.

So, when it comes to schools, the aesthetics of the building together with the transactions in which people engage, can, in fact, alter students' lives. I proposed elsewhere (Durán-Narucki, 2008) that there are at least three levels (material, social, and meaning) at which the condition of academic facilities might affect the performance of students. The performance of students is important to social mobility.

The problem that this dissertation explores is: How do the physical characteristics of school buildings participate in the production of academic outcomes and the reproduction of social structure? If the physical environment reflects, creates, recreates, and maintains the social and economic circumstances in which the school is located, how do students in buildings in different conditions experience their schools? How do these experiences contribute to their academic success?

The motivation for this research comes from the need to provide paths to a better understanding of the role of facilities for school outcomes. This need comes from a sense of urgency which was born in my training as a Latin American psychologist. I studied psychology in Costa Rica, Central America, under the tutelage of colleagues and collaborators of Ignacio Martín-Baró. Martín-Baró advanced the study of contemporary social problems from a version of psychology that was not afraid of being clearly political. Beyond the specific goals of the study (next chapter), this dissertation aims to contribute to the elucidation of social injustice and its

reproduction in urban public schools, what Martín-Baró (1994) called “unjust structuring of the social systems”. Better school buildings can perhaps interrupt and change processes of injustice.

My scholarship in environmental psychology has complimented this sense of urgency with the calm and foresight that advanced training in social sciences provides. The study described in the next chapter makes use of both sources of knowledge to create a whole picture of what happens in urban public schools.

## Chapter Two: **Description of the study: A study on the role of the physical environment in the reproduction of social injustice**

### 1.Goals

Given the history of legal battles in the United States to ensure adequate education, in particular for those who in society are in most need of its benefits, it is important to establish what a school building in good condition can contribute to education. This dissertation provides specific "foci of attention" regarding the condition of school facilities. Most people can agree that a functioning and good looking school building is important for high educational achievement. However, it is hard to describe why that is the case. When there are constrictions on the budgets of school districts, tensions about how to spend the very finite monies, and public education is being attacked by corporate interests, it is fair to ask an environmental psychologist: What building improvement or renovation would make the biggest impact on school users? Can a functional, clean, good looking school building improve education? Can a building in disrepair negatively affect school outcomes? How do school buildings affect education?

Many arguments can be introduced at this point regarding the primacy of variables other than building condition in determining school success such as the quality of teaching, the quality of the school curriculum, or parental involvement among other things. Based on the previous literature review as well on the existing empirical research, it is possible to establish that these other variables are, in fact, related to the quality of the spaces in which they take place. An examination of the everyday of a school will provide information about the ways in which other variables interact with school facilities. It is possible, by looking at the physical environment of

the school, to understand how all other variables interact to create -or prevent- a favorable environment for education. The experience of education is embodied, situated, and shared.

This study attempted to discern environmental meanings in urban public school buildings. How building users' experience of the school building influence their school outcomes. How do users of a new or renovated school building experience their school building and feel about their chances for success? About their position in society? About who they are and who they can be or become? How do users of deteriorated or poorly maintained buildings experience their building and feel about their chances of success? About their position in society? About who they can be or become?

In terms of social justice and equal access to education, it is impossible to address the condition of school buildings without examining the implications for academic success. School facilities in disrepair are not simply an aesthetic problem or even a functional one. The condition of school facilities interacts with the quality of the school experience affecting student outcomes and, therefore, their future opportunities. A school's environmental transactions should provide students with the experiences necessary for their adequate development and academic success. Both of these outcomes will increase student chances of upward social mobility.

The general goal of this study was to understand how the physical characteristics of school buildings participate in the production of academic outcomes and the reproduction of social structure. The intention was also to examine the role of school building condition in social reproduction. To achieve this general goal, more specific goals needed to be outlined. First, learn about the everyday experience of students in school buildings with different physical conditions. Second, identify features of a school building that are relevant to students' feelings of attachment and success. Third, observe what kinds of behavior settings existed in each school and whether they functioned differently in schools with different conditions. Fourth, determine

what were the observable, as opposed to the stated, programs operating in these behavior settings. Last, it was relevant to learn about the differences in the expectations about students, teachers and administrators in school buildings with different physical conditions.

## 2.Methodology

To answer the questions formulated, it was necessary to develop a methodological strategy congruent with the transactional paradigm explained earlier. This is an uncommon endeavor and therefore needs to be tackled with creativity and with the clarity that a psychologically meaningful description of the environment needs to acknowledge the relational character of individual-environment reciprocity (Heft, 2007). This was captured through observations and complemented with interviews and focus groups. The methodological strategy put forth was inspired in grounded theory (Strauss, 1987) in its attempt to systematically collect data and make sense of it to produce theory. However, the study started with clear research questions which is not always the case in grounded research. The goal of the approach was to capture the environmental transactions that users had in buildings with different environmental qualities and explore the role of the built environment in the transactions.

### a.School Selection

To compare schools having different building conditions while keeping other intervening variables constant, it was necessary to find schools that differed in building quality within the same school district. This was possible in the State of New Jersey because of special legislation known as “Abbott v. Burke”. After negotiating access with several school districts, access was finally granted in one of the “Abbott districts”. The district’s name and location will remain confidential. The identification of the specific district is not considered relevant or considered to limit the generalization of the results. The schools in the study were selected after conducting the Human Subjects Board Review for that school district. Letters were sent to all high schools

asking them to participate in the study. After getting responses from the first high school, Industry High (all schools names were changed), it was discussed with an architect, who works in that school district, which schools could be matched in terms of their buildings and population. The district's architect indicated which buildings were new and which were old. There were only two new high school buildings open in the district , those buildings had to be included in the study. Those schools were paired with schools that had similar characteristics and that had answered a letter asking for permission to conduct the study.

There were three main criteria for the selection of schools in the study:

- The schools had to be located within a designated Abbott district. The Abbott rulings explained in the following section, allow the study of different school building condition within a district that shares the same demographic characteristics. In addition, in pursuing to understand the quality of school buildings as a problem of social reproduction and social justice, it was relevant to look at the impact of school building quality in a community that has been designated as economically disadvantaged. It is in this type of communities where facilities would make a largest impact.
- The schools had to provide a balanced comparison based on the condition of the building. Two schools had to be low in building quality and two had to be high.
- The district level authorities as well as the schools' administration had to approve the research.
- The schools needed to be high schools to better capture the students' usage and opinions about their buildings. It was considered that teenage students would be allowed more mobility within the school building thereby providing more opportunity for observations. They were also considered to be more developmentally mature and therefore better able to verbally convey their experience with their school

buildings. In addition, high school performance indicators were considered to be relevant indicators of future plans and possible social mobility .

Based on these criteria, four high schools were selected. Two schools were in new “state-of-the-art” buildings and two schools were in old buildings with minor renovations. The study was approved by the district’s board of education as well as by the principals of each school.

The following section details the history of Abbott v. Burke, the landmark ruling in New Jersey that granted additional funding to school districts in the lowest income communities in the state to make education more equitable. This ruling made it possible to find new, state of the art, school buildings in a low income community.

## i.i. History of Abbott v. Burke

*Abbott v. Burke "may be the most significant education case since the Supreme Court's desegregation ruling nearly 50 years ago."*

New York Times Editorial, February 9, 2002

The Education Law Center, a non-for-profit organization, served as attorneys in the now landmark case of Abbott vs. Burke. In rulings in 1997 and 1998, the New Jersey Supreme Court ordered a set of education programs and reforms that were meant to insure educational equity. The Education Law Center (ELC) was founded in 1973 to advocate on behalf of public school children for access to an equal and adequate education (ELC, 2010). ELC's work is based on the premise that all children can achieve high academic standards to prepare them for citizenship and to compete in the economy if given the opportunity. The ELC served as attorneys for the plaintiff-class of over 300,000 school-age children and 60,000 preschoolers in the Abbott v.

Burke case (ELC, 2010). These predominately low-income, minority students attend public schools and preschools in 31 poor urban communities across New Jersey.

According to the Education Law Center (2009), the approved framework includes:

- Rigorous content standards-based education, supported by per-pupil funding equal to spending in successful suburban schools.
- Universal, well-planned, and high quality preschool education for all three- and four-year olds.
- Supplemental ("at-risk") programs to address student and school needs attributed to high-poverty including intensive early literacy, small class size, social and health services.
- New and rehabilitated facilities to adequately house all programs, relieve overcrowding, and eliminate health and safety violations.
- School and district reforms to improve curriculum and instruction and for effective and efficient use of funds to enable students to achieve state standards.
- State accountability for effective and timely implementation and to ensure progress in improving student achievement.

It is the goal of the Abbott programs and reforms to give every child the opportunity to attain "his or her own place as a contributing member in society with the ability to compete with other citizens and to succeed in the economy." ( Abbott IV, 1997 cited by Education Law Center). This legislation includes the improvement of educational facilities as one of its key components in the hope that facilities matter in equal and fair access to quality education. Implicit is the notion that children need buildings in adequate condition to participate in adequate educational processes.

After the legislation was passed, funds were directed to the construction of new buildings in most of the 31 designated Abbott School Districts. The use of local taxes to fund schools normally ties the quality of the school building to the economic resources available to

the communities in which the schools are located. It has been the case that the lowest income communities have the worst school buildings and the communities with the highest income have the best school buildings. The Abbott mandate to provide quality school buildings to low income communities decoupled this relation thus allowing one to observe the role of school building quality within a low income community.

The districts that were singled out by the Abbott decision were the poorest urban districts which were also educationally inadequate, and did not have the means to overcome the disparity with other more affluent districts (Librera, 2003). Both characteristics, lower socioeconomic status and lower academic achievement, were necessary to the denomination of a district as "Abbott" (Librera, 2003). The denomination of a district as Abbott or "special needs" is based on the concentration of poverty indicators. This designation is in part determined by the District Factor Grouping (DFG), a system developed by the New Jersey Department of Education in 1974 to rank every district in the state by seven factors thought to be closely related to socioeconomic status (SES). The DFGs were calculated using the following six variables considered to be closely related to SES: 1) Percent of adults with no high school diploma, 2) Percent of adults with some college education, 3) Occupational status, 4) Unemployment rate, 5) Percent of individuals in poverty, 6) Median family income (Librera, 2003). These factors were revised after the 1990 Census and then again in 2004. In updating the DFGs using the data from the most recent national census, efforts were made to improve the methodology while preserving the DFG classification system. A list of the designated Abbott districts can be found in the appendix section. It is in one of these districts that this dissertation study took place.

Unlike the model used to create the DFGs of 1974 and 1990, the most recent model omitted population density as a relevant variable. Principal components analysis was the statistical method used to determine districts' relative SES. The method used to group the districts into DFG categories was also the same. According to the New Jersey Department of Education (2004), the DFGs represent an estimated measure of a community's relative

socioeconomic status (SES). The classification system has been a useful tool for looking at student achievement and comparing similarly-situated school districts in other analyses.

### i.ii. Specific implications of the Abbott legislation for school buildings in NJ

Answering the call to provide adequate educational facilities, the “Educational Facilities Construction and Finance Act” enacted on July 18, 2000, launched the New Jersey School Construction Initiative (NJSCI). This is “ ...a multi-faceted, comprehensive program for the design, renovation, repair, and new construction of primary and secondary schools throughout New Jersey” (New Jersey School Board Association, 2010). This initiative anticipated the provision of 100% state funding of approved projects in the "special needs" Abbott districts.

According to the Education Law Center’s latest Abbott School Construction Program report (2009), 80 projects have been completed by the State under the Schools Construction Corporation (NJSCC) and/or NJSDA. In July 2007, the NJSCC was reorganized by Governor Corzine and is now the New Jersey School Development Authority or NJSDA. As of 2010, eighteen projects were under construction by NJSDA.

The New Jersey Supreme Court in the Abbott legislation found a wide gap in the condition of school buildings in urban and suburban communities. In urban districts, students attend school in buildings that are unsafe, overcrowded, and "often incapable of housing the very programs needed to educate them." In a later Abbott ruling, the Court ordered the State to undertake and fund a school construction program to eliminate deficiencies in all Abbott school buildings. Full state funding for the construction program was reaffirmed in a later ruling. The last ruling stated that “minimally adequate education required by the Constitution's education clause includes providing students adequate and safe facilities in which they have the opportunity to acquire: (1) the ability to read, write, and cannot expect disadvantaged children

to achieve when they are relegated to buildings that are unsafe and often incapable of housing the very programs needed to educate them" (Abbott V).

In 1997, the New Jersey State Department of Education (NJDOE) found no empirical research that directly established a cause and effect relationship or correlation between academic performance and the presence, absence, or configuration of specialized instructional spaces. In 2010, there is far more evidence of the opposite (i.e. Durán-Narucki, 2008; Evans, Yoo, & Sipple, 2010 ). At that time, the NJDOE concluded that the facilities standards for Abbott districts should minimally require that all schools be connected to a high-speed fiber-optic network and all classrooms be wired for integration of technology into the instructional program. Some of the requirements for high schools include:

- Adequate classroom space for class sizes of 24;
- Art room;
- Music room;
- Science demonstration room(s) for general science with demonstration table and perimeter student areas with water;
- Science Lab(s) with gas, water and appropriate ventilation for chemistry and physics;
- Auditorium with stage for large group presentations, instrumental music and student performances;
- Cafeteria for breakfast and lunch;
- Gymnasium with bleachers and locker rooms; and
- Media center.

These characteristics would guide the actual improvements, renovations, or new construction to occur in Abbott Districts.

Abbott vs. Burke has not gone uncontested. In May of 2009, the New Jersey Supreme Court issued the School Funding Reform Act (SFRA) of 2008, a decision upholding a State's new school funding formula. The Court's decision ended the Abbott vs. Burke school funding remedy

including the requirement that Abbott districts be provided parity aid and supplemental funding (New Jersey Principals and Supervisors Association, 2009). A new system was proposed to calibrate how much money is needed per pupil for an "adequate" education in each district. The monies are allocated based on the particular needs of individual students with additional funding going to low-income, special education or limited English skills students, and to districts with high concentrations of "at-risk" children. The premise is that the funding follows the individual students and not the districts as a whole. The formula calculates a spending amount for each district based on enrollment and student demographics (New Jersey Principals and Supervisors Association, 2009). The state pays a share and each district is expected to contribute a portion locally. Wealthier communities pay more often receiving only limited state aid and poorer districts get more state help. With the Court's decision, the SFRA is the first unified school-funding system since 1976 to obtain court approval. In the implementation of this decision, the court approved a three year period of supplemental funding for the previously designed Abbott Districts. The Abbott legislation demonstrates that educators, policy makers, and other stakeholders see the connection between inadequate schools and inadequate learning.

### b. Non-Participant Observations

The non-participant observations were conducted during the academic year 2009-2010. Each first observation consisted of a building walkthrough to locate areas of interest such as cafeterias, gyms, libraries/media centers, other common areas, entrances and exits, specific instructional areas such as labs or workshops. In subsequent walk throughs the emphasis was in observing the emergence of behavior settings. Special attention was paid to the change of classrooms between lessons, the entrance and exit of students and other visitors to the schools, lunch time, the use of the main office, the guidance counselors' office, and the use of other spaces specific to each school. Each observational period ranged between two and three hours and the observations were done at different times during the school day in order to achieve a full

picture of what a school day looked like in each building. Notes were taken during the observations describing naturally occurring behaviors. The goal of these observations was to document existing affordances and relevant person-environment interactions. Attention was paid to specific features of the environment that would be clearly related to specific behaviors. Another goal was to determine the existing behavior settings, understood as specific relationships between collective behavior and specific places. The school observations are considered the foundation of the study because it was through them that the most relevant information emerged on actual person-environment transactions and functional relations. However, interviews with building users were also conducted and provided a context for the observations. The strategy for the observations started with conducting an inventory of the available behavior settings and how they existed in each school. The overall goal was to identify patterns of behavior and affordances that potentially encourage or discourage academic success. The spaces observed were the school entrance, classrooms (from outside, so that class would not be disrupted), hallways, computer labs, library, gymnasiums, swimming pools, and other specialized spaces where available. The records kept were mostly descriptions and narrative accounts of what occurred at each school building.

For the sake of clarity, the subject of the observations is further explained. The main goal of this study was to understand how the environmental transactions between the school building and the school users affect students' academic achievement. The observations were intended to capture the interactive units that people and their everyday environment make. It is important to emphasize that the unit of observation included both the person(s) and the physical environment around the person. As suggested by Heft (2001), in order to study environments as meaningful, it is important to overcome the dichotomy between a "meaningless material world and a subjective, meaningful psychological realm…" (Heft, 2001, pp. 329). An alternative approach would be to locate meaning in " …a relational, yet independent, shared environment." (Heft, 2001, pp. 239). According to Heft (2001) individual knowledge grows out of social

processes and sociocultural contexts. In the context of public schools, it was the interest of this study to find out how the social processes that produce both the school building and the building users function interactively and how this interaction does or does not contribute to academic achievement. Individual knowledge and meaning making grow out of the experience of place. From the basic physical characteristics of the setting (temperature, light, types of surfaces, etc) to the more complex social attributes of the physical environment (dirty school, urban school, new school, etc) individuals learn about possible appropriate or inappropriate behaviors, expectations, social status, etc. In sum, the subject of the observations was the functional relations and their potential contribution to academic achievement.

**c.Focus Groups**

Informal focus groups were conducted at each high school in order to capture students' experiences of their school buildings. The group setting allowed for the emergence of shared and individual perceptions and experiences. The questions that guided the focus groups are included are included in the addenda section. The main topics included:

a) Perception of the school building

b) Social perception of the school building

c) Questions specific to the mechanisms through which school affects its students

d) Questions specific to those users that were in the school before they moved to the new building

The focus groups ranged in the number of participants from 2 to 16 depending on the school's willingness to help reach out the students. Only those students that provided a signed consent form were counted in the summary table below.

### e.Interviews with adult school users

Short interviews were conducted with adult school users. Administrators such as school principals or vice-principals, teachers, and security guards were interviewed. The goal was to learn about their own experiences as users of the school or about the existing policies (program of the settings) that might have modified the behaviors afforded by each school building. These interviews addressed particular circumstances of the schools, particularly those not observed, such as classroom behaviors or other school particularities. The specific interview themes included: experience of the school building, social perception of the school building, how does the school building affect students. The themes and specific questions can be found in the addenda.

| School | Hours observed | People Interviewed |
|---|---|---|
| Industry High | Approximately 20 | 5 adults<br>6 adolescents |
| Sears High | Approximately 20 | 4 adults<br>2 adolescents |
| Knowledge High | Approximately 20 | 5 adults<br>5 adolescents |
| Main High | Approximately 18 | 3 adults<br>5 adolescents |

**Table 1. Summary of hours observed and people interviewed at the four high schools in the study from October 2009 to February 2010**

### 3.Population

According to the "American Community Survey" (US. Census Bureau, 2006-2008), the population of the selected district has an average household size of 2.75 slightly larger than the national average size of 2.61. Twenty-eight percent of those 25 years and older are high school graduates and 21% have less than a high school diploma.

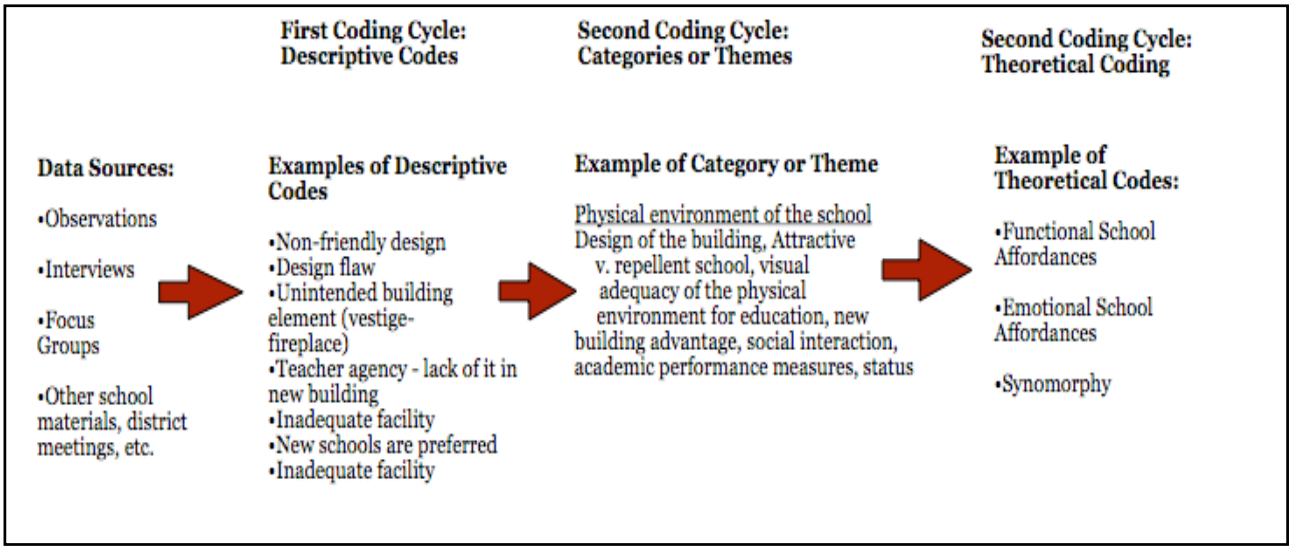
Twenty-seven percent are foreign born (12.5% in the US) and 44.5% speak a language other than English at home (19.6% in the US). The median family income (in 2008 inflation-

adjusted dollars) was $41,625 which is considerably lower than the US average ($63,211) and the percentage of families living under the poverty level is 20.8% which is considerably higher than the US average (9.6%). Of the 88% of occupied homes in the district, 74.5% are occupied by renters (32.9% in the US). The median value of the owner occupied homes is $305,400 which reflects the cost of life in the northeast of the US when compared to the median value of a home in the US which is $192,400. The median age of the population in years is 32.7 (36.7 in the US) and 15% are between the ages of 10 and 19. Of the people who identified themselves as being "one race" 24.3% are White (74.3% in the US), 53.6% are Black or African American (12.3% in the US), 1.7% are Asian (4.4% in the US) and 17.2% are some other race (5.8% in the US). Thirty-two percent identified themselves as being Hispanic or Latino of any race (15.1% in the US).

## 4.Data Analysis

The field notes from observations, notes from all interviews, and the notes from the focus groups in all school building, were coded using the procedures suggested by Saldaña (2009) for qualitative coding. The first coding cycle followed two main procedures. First, "descriptive codes" were created. Originally described by Miles & Huberman (1994) and Wolcott (1994), Saldaña defines descriptive coding as a summarization of the basic topics in the data. As an initial coding, it was useful to answer the question "What is going on here?" (Saldaña, 2009, p. 70). Descriptive coding is particularly useful when there are different data sources as was the case in this study in which data came from observations, interviews, and focus groups.

As a second step during the first coding cycle, themes or categories were constituted from the initial descriptive codes. Encompassing, descriptive categories were inferred from the codes created from the data. Themeing the data allowed categories to emerge from the data (Saldaña, 2009, p. 140). These categories, however, took into consideration the questions, goals, conceptual framework, and literature review set forth in the dissertation proposal.




In a second coding cycle, the generated themes or categories underwent "theoretical coding". This type of coding is helpful in creating theoretical propositions. In this coding, the main goal was to determine central or core categories for the study. Figure 1 presents the main aspects of the coding process.

**Figure 1: The coding process used to analyze the collected data**

## Chapter Three: Four High Schools in New Jersey

In this chapter, I will describe the schools participating in the study. The goal is to carry out the ecological psychology requisite of specifying behavior settings and their participants. This will be useful to describe the synomorphic milieu properties of the settings (Heft, 2001), a task that will be accomplished in the following chapter. The first section will cover the four schools together describing their characteristics in relationship to each other and to other schools in the state of New Jersey. Within this first section, descriptive data are provided about the schools, the students, the teachers, and the district. The second section will provide individual school descriptions. The microsystem of each school will be described characterizing each school's individual environment.

### 1. A look inside: A description of the schools participating in the study

The four schools participating in the study were located within the same school district and therefore shared its regulations, politics, timelines, and practices. Two schools were *comprehensive* schools which meant that they were mandated to accept all students in their geographic intake area. Two schools were *magnet* schools which meant that students were accepted based on performance indicators.

Industry High, a magnet school, had an emphasis on technologies geared towards industrial careers. This school was located in an old building. Sears High, a large comprehensive school was also housed in an old building. Knowledge High was a magnet school located in a brand new building. Main High was a large comprehensive school also located in a brand new building with current technologies. The main characteristics of the four high schools are depicted in figure 2.

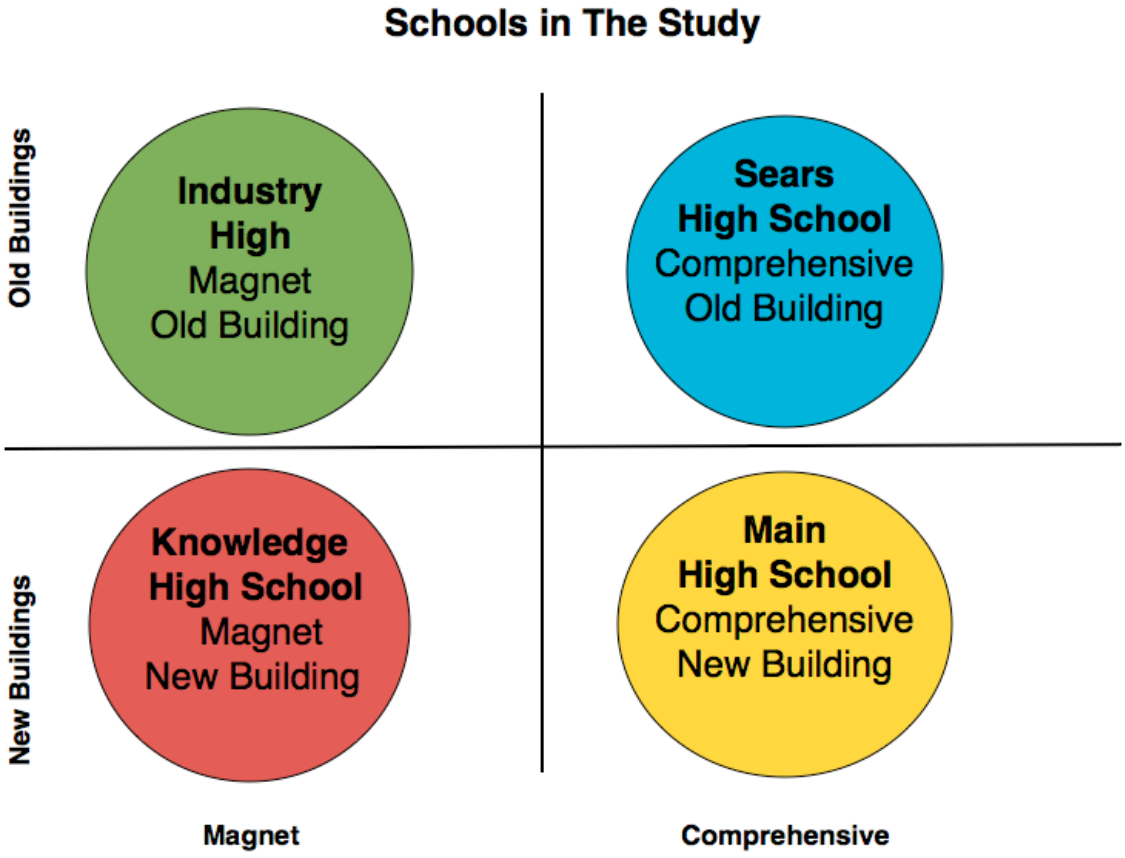



**Figure 2. The main characteristics of the four high schools in the study**

### a. About the Schools

The study's selection of schools was balanced in that two high schools were magnet schools and two were comprehensive schools. One of the comprehensive schools and one of the magnet schools were located in old buildings. The new buildings housed a magnet school and a comprehensive school as well.

The old buildings were built in different eras. The building in which Industry High is located was the oldest. It was originally built in 1855 as a school for adults. As was the case for other structures built at that time, its architecture had the grandeur characteristic of the Gothic Revival style. The other older building, in which Sears High was located, was built in 1964. Architecturally, it was a very simple building made of brick and cement and with no ornamentation.

The new buildings in the study used contemporary materials such as glass, concrete, and exposed steel. Knowledge High was more modern - it used alternative sources of energy such as thermal and solar. It was also designed to be used by the surrounding community. It has a large auditorium with street access. Main High's building was also modern but, inside, it followed more of the traditional public school style in terms of its layout and wall colors. It also had an auditorium with easy access from the street.

Sears High had the highest student enrollment with 1,408 students. It was the main comprehensive high school in the area. It was followed by Knowledge High with 902 students enrolled, Main High with 861 students, and Industry High with 474 students. A simple division of the school buildings' total square feet (s.f.) by the number of enrolled students showed that Main High had the largest number of s.f. per student at 302. Its modern building had enough space which included an auditorium and two gymnasiums. The second largest was Sears High at 209.0 s.f. per student, then Industry High with 166.9 s.f. per student and Knowledge High with 146.3 s.f. per student. One reason why the comprehensive schools might have had a larger square footage is that they housed other non academic services such as child care rooms and

other community services such as health and counseling clinics in their buildings. Magnet schools did not have these kinds of spaces.

All schools in the study were high schools but they differed in the grades that they housed. Industry High and Main High had grades 9th through 12th. Sears High taught grades 10th through 12th and Knowledge High had grades 7th through 12th. Knowledge High had the largest class size with 25.1 students compared to 18.2 in the State. This school also had the largest number of students per faculty member at 13.5, compared to 10.8 in the State. Sears High had the smallest class size with 15.1. All the schools had a better student per computer ratio than the State average of 3.1. The two magnet schools had a 1:1 student per computer ratio.

### a. About the students

Student attendance in all schools was lower than the state average of 94.6%. The lowest student attendance was found at Sears High, the comprehensive school in the old building, with 86%. Student mobility was under the state's average in the magnet schools, but much higher than the state's average in the comprehensive schools. Sears High had the highest mobility rate at 34.7%.

In all schools, English language was the highest reported first language spoken at the students' homes. The lowest percentage was reported by students from Sears High with 74.4%. This school also had the highest number of students with limited English proficiency at 13.3%. Dropout rates were higher than the average 1.7% for the state in all schools except for Industry High where the rate was 0%.

In terms of academic achievement, as expected, the magnet schools had a higher percentage of students testing proficient and advanced in both English language and Mathematics standardized tests (HSPA) than the state average of 88%. Both comprehensive schools in the study had students testing as proficient and advanced in a considerably lower percentage than the state average in English language and Mathematics. The lowest scores were

from Main High, the comprehensive school in the new building with only 36.9% of its students testing proficient or advanced in the English Language test, and 20.1% in the Mathematics test.

Scores for the SATs were lower than the state's average in all schools except Knowledge High. In this school, the average was slightly above the state's 1,512 score at 1,515 for the three sections of the test (Mathematics, Verbal, and Essay). This school had, however, the highest percentage of students taking the SAT test of the four in the study at 94%. The lowest percentage of students taking this test was in Sears High at 35%. Graduation rates, however, were above the state's average of 94.7% in all schools but Sears High which had a graduation rate of 92.1%.

Many students expressed that they plan to attend a 4 year or 2 year college or university but the percentage of one versus the other varies with the school. The highest percentage of students who want to attend a 4 year college attended Knowledge High, the magnet school in the new building. The lowest percentage of students who want to attend a 4 year college was in Main High with 22.2% students. The highest percentage of students declaring their intention to attend a 2 year college was at Main High. Fifty-three percent of students at this school said that they intended to attend a 2 year college.

### b. About the teachers and the district

In all of the study schools, faculty attendance was lower than the state's average of 96% ranging from 91% in Sears High to 94.8% at Industry High. Faculty mobility rate was the highest in Main High at 5.5% and the lowest at Knowledge High at 1.5%. The median salary in the district was a yearly $87,216, higher than the state's median of $61,840. This district, however, had a higher median years of experience of their administrative and faculty personnel, which was 13 years, compared to 10 years in the state. Per pupil expenditures were also higher at $17,515 compared to $15,538 in the state.

The following comparative chart shows the basic information about the schools' buildings, students, faculty and district.

| | | Industry High | Sears High | Knowledge High | Main High |
|---|---|---|---|---|---|
| **About the Schools** | Type of school | Magnet | Comprehensive | Magnet | Comprehensive |
| | Type of building | Old | Old | New | New |
| | Year current building was built | Main building 1855 Annexed building 1960 | 1964 | 2006 | 2008 |
| | Year this school first opened | 1996 | 1907 | 1974 | 1911 |
| | Building's Square Footage | 79,090 | 295,480 | 132,000 | 259,640 |
| | Enrollment | 474 | 1,408 | 902 | 861 |
| | Square feet per student | 166.9 | 209.9 | 146.3 | 302 |
| | Grades in the building | 9-12 | 10-12 (9th grade moved to a different building in 2006 | 7-12 | 9-12 |
| | Average Class Size (18.2 in the State) | 17.6 | 15.1 | 25.1 | 16.9 |
| | Students per computer (3.1 in the State) | 1.0 | 2.4 | 1.0 | 1.9 |
| | Number of Students per faculty member (10.8 in the State) | 8.5 | 10 | 13.5 | 11.8 |
| | Number of Students per Administrator (178.5 in the State) | 79 | 92.6 | 128.9 | 95.7 |
| **About the Students** | Attendance (94.6% in the State) | 92.3% | 86% | 93.5% | 90% |

| | | Industry High | Sears High | Knowledge High | Main High |
|---|---|---|---|---|---|
| | Mobility (9.7% in the State) | 5.5% | 34.7% | 2.9% | 23.5% |
| | First Language Spoken at Home | 100% English | English 74.4% Spanish 25.1% | 100% English | English 96.1% Spanish 6.6% Haitian Creole & French 5.8% |
| | Limited English Proficiency | 2.5% | 13.3% | 0.2% | 5.1% |
| | Dropout Rates (1.7% in the State) | 0% | 5.0% | 1.9% | 3.3% |
| | Percentage of students who tested proficient & advanced at 12th grade State English Language Arts Test (88% in the State) | 100% | 38.7% | 97.5% | 36.9% |
| | Percentage of students who tested proficient & advanced at 12th grade State Mathematics Test (75% in the State) | 86% | 26% | 96.4% | 20.1% |
| | Percentage of Students taking the SAT test | 71% | 35% | 94% | 49% |
| | Average SAT Total (Mathematics, Verbal, Essay) Score (1,515 in the State) | 1,292 | 1,027 | 1,512 | 1090 |
| | Graduation Rate (94.7% in the State) | 99% | 92.1% | 99% | 95.5% |

| | | Industry High | Sears High | Knowledge High | Main High |
|---|---|---|---|---|---|
| | Percentage of Students who plan to attend a four year college/university | 48% | 16.3% | 78.6% | 22.2% |
| | Percentage of Students who plan to attend a two year college | 40% | 36.7% | 13.8% | 53.4% |
| **About the Teachers** | Faculty Attendance Rate (96% in the State) | 94.8% | 91% | 93.7% | 93.1% |
| | Faculty Mobility Rate | 1.8% | 3.2% | 1.5% | 5.5% |
| **About the District** | Teachers' Median Salary in the District ($61,840 in the State) | $87,216 | $87,216 | $87,216 | $87,216 |
| | Median Years of Experience of Administrative and Faculty Personnel (10 in the State) | 13 | 13 | 13 | 13 |
| | Per Pupil Expenditures in the District (15,538 in the State) | $17,515 | $17,515 | $17,515 | $17,515 |

**Table 2: Data from the latest available School Report Card, school year 2009-2010.**

Source: State of New Jersey Board of Education.

## 2. Each school its own world: Individual school descriptions

In the following section, I describe each school as I observed them. Please notice that, in many cases, I will use the first person to convey the way I acquired the information. It is important to acknowledge that I entered those settings and, temporarily, became part of them.

### a. Industry High

This school was selected because it is housed in a building that has not been replaced or renewed. It was also the first school to agree to participate in the study. The setting of the first school consisted of two buildings joined together. The first building was an old, architecturally elaborate building which used to be a teachers' college. For many years, it was also the campus of a public university. The second building, more modern, housed a district office until recently when the space was given to the school.

Industry High is a 9th to 12th grade high school magnet school. Students undergo a selection process to attend this school. According to the school's web site, prospective students need to fill out an application form, take and pass an entrance test, and must have grade level test scores in reading, writing, and mathematics. Prospective students should also demonstrate that their attendance was 90% in the current and previous school year and must have a recommendation letter from a teacher or child study team member. In addition, it is desired that the students have "satisfactory or better ratings in conduct, effort, academic achievement and other areas which demonstrate character, values and ethics" as well as being residents of the school district.

As the school year and my initial observations started, a renovation was begun in the newer building of the school. The district offices located in this building were moved out to allow for a new space for the library/media center and the school's main office. Students in the school's CAD (Computer Assisted Design) concentration designed the new spaces for the library/media center and main office. These students were currently attending the school.

Students used to enter the school through the old building. The main office and the guidance office were located at ground level. The main school door opened into the hallway where those offices were as well as other classrooms. Now the main entrance was moved to the newer building which had a small lobby that now lead into the relocated main office and library and media center

All entrances in this school, as well as in all the other schools in the study, were equipped with metal detectors and students, staff, and visitors were required to pass through those when entering the building. There were security guards in uniform posted near the main entrances to the buildings. Identification needed to be shown when entering the building and a sticky name tag must be affixed to the clothes of visitors. Students had scannable identifications that showed tardiness and other information like the lunch period that they should attend.

The school building, on first impression, was convoluted and not friendly to newcomers. Security guards and other insiders provided directions to the main office, guidance office, nurse's office, and other places frequented by parents and outsiders. The old building housed most of the classrooms. In the basement there was a space used as a gym, classrooms, the English teachers' lounge, the guidance office, and the old main office which was to be turned into a classroom. The hallways in this part of the building were dark and they had lockers only on one side due to its narrowness. Pipes and other construction parts were exposed evidencing the different renovations during the years. Most classrooms on the first floor of the older building had large windows and high ceilings. Some had distinctive features such as a fireplace or a ballet bar around the perimeter of the room. The space in the basement was not a space that was built as a gym - it had a rectangular basketball court not done to regulation size. The space was small, dark, and lacked bleachers or any other seating required for the viewing of games. No home games were held at this location.

The newer building housed the relocated main office, the new library/media center, other administrative offices (such as vice principal's office, technology coordinator, etc.), the

cafeteria, and the workshop style classrooms. There was also a small room opposite the new main entrance which was designated as a café. This space was meant to provide a safe space for students before and after games because they are bussed to where the games are played. The surrounding neighborhood was known to have gang activity and students have been mugged there. This café was rarely open and awaited funds to be better decorated and operated.

Near this café and next to the new entrance/lobby, there was a store area where school's t-shirts and sweatshirts were exhibited in a case and were for sale. I never saw anyone selling or buying them, though. There were also a couple of trophy cases featuring sports trophies and awards.

The workshops located in the newer building provided the equipment needed for the different technologies taught at the school. These technologies were architecture and construction, communications, information technology, and pre-engineering. Within these areas, specific courses were taught. Architecture and construction included computer assisted design, construction, and heating, ventilation, and air conditioning (HVAC). Communications included graphic arts, office system technology, and web site design. Information technologies included A+ computer repair, Cisco networking, C-tech, and telecommunications. Finally, the pre-engineering consisted of the "Project Lead the Way" which was a four year sequence of courses which introduced students to engineering before entering college.

The normal "bell schedule" for this school was as follows:

| **Period** | **Start** | **End** |
|---|---|---|
| 1 | 8:00 a.m. | 8:40 a.m. |
| 2 | 8:44 a.m. | 9:24 a.m. |
| 3 | 9:28 a.m. | 10:16 a.m. |
| 4 | 10:20 a.m. | 11:00 a.m. |

| | | |
|---|---|---|
| 5 | 11:04 a.m. | 11:44 a.m. |
| 6 | 11:48 a.m. | 12:28 p.m. |
| 7 | 12:32 p.m. | 1:12 p.m. |
| 8 | 1:16 p.m. | 1:56 p.m. |
| 9 | 2:00 p.m. | 2:40 p.m. |

On the first visit, a walk through helped me to figure out the school's layout. The two buildings that comprised this school were connected through a passage way that exhibited students' paintings mostly depicting flags of some of their ethnic origins (e.g. Puerto Rico, Dominican Republic). This area was narrow and because it required a couple of steps to reach the level of the older building it had a lift for handicapped students. I spent time in the common areas that I had already determined to observe such as the cafeteria, main office, main entrance, and the space where students exercised.

The cafeteria was large and well lit. There were two lunch shifts. The walls were decorated with different colored poster boards and, in the first observations, these boards were assigned to the different graduating classes (class of 2013, 2012, etc). Most boards were undecorated and had been either neglected or tampered with. Things seemed to be missing or hanging. They did not seem to have been vandalized though. The tables were round and seated 8. They were foldable and had wheels. They looked fairly new and in good condition. There were several trash cans but they did not look new or pretty. They were plastic, dirty, and were yellow and gray. The windows on the cafeteria, which were in the newer side of the school, overlooked the older building. The older building had "cathedral style" stained glass windows on its auditorium. There were signs of wear and tear on these windows as there were many small colored panels missing. The paint in the window frames of the old building looked old. The temperature was comfortable in the cafeteria when I observed. There were two vending

machines there. One sold ice cream and the other, water. I saw students using these machines. Students lined up to purchase their meals which seem to be mostly "fast food". They bought items such as fried chicken, burgers, French fries, pizza, and sandwiches. As I walked around the cafeteria, I realized that colored posters had information about different colleges and universities. They had facts such as tuition cost, ethnic make up of the school, required test scores, sports played, etc.

The stairs connecting the floors in the school were a dark gray color and not very well lit. In general, the newer building seemed brighter and better maintained than the old building.

The old main office had seating for people waiting and had three women as staff. They were very friendly and attentive. When the mail office moved to the newer building, the staff was divided, some clerks in the old office some in the new office.

The basement level of the floor where the gym area is located was damp and dark. One classroom had a closet where mold was growing in spite of repeated attempts to remove it. It was possible to smell the mold in the air. There were no windows in this classroom.

### b. Sears High School

The second school was simply known as "Sears." This was a large, comprehensive, high school located in the vicinity of a famous architectural landmark in the State. In contrast with the landmark, which is grandiose and kept up, the building where Sears High is located was short and lacked distinctive architectural features.

Even though this school had a long history, being one of the oldest high schools in the state and in the country, there was nothing in the building indicating that history. Perhaps the only vestige of those days was a stained glass window that is displayed in a not very visible hallway near its auditorium. The window commemorates an accident that involved former students at the turn of the century. The day I discovered it, I noticed that a display case across the hallway told the history of the window and ended by saying:

*"The memorial is an artifact that receives no recognition mainly because the students and teachers are not exposed to their high school's history. Also because there are no lights behind the window, when walking down the hall is almost invisible."*

This statement sums up the lack of prestige or historical continuity in this school, the latest iteration of a high school that was created to improve the life of the town's residents. When this building opened in 1964, it did not have the grandeur of the previous buildings, nor did it have a central location in the district.

The first time I visited the building, I had a scheduled appointment with one of the Vice-Principals. Once I entered the building, a security guard greeted me and asked me to show a valid ID. This measure, common to all schools, was only done thoroughly at this building. In the other buildings, security guards were more relaxed and, once they knew me, they would just let me in.

As I made my way into the Vice Principal's office, I noticed that the walls were made of colored tiles. It gave the school the distinct look of public, "under a tight budget" construction. The hallway reminded me of the New York City subway stations of the 80's and 90's -minus the subway and the direction signs-. The Vice Principal greeted me with "What is it that you need?" I said, "I am here to conduct observations" and she scribbled on a hallway pass and gave it to me. The pass said that I was going to observe classrooms which I did not intend to do. I explained this to her and she still gave me the pass "in case someone asks" she said. Student teachers are probably the most common type of observers at a school building and that was probably why she immediately assumed that I was doing something like visiting classrooms; even after I explained that I was a doctoral candidate doing research.

As I exited the Vice Principal's office, there was a change of period in the school. The hallway was chaotic so I decided to stand to the side and observe. The students were very loud and I wondered if the tiles only made the loudness worse. The Vice Principal with whom I had

just spoken and other teachers used whistles to "direct" the students somehow but I was uncertain about what that was accomplishing other than making the hallways noisier and more chaotic. As the change of period ended, I made my way around the building which had two levels and many staircases that were not labeled. Some hallways had signs that showed the direction of the room numbers with *Sharpie* marker on the tile. There were a number of display cases throughout the school, most built into the walls. They were not very good looking but they contained up to date information about clubs and some district initiatives. In subsequent visits, I noticed that the information did not change.

As I stood at the end of one of the hallways, I heard young children's voices. I followed the sound through a staircase and found that, in the first level of the building, there was a child care room. The sign at the entrance read "Infant Toddler Center." When I peeked inside I saw some children sitting in high chairs being fed by adult caretakers and some toddlers watching T.V.

The tiled hallways were well lit by fluorescent lights. There was little natural light coming in. The classrooms seemed to be better lit with large windows that allowed natural light and, in some cases, a view of the beautiful architectural landmark nearby. The school had a gym which looked well built and well lit. Outside the gym, there was a large display case with sports trophies earned by the school teams. I looped around the first level of the building two times. The layout was still confusing to me. I did have access to a floor plan that the school principal made available to me (See Appendix). As I continued walking, I noticed that there were many loose tiles some in the ceiling. It seemed to me that, beyond any aesthetic concern, there may be safety issues with loose tiles perhaps falling on students.

At the entrance of the school, next to the main office, there was a display case that had the school's "Vision Statement" as well as its "Mission Statement." Two lines in these statements caught my attention. The first one, on the mission statement said: "to create a school environment that has a positive impact and creates lifelong learners." The second one, on the

vision statement said: “We will provide a caring and nurturing learning environment with multiple opportunities to experience new methods of learning.” The fact that these were displayed made me feel that someone, somewhere, cared about the quality of the school’s learning environment. However, when I looked at my watch right after reading these statements, I noticed that only 40 minutes had passed of my observation time. I was tired and ready to leave. This was a feeling that I explored in my observations of this school. Why did I feel so uncomfortable in this building? The physical and social environment of this school was not inviting. The cursing and chaos that I heard on the hallways by both students and security guards did not contribute to making this a nurturing environment. I doubted that lifelong learners were being created here with the loose tiles, the whistles, and the strict security.

I asked a guard about the entrance that the students used to enter the building. He pointed to the side of the building, not where I had come in, and said that there were separate doors for girls and boys. Some teachers wore uniforms comprised of a polo shirt with the school’s emblem and it was sometimes hard to tell them apart from the students because some of them seemed young. The security guards wore the standard district uniform which was dark blue and had an insignia similar to the one used by the police.

As I continued to move through the building, I found signs that stated things like “This is an official NBHO Zone” and it explains: “No butts hanging out zone”. This refers to the preference of some students to use their pants lowered in the waist, to the point of showing their underwear and rear end. There are many of these types of signs around made of paper, usually typed. Some read “Pull up your pants before entering this classroom”.

The school seemed dirty to me. There was garbage on the floor in different places like hallways, staircases, and at the entrance to classrooms. Classrooms had numbers outside and some were marked with old golden paint that did not correspond to the current usage of the classroom. One read: “Secretarial and Office Practice.” I heard music coming out of a staff office. There was no sign on it. I recognized that the music was Louis Armstrong. It was common in

this district's schools to hear music by the local jazz station coming from teachers' lounges.

It was hard to distinguish between classrooms and staff offices. The long hallways had entrances to both kinds of places and it was hard to tell one from the other. The guidance department had a sign on the front and it was possible to get in through two different entrances. There were signs posted at these entrances, in paper, clearly stating: "No pass, no entry". Students needed to be authorized by their teachers to be outside of their classrooms and this included visiting the guidance department. There were posters outside this office with information about local universities and colleges. There was another sign stating that parents needed to make an appointment if they wanted to talk to their child's counselor. I noticed that the sign was written in English and I had heard parents speaking Spanish when they came into the school. There were other signs, on letter size paper, that explained testing dates for the SATs and ACTs.

As I looked for the ground level, which was not the level at which you entered, I noticed that there was a gap in the hallway floor that was filled with garbage. The gap started at the floor and continued to the wall. I noticed that there were tiles that were replaced with different colored ones. Some tiles were painted over with a color similar to the original one. The paint was peeling, however. As I walked downstairs to the first level, I heard a hissing sound coming out of a board in the wall of the staircase. I was not sure about what it was but it seemed to be steam from the heating system. I started observations in October and it had begun to get cold. The sound was coming out of a short wooden board stuck into the tiled wall with screws.

The cafeteria had long picnic style tables grouped together in long lines along a side of the rectangular space. It had the same elements of the school cafeterias of the other schools in the study. The counter where you ask for the food was inside an enclosed area. There were three registers, vending machines, and controlled entrances where teachers were posted for lunch duty. They check the IDs of the students and confirm that they were assigned to that specific lunch period. There was an office with a sign "Youth Services Programs" which was an office

with services sponsored by a hospital in New Jersey. They had different services available to students from counseling to tutoring and sexual education.

I found the library hidden at the end of the first level. To me, it seemed like an oasis of cleanliness, quietness, and organization in the building. There were very few students in the library and they there were using the few computers available. The entrance had displays on both sides and they featured a collection of books with titles that I find relevant because of their subjects (e.g. The Body Project: An Intimate History of American Girls by Joan Jacobs Brumberg). The librarian showed me the five rooms that comprised the library. It was really just a large room with some enclosed areas. The rooms were a computer room, the librarian's office, a film room that had VHS tapes and a TV. set, and a small conference room. In the main reading room, there was a sign attached to a heater: "This heater is not working".

Sears High was divided into four "academies". This was an attempt to make this very large school into more manageable small schools. The focus of these academies were: Aerospace & Technology, Law & International Studies, Visual Arts & Graphic Design, Health Sciences & Related Careers.

### c. Knowledge High

The third high school in the study was located in a brand new, state of the art building. The school itself, a magnet school, existed since 1974 in an old building near the downtown area of the district. However, in 2006, the school opened in its new 275,000 square foot location. The architectural narrative for the site stated that this school benefited from "*a capital program spearheaded by a state construction program to build innovative new schools. In collaboration with a public/private partnership that includes the school district, regional universities and high technology industries, this facility was planned utilizing Instructional Technology Standards that define infrastructure, equipment to student ratios, maintenance standards, and alignment of technology resources to*

*curriculum goals. These groundbreaking educational ideas are the way in which the new school will help foster social progress and the renaissance of this economically depressed area.*" (Design Share, 2010)

Before the school moved to the new location, it housed grades 9th through 12th. Since the move, in school year 2006-2007, they added grades 7th and 8th. It was the only school in the study that included middle school grades. The application process was described on the school's web site as competitive and based on the student's standardized test scores, his or her transcripts and grades, a teacher recommendation, response to application questions, and scores on entrance exams in Mathematics and Language Arts. This school prepared students in Mathematics, Science, and Technology and, unlike the other magnet school in the study, it allowed students to apply to their 7th grade class or to their 9th grade class. All students need to reside within the district to attend the magnet schools.

During 2008-2009, this school had an enrollment of 887 students, slightly lower than the 896 students the year before. The largest jump in student enrollment was during the 05-06 and 06-07 academic year when this school went from having 623 students to having 784, a 25.8% increase due to the addition of the middle school grades. .

The building stood out at the top of a hill surrounded by newer developments in an otherwise old urban area. The building was modern and it was easy to see the solar panels on its rooftop. There were two main entrances, one leading to a lobby and another one to the auditorium. The lobby entrance opened out to a large atrium that expanded to allow a view of the three floors of the building. There was a skylight at the top. The classrooms were on the top two floors, the gym on the second floor. The first floor held the library and media center, cafeteria, main office, guidance office, swimming pool, and auditorium. The materials used in the building were contemporary with cinder blocks, cement, and glass prevailing. The building had a somewhat industrial look because not all walls are covered with paint. The walls in the corridors and classroom areas showed the gray blocks.

The library was large and had an additional media lab as well as meeting rooms that were used for after-school programs. There were computers throughout the library and large hanging lamps. There were some tables with chairs and the bookshelves were low allowing a full view of the library. There were student creations decorating the top of the bookshelves. One of the themes was energy and conservation.

The classrooms were well lit and spacious. Not all had windows and the science labs had no windows. All of them were up to date in terms of technology. The classrooms had individual desks as well as individual computer hubs surrounding their perimeter. The teacher's desk was in the center of the classroom and had a computer monitor.

There were elevators and two sets of staircases, one in the middle of the school, visible to everyone from the atrium. The other set of stairs in the back of the school was meant for higher volumes of traffic. The latter stairwell was the most frequently used and had large amounts of open space between the floors. It also had large windows that let natural light in and showed a view to an iconic building in the district as well as the adjacent neighborhood.

### d. Main High

Main High had been located in a brand new building since 2008, only one year before this study started in the fall of 2009. Similar to the other new building, this school was located in an area of the town that had been slowly gentrifying with newer housing developments. The building had two entrances on each side of the block and a play ground on one side for toddlers. Across from the school, there was a park with a playground for older children. On the opposite side of the school, there was a low rise public housing development. This school was the least welcoming of the four schools in the study. Even though the building was well lit with a large atrium like Knowledge High and the security guards were also relaxed and friendly, the administrative staff was cold and seemed annoyed that I was there.

On my first visit, I ran into an architect who works for the district and who had helped me with the selection of the schools and he gave me a tour. The school had three floors and we started by taking the elevator to the top floor. The first thing that I noticed was how this building, unlike the other new building, looked more like a traditional school. The walls in the top two floors were made of cinder blocks which were painted in the colors that you would find in other schools (shades of green and blue, gray). The classrooms were bright and had glass doors that allowed looking inside. There were administrative offices for vice principals on every floor. The first floor had the media center and library, the office for the guidance counselors, a lounge for student clubs, and a meeting room for the Parent Teacher Association.

The basement level held a main gym and an auxiliary gym, the nurse's office, and the child care room. At ground level, on one side of the atrium, there were the main office and cafeteria. On the opposite side, there was the security office, and a school store that sold t-shirts, sweaters, and other school themed banners. There was also a modern auditorium designed to teach production (lighting, dressing).

This building was designed by a firm from outside of the district. The building took longer to complete than expected and some parents and students organized and protested to get it done on time.

When I started the observations, the lobby was decorated with a Hispanic Heritage Month theme. There were flags of different countries around the lobby. The main atrium had leather chairs and ottomans. There were live plants in the built-in planters. Throughout the school affixed on the walls, there were wooden signs with phrases from different people. One of them read: "There was no such thing as liberators, the people will liberate themselves" by Che Guevara. Another one read: "We have a 9000 year old culture, you have a 200 year old culture. I think we can figure out our own future" by "Anonymous Man, Bagdad, Iraq". There were also other displays celebrating important African American people including the current president, Barak Obama.

During another observation, the lobby was filled with people as they had a college information fair with nearby universities and colleges presenting to the students. Outside the main office, there were statistics for the school. Student and teacher attendance were posted as well as the results of a “walk-through” done recently in which all the departments were surveyed. As I approached the area where the classrooms were, I heard a security guard yelling at the students to “get a pass”. The lunch bell did not ring yet and I assumed that the students were prematurely outside of their classrooms. When it was time to change period, I noticed that, instead of a bell, the school had jazz music play over the P.A. System. There were poster boards on the second floor that displayed challenges to the students by the teachers such as math problems or physics problems to be solved.

## Chapter Four: School Affordances, The Functionally Meaningful Transactions in School Buildings

Before starting the description of school affordances, it is important to describe the nature of this chapter. Whereas the previous chapter offered descriptions of the environments of each school, some of their academic outcomes (standardized test scores, attendance, graduation rates, dropout rates, teacher mobility, and student mobility) and general character, this chapter provides information about the ongoing environmental transactions found in the schools. These transactions are at the core of mediating processes often cited as "little known" in the literature (Evans, 2006). Because of the transactional nature of these mediators, what will be described in the following chapter are behaviors, emotions, routines, and other kinds of relationships between the physical environment of the school and the people who use the school. Heft (2001) describes affordances as being functionally meaningful. While in the previous chapter, the emphasis was on the description of behavior settings, this chapter will focus on the description and categorization of school affordances as functionally meaningful components of those behavior settings (Heft, 2001).

### 1. School Affordances

The physical environment of the school affords certain behaviors, routines, and thoughts. The following are five categories of affordances found in school buildings that are considered to be relevant to academic achievement and the reproduction of social conditions. These categories are not meant to be exhaustive. They are simply a first attempt to categorize school building affordances relevant to the educational process and the reproduction of social structure.

The first category of affordances is that of function, school facilities that help or impede specific tasks and behaviors associated with teaching and learning. Within this dimension, the

affordances considered are those directly related to the behaviors and attitudes necessary for the tasks involved in teaching and learning. A second category of school affordances would be social: school buildings favor certain types and frequencies of interactions among their users over other. Different types of interactions at the group or school level are considered. A third category is that of emotional affordances. These subtler affordances are the feelings and emotions created in the interaction between the school and its users. Feelings of pride, stigmatization, and motivation are examined. A fourth category is that of communicative affordances. These are written signs, postings, or emblems that are meant to communicate something specific using language. The fifth category of affordances is comprised of those affordances related to the development of identity. These are features of the environment that inform users about who they are and perhaps about whom they can become.

Although in his original theory Gibson did not propose these nuanced affordances, these have been derived from existing theory (see Chapter One) as well as from the categories created from the coded observations, focus groups, and interviews. They are congruent with Heft's extension of Gibson's theory (Heft, 2001). Heft identifies as sources of affordances topographic features, physiological forces, and sociocultural practices. From these sources, sociocultural practices have received the least attention from theorists and researchers. The following sections will report on the kinds of affordances observed at the schools in the study. These come from direct observations of the buildings, interviews, and other exchanges with school building users. The approach used to describe affordances is a molar one. The units being described are person-environment transactions and, as such, they include people and environment.

### a.Functional School affordances

In terms of function, schools afford building users to be educated, to educate, and to provide a safe, clean and rich educational environment. Functional school affordances are

closely related to the design of the building, the condition in which it is maintained, the availability of technological resources, as well as climate control factors and noise.

In the study's schools, students attending in old buildings had the most complaints about everyday tasks that were impaired or made difficult by the condition of the school. When students talked about these, they did it with the expertise that only daily users can have. Their complaints were due to the lack of maintenance or the decay widespread in inner city public school buildings.

A common issue with old facilities was that of the bathrooms. Most students interviewed in the old buildings spoke about the bathrooms in their building negatively. This essential setting is an incontestable indicator of the quality and maintenance of a building. Students had similar complaints. As one student from Industry High stated:

" *The bathrooms need work. They are broken, sinks don't work, there is no paper, you have to bring your own paper. There is a leak in the last stall, close to the biggest window. The bathrooms that work are on the first floor, sometimes you have to go to the other building [*newer building*] to use the bathroom.* "

A similar experience was described by a student from Sears High, the other old building in the study:

"*I don't use the bathroom. I live a block away so I wait until the end of the day to go to the bathroom. Bathrooms are dirty here.*"

For the first student, there were ways to adapt to the condition of the bathrooms. She knew which bathrooms were in working condition and she knew that she had to bring her own toilet paper. The second student also adapted to the condition of the bathroom but her strategy involved avoiding them completely. The functionality of the bathroom is compromised by its condition. The discomfort of having limited access to a bathroom can impact students' mood, attention, and overall experience of the school. How comfortable can a student be when she knows that she has to walk out of her school building to use the restroom? This is particularly

problematic when students cannot leave the school building at will. The observations conducted in the old buildings confirmed that the bathrooms tended to be dark, did not look clean, or lacked toilet paper. At Industry High, the bathroom that the student referred to as cleaner was located in the newer building and, it was, in fact, cleaner. This was perhaps due to its closeness to a security guard station and to the library. There was better monitoring in this area of the newer building.

In contrast to the experience of students in old facilities, students in new buildings did not mention the bathrooms at all as a source of problems. New buildings' bathrooms were clean, modern, large, and clearly signed on each floor. None of the students in the new buildings complained about their bathrooms.

Just like bathroom use, issues of temperature control are related to basic building functionality and comfort. At Industry High, the lack of temperature control exemplified how hard it is to retrofit an old building as well as to negotiate the conditions of the two buildings that comprise the school. One teacher at this school said about the older building:

"*This building was built before electricity was available and therefore has suffered many changes.*"

This building, the oldest in the study, was designed at a time when wires and centralized temperature controls did not exist. The heating system or boiler is located in the old building. The newer building does not have a boiler or independent heating. Hot water is pumped from the old building to the newer, making the temperature in the old building, particularly in the basement classrooms, very high. A teacher reported that:

"*Sometimes in the winter the classrooms are so hot in the morning that whatever is posted on the walls curls up.*"

Temperature control, a basic condition for comfort in the learning environment, is impaired by the characteristics of the school buildings. The patchwork that unsteady and

sporadic funding creates, contributes to the negative conditions affecting the everyday of the school.

Among the basic activities that a school needs to accommodate are those related to sports, physical education, and other activities that allow students to exercise. The lack of a gymnasium at Industry High prevents certain activities from happening. Industry High uses an area in the basement level to hold their physical education classes. As described in the previous section, there are basketball hoops in it as well as lines on the floor but it is not a regulation sized court and it does not afford sitting and there is little room for spectators. When it rains, this area floods disrupting physical education classes. In addition, three students, one teacher and the principal of the school reported that there is mold growing under the mats that cover the floor of that area as well as other sun deprived, moist areas in the basement. Mold is linked to respiratory problems such as asthma. The lack of a clean, adequate, reliable exercise area has direct effects on students' health. When this area is not available, students used the auditorium and students sometimes step outside to the parking lot to play ball or exercise. The parking lot is cemented and has a small and uneven green area. This area is not fit for group exercise. The lack of a gym means that students do not have a consistent space available for physical activity. As one English teacher at Industry High puts it:

"*The lack of a gym sends the message that they don't care, and there is an obesity epidemic out there!*".

Another teacher at the same school who coaches the basketball teams was upset and discouraged about not having a gym because the teams performed well in the previous year's season. The teacher implied that the team "deserves better". When a home game needs to take place, students on the teams are bused to a nearby elementary school where they use their gym. He thinks that this is negative not only for the team but also for the whole school:

"*We cannot have home games, nobody goes to cheer the teams because they would have to pay a bus fare to get to where we play. It definitively hurts the school's spirit*"

What seems to happen is that a very clear, material, and functional aspect of the school environment, which is the lack of a gym, is, in addition, an issue that hurts something less tangible the school's spirit. School spirit will be discussed in the section that deals with the emotional affordances of the school.

Some of the functional affordances in a school building may be related to the health of its users. The school building might be giving off toxins that can impair daily activities and, over time, achievement. In one of the basement classrooms at Industry High, a history teacher showed how mold was growing in one of the closets. He said that he taught in this classroom in his first year at the building.

"*The moldy closet gave off a smell, and even though I communicated the problem to the adequate people, it took years to be corrected. It was resolved then, but is now growing back in the walls. I could not teach in that classroom because of the smell.*"

Discomfort for teachers and students can arise from moldy classrooms but there are also health implications from mold exposure. According to the Center for Disease Control and Prevention (2011), mold exposure also been linked to an increased incidence of upper respiratory tract symptoms such as coughing, wheezing, asthma, and pneumonitis. People can also experience symptoms like nasal stuffiness, eye irritation, or skin irritation. Some people, such as those with serious allergies to molds, may have more severe reactions. Mold exposure is not only an inconvenience and something that may disrupt class time but an environmental hazard that may prevent students or staff from attending school. There was only one area in which mold was observed but, given that the whole first floor of the building is underground and is, at times, flooded, there may be other areas that have mold that were not observed.

Observations were concentrated in common areas, not specifically classrooms. In the other old building in the study, Sears High, there were no health hazards directly observable or mentioned by any of those interviewed.

Another important aspect of functional affordances is the provision of current technologies. Schools need to be up to date technologically to prepare the students for the challenges of higher education and for the job market. In old buildings, it is harder to adequately set up computer networks, wiring, electrical outlets, and the hardware needed to sustain modern information technology. As the technology coordinator at Industry High puts it:

"*It is hard to be the technology coordinator when the building is, for example, not suitable for wireless networks*"

The guidance counselor added that:

*"Not all the computers are connected to the Internet and some of our students don't have access to personal laptops like students in other schools. Students here cannot take computerized versions of the SATs and other tests. I feel that the more exposure they have to different kinds of things the more willing they are to take chances"*

The general difficulty of retrofitting buildings translates into specific difficulties like students not being able to take the computerized version of a standardized test. Students are not being excluded from taking the test. They can still take the paper version. However, they are being excluded from the kind of experience that students in more affluent public schools have.

At Sears High, a social studies teacher complains that:

"*There are not enough computers. There is a long wait for repairs because it is a large school*"

Whether there are enough computers or not can be debatable because, according to the numbers issued by the New Jersey Department of Education, this school has 2.4 students per computer which is smaller to the 3.1 students per computer average in the state. However, of the

schools in this study, this school had the largest ratio of students per computer followed by 1.9 at Main High and 1.0 at Knowledge High and Industry High. What is probably accurate is the fact that, whenever there is a large institution, there is usually a wait when it comes to getting support from the informational technologies experts.

In contrast to new school buildings in which modern technologies are considered from the moment they are designed, in old buildings, it is more difficult to set up modern computer networks or other technologies. In new buildings, classrooms have the wiring and the space needed for computers, Internet, and audiovisual equipment such as "smart boards." Libraries were conceived as media centers and not restricted to books or other paper bound information. In old school buildings, technology integration in the libraries is an afterthought. Technology is also not introduced as it is developed but whenever the district is able to afford it and within the physical possibilities of the existing facilities. At Industry High, the library was improved when it was enlarged and more computers were added but, even though the change is viewed as an improvement, it is still an improvement over what existed, not a move towards going beyond a minimum requirement or excelling.

It was very telling during the study to converse with people who experienced the move from an old derelict building to a new building. These building users presented an important view of what the move had meant to the school as a whole. For Knowledge High, the move from an old building to a new building was an issue of safety. A history teacher who has been at the school for 17 years, describes the conditions at their old building:

"*The old building was condemned by the state. The fifth and sixth floors had asbestos. There was a flood every time it rained. When it rained, it rained inside.*"

Safety is a basic functionality that a school needs to afford. When safety is not afforded at a school, all other activities are affected or impaired. In the old building, Knowledge High students and staff knew that the facilities were unfit. They had to devote instruction time to solve issues related to the condition of the facilities. New buildings have a clear advantage in this

regard. They are safe and the condition of the building is not an impediment but a facilitator of newer instructional methods. All classrooms at the new Knowledge High building have smart boards and are connected to the Internet. Instead of worrying about the roof leaking they now worry about how to best use the technologies they have at hand.

Functional school affordances are akin to the bottom levels of Maslow's pyramid of needs (Maslow, 1943). Physiological needs and needs for safety ought to be satisfied to be able to participate in higher level needs. Of course, in the case of schools as it is in other areas of life, there is not a linear trajectory from basic needs to self-actualization. Students in all the schools are able to move their focus from the negative aspects of the environment to the specific things they need to do to accomplish their goals. However, the weight of the environment does not diminish by ignoring it because the problems of school buildings in disrepair are usually chronic, not episodic. It can be argued that the bad condition of school buildings can propel students to graduate sooner as they might want to exit that environment and not repeat a grade. But environmental burdens can make it harder to concentrate in academic activities and, therefore, it is unlikely that students can benefit from unfit facilities. It could also be argued that dropping out of school is a likely solution to the discomfort in the building. In fact, older school buildings have slightly higher dropout rates than their newer counterparts (see schools comparative chart). This fact is, however, confounded with type of school because comprehensive schools overall have higher dropout rates than magnet schools.

The lack of basic functionality or the less than adequate provision of basic school functions may make the difference between an attractive and a repellent school, between a high performing and a low performing school. Looking at the specific issue of science laboratories, it was possible to observe and learn that, at old school buildings, where the labs were not in good condition, teachers were reluctant to use them to their full extent or stopped using them altogether. There were no signs of labs being used at Sears High and one student at Industry High said that in her school "*labs are no good*."

One Mathematics teacher at Sears High said that:

"*There are three academies that are supposed to function within the school. The science wings where the labs are concentrated don't work. These academies exist in paper but not in real life*."

Establishing academies within a large school has been a popular solution for breaking large schools into smaller ones and is thought to be better for student performance. In the case of Sears High, this solution is not working partly because of the lack of functionality in the science labs.

In new school buildings, the science labs were fully functional and even had integrated technologies such as computers on each lab table and a smart screen to share information. The difference in functional affordances in the case of science labs is immense. Students deprived of the experience of using a science lab forgo important learning experiences. Having a science lab tilts the student experience into the positive because now they are able to learn from this specialized space. This learning is, of course, contingent on the quality of instruction. It can be difficult for teachers to effectively use new resources to teach.

According to a Mathematics teacher at Main High, the only teacher whom I was able to interview at that school,

"*Now that we are in a new building, some teachers had to attend training to use computers and other equipment that they never had a chance to use before*".

The old schools cope with functional problems differently. Taking technology integration in the library/media center as an example, in the old buildings, technology integration appeared as an extraneous element to the existing space. Computers, for instance, were added to the existing libraries forcing the reconfiguration of the space. At Industry High, the move from the old library space to the new one helped to create a library that had more space for computers and changed the main focus of the library from written materials to digital media. At Sears High, the library was not in a prominent space. It was located at the bottom floor on one side of the

building. There were not many computers and one of the attached smaller rooms was used as a computer lab.

In both new school buildings, however, the inclusion of computers, smart boards, and other digital media was seamless and allowed students easier access to these resources. In terms of function, old buildings and new buildings differed considerably. Newer buildings were able to physically afford a greater range of activities and to afford the same kinds of activities as other schools in a more reliable way. In the new buildings, there were two gyms instead of one (one for sports practices while the other one was occupied with home games), computers were state of the art and Internet ready, smart boards were the norm and not the exception.

### b.Social School Affordances

The physical environment of the school encourages certain types of interactions, groupings, and social practices. Schools are designed to contribute to specific didactic situations that entail certain social interactions. In the new buildings, the design of the school helped to create an inviting environment for education. The large lobbies at the entrance of both buildings were both large and inviting. The natural light penetrating the buildings as well as the seating area in one of the buildings were signs that students were welcomed there. This design feature, paired with the looser scrutiny of the school guards at the entrances made for a friendlier, more relaxed environment. The metal detectors, ubiquitous in all district schools, were considered in the original design of the building and therefore their placement is little interruption in the flow of people entering the building.

In the old buildings, the entrances are not those that were originally designed for the building. At Industry High, the main entrance for visitors used to be to the side of the auditorium which made it very narrow and difficult for students to enter quickly. The two metal detectors were placed side by side in the narrow hallway making them a real physical deterrent to building access. It was also difficult for visitors to figure out which was the expected access

entrance. As my observations ended toward the end of the school year, the main entrance was established through the newer building. This entrance was larger and now communicated with the main office that was moved to that area. There was more room for the metal detectors and they did not block the entrance to the building. The flow of people, however, was still controlled.

At Sears High, the main entrance that visitors use is on the street side of the building that has sidewalk access. There is nothing special about it, no foyer, and no metal detector. The entrance leads into a corner where two corridors converge. Here there is a desk where one security guard requests IDs from visitors and writes down their information when they enter the school. Interestingly, this is a school where at least 30 students, according to the school's principal, had an ankle bracelet due to legal infractions. During observations, some students left the building unauthorized through this exit while the guard was busy taking down visitors' information. It is hard to monitor this entrance. The entrances that students use to enter the building in the morning have metal detectors. These are on the side of the building where there is a parking lot used by teachers. In the morning, students enter the building through doors separated by gender.

The entrances to the school were of interest because they tend to establish a set of expectations for what occurs inside of the school. Many middle class parents would cringe at the idea of sending their children to a school that has metal detectors. In this district, however, it is seen as a necessary measure for the safety of all. In all buildings, security officers had blue police-like uniforms with badges. These security officers were more relaxed in the newer buildings. They were friendlier and it appeared that they had better posts that had more video monitoring than in the older buildings. The security posts in the new buildings were included in the original design of the building and not an added feature as it was in older buildings.

There was also a difference in the demeanor of security officers located in magnet schools and those in comprehensive schools. The assumption is that students that attend magnet schools are "good kids" whereas comprehensive schools have to take "everyone." The

tone of the officers changed in both kinds of buildings. They were more welcoming and more relaxed about procedures like making me go through the metal detectors in the magnet schools. Also, in the new buildings, the metal detectors where immediately after the main doors and the security guards were at a counter away from the doors. This allowed visitors to the building to go through the metal detectors without the intervention of the security guards who just waited at their post and asked people to sign in and show an ID. In the older buildings, the security guard is immediately after the metal detector and this slows down the access to the building.

At Industry High, there is a room that they call “The Cafe" which is set up as a coffee shop and is used sometimes as a meeting place for school team players on their way to a game. The fact that they don’t have a gym makes it harder for them to gather inside of their building. This room was conceived as a safe area for students to avoid the heavy gang activity in the vicinity of the school. According to the teacher who coaches the basketball teams:

“*The room was opened because students that went to a nearby deli were harassed by gang members that live the public housing down the block. The students would get in fights and in trouble*”.

This space is used to serve dinner to students before they attend the game. This room was never open to the students during observations but these were conducted during class time. “*The room is not what it should be*” the basketball coach said. “*We would like to fix it up and decorate it better, but it is all about the money*”. Currently it is just a bare room with some tables and chairs and counters designed to keep food warm. One of the functions that the social environment of the school should provide is safety. People and space should feel familiar and safe. This gathering room serves this purpose at specific times. The school officials at Industry High acknowledge that what they can do to change the culture of the neighborhood is limited and they try to protect their students while they are at school.

At Industry High, the social environment was frequently described as that of a family. Perhaps because of the school size, 414 students enrolled in the 2009-2010 year (the smallest

school in the study,) or perhaps because of the influence of the principal, who explicitly fostered camaraderie at the school. This school's staff and students reported that they felt comfortable.

What the school building affords socially is particularly relevant to the educational process. From the beginning of life, caregivers guide children toward the discovery of affordances in the environment. Learning is directly and indirectly taught by other persons. The environments in which we spend time shape, support, and discourage exchanges between people. The familiarity that school users mentioned at this school was fostered by the various workshops available at the school. The CAD workshop, which held the class and the students who were in charge of the renovations of the new space at this school felt like a close knit group. The teacher comes from an architectural firm and she chose to teach at this school because of the opportunity to "make a difference." It is due to her encouragement that the administration of the school has taken seriously the role of students as partners in the redesign of the new main office and library. This teacher runs the class as if students were part of the same architects' office. Each student has a computer where they can work and save their designs at the end of the day. This teacher uses the available resources in a creative way and affords real professional training in the social environment of her class. The teacher was intent in that:

"*I am a teacher here and nowhere else. If I had to change schools I would just go back to my office.*"

Knowledge High had a very run down school building before they moved to the new one. The stories about leaks, temperature issues, and a lack of adequate spaces for education were consistent among the teachers who taught at the old building. Teachers reported that the poor conditions of the old building helped, in part, to make them band together. There was a sense in the old building that only by working as a team they would overcome their difficulties. Their efforts paid in that the students attending the old building were producing good scores on standardized tests. These scores were higher in this school than in the other three schools in the study and they remained high even after moving to the new building in 2006. In the new

building, teachers report a very different environment. In the old building they had to see each other several times a day, the building was small and the only faculty bathroom was close to the elevator and the main office. In the new building, they see each other less often, or rarely. The grades and subjects are distributed in different floors of the building. It is hard for teachers to see other teachers with whom they don't run into in a daily basis. A teacher who has been at Knowledge High for 39 years reported the following:

"*In the old building we shared the same space, even the locker room, so I saw every teacher several times a day. Now I don't see many teachers. Half of the teachers in the new building are new and I have not had a chance to meet all of them. I met some at the Board of Education while I was at a meeting there. Some of them I only know through e-mail*"

When this school moved into their new building they expanded to include 7th and 8th graders, hired more teachers and, as mentioned before, distributed the grades and subjects into specific areas of the building. The new building is also larger than the old one. The environment in this new building is less of that of a family and more like an institution according to another teacher who has been there for 17 years:

"*The old building was a club, there was a sense of family (…) the building was definitively dilapidated, but it was not considered to be a reflection of us, it gave us 'something to prove'. The thinking was that later we will do twice as well because of what we have overcome. The switch to the new building was experienced as a change from a club to an institution.*"

The quality of the building not only affords a certain type of interactions but it also frames these interactions in the context of the social environment of the school. Lack of appropriate conditions made Knowledge High's old building a source of a feeling of familiarity, not unlike the kind found in a life raft trying to survive a boat about to sink. Another teacher at Knowledge High puts it this way:

*"This place is so much better now. We are spoiled. But there is nostalgia. The older place was more intimate because it was crowded. Here sometimes you don't see people in months. There used to be chaos outside of the principal's office in the old building, but it was central to the building (…) There is less intimacy here as a whole community."*

In the new building there is no longer a sense of risk or lack of safety. It has everything that the old building lacked and more (swimming pool, auditorium, two gymnasiums, weight room, etc.). However, it does not afford the integration and familiarity that the old building did. The new building organizes people according to predetermined divisions (grades and subjects) and does not afford the less formal ties that come from dealing with shared adversity. All meeting areas are predetermined and casual encounters are less common. The faculty dining room is tucked in a secluded area between the main office and the auditorium and has a long table with no windows or natural light coming in. It did not look welcoming perhaps because it was not decorated. The building had faculty lounges on each floor. The second floor lounge did not have natural light either but had lockers for the teachers, a microwave oven, coffee maker, and while conducting an interview there, the lounge filled up with teachers during the period change. All these teachers, however, taught the same grade or similar subjects. It was a place where talking to other teachers was encouraged in a planned way, not spontaneously as it happened in the old building.

At Sears High, it was hard to imagine spaces that were conducive of gathering. The only exception would be the gym which hosted games for the different teams at the schools and "pep rallies" organized by the principal. No special spaces for the staff were observed. Other than the gym, the spaces where students could gather were strictly monitored such as the library or the cafeteria. The layout of the school also made "hanging out" difficult. As described earlier, this school had no lobby, no central area. The courtyard between the cafeteria and the library did not have students during observations. It had a couple of picnic tables that did not seem sturdy and

it had some garbage and there was a textbook thrown to one side. The space was not inviting to students due to its condition or to the programming of the school. There were three lunch periods with 400 students at each. This is a large number for any space to handle. Many of the policies that regulated the spaces within the school had to do with student management and not necessarily with the best use of the spaces. In the hallways at this school, the degree of noise was high and the change of period was chaotic. The hallways were very crowded and the noise, crowding, and a short amount of time to move from one point to the other influenced the interactions between students, security guards, and teachers. The use of whistles by the teachers in charge of discipline increases the feeling of chaos. Many exchanges heard at this school were loaded with negative words towards the students. Cursing was also common both by adults and adolescents. A teacher said that the distribution of classrooms was concentrated toward the center of the building to avoid students losing time moving from class to class. However this decision made the experience of the hallway chaotic.

At Main High, the new building visibly afforded a greater variety of social interactions. Not only did it have a lobby that had comfortable furniture, it also had spaces to gather in the library/media center, and even separate spaces for the PTA to meet, and for the different clubs that students belong to. All of these differentiated spaces allowed for different kinds of social gatherings. The main lobby was used for things such as student art exhibits and college fairs. The space could hold large groups of students and provided a good venue for the interaction between people inside of the school (students, teachers) and outside of the school (parents, college scouts). On the outside of the school, there were planters that had seating and parents and students were observed sitting there. There are district wide policies that affect organization and agency. These will be discussed in the following chapter.

### c. Emotional School Affordances

Emotions are created and recreated in the experience of schools. As relevant places in the life of people, schools provide (or fail to provide) a home away from home, a place where new skills and identities can be achieved, a place where the future can be decided. As such, schools need to be experienced as safe places. Being and feeling safe is a basic requirement for being comfortable in a place. Pride is also relevant as it may enhance the experience of students and promote and sustain attendance. Feelings of effectiveness or accomplishment are crucial to motivate students to achieve good grades and graduate. These are some of the emotions that schools need to afford. There is a physical substrate to the affordance of emotions. Some aspects of the school are specifically manipulated to create and maintain these feelings. From the colors chosen for the school teams, to the banners or emblems with the school name, there are more or less intentional displays that are intended to create emotional responses in adolescents.

At Sears High near the visitors' entrance and close to the main office, there was a ceiling beam and its connecting marble columns that were painted in a shade of blue. The color is emblematic of the school team and a nearby sign that reads "Go Blue Tigers" implies to those who understand the reference to feel attachment and or pride in their school team. In a review of the literature on different aspects of school connectedness, Libbey (2004) concluded that, in spite of the many names by which the construct of connectedness is studied, there are common elements like sense of belonging or feeling part of a school, whether students like school, whether teachers are supportive and caring, the presence of good friends at school, engagement in current and future academic progress, fair and effective discipline, and participation in extracurricular activities; that are associated to students outcomes. These emotional aspects of school transactions are created, supported, or sabotaged by the school's physical environment. The vision statement at Sears High, displayed at the entrance of the school, read:

"*We will provide a caring and nurturing learning environment with multiple opportunities to experience new methods of learning.*"

During observations, a clue about emotional affordances in the school buildings was in the ease with which each school afforded observations in the building. It was more difficult to spend time observing at the old buildings than at the new buildings. The new buildings were bright and always had a space to sit and take notes. The hallways were wide and one could walk around without disrupting the school's normal activities. The new buildings had many flexible or open spaces that were not particularly labeled or designed for a specific purpose. In the old buildings, the hallways were dark and narrow and every space was designated for a specific purpose. The hallways were the only spaces that were not labeled. The legibility and ease of travel within the building can contribute to students and staff feeling comfortable and safe at school.

It was hard to spend time at Sears High. The noise levels were higher than at other schools perhaps because of the tiled hallways. The building was just not as comfortable. However, at the other old building, Industry High, it was not that hard to spend time doing observations. The difference seemed to be that the people at Industry High were friendly and welcomed the presence of a researcher in the building. At Main High, after a couple of observations, it was noted that as comfortable as the building was and that the security guards were friendly, the personnel were not as friendly or welcoming to the researcher. This school had been under heavy pressure to improve its performance fast given that they were in the second year in a new building. There was the sense that they were weary of people taking notes or doing anything that felt like evaluating. At Knowledge High, people were friendly and the building was welcoming. The social environment at all schools seemed to work as a mediator of the users' experience of the building. The school buildings afforded different emotional landscapes that acted to produce attraction or repulsion.

The experience of the building in terms of emotional affordances was informed in part by the comments made by students and staff at the buildings observed. There was an overall climate or image of the school that was built and maintained by everyone in the school. The

school administrators seem to have a heavy influence on the climate. The principals and vice principals set the tone about what type of school it is. They were at the junction between the higher organizational levels of the district and state and the teachers and students at the school.

At Industry High, the principal was adamant:

"*When the thing stinks, it does it from the head, it is about how you use things. When administrators are in defensive mode, it takes away part of the expectations of having successful kids*"

At this school, it was mentioned several times by the staff that the principal was charismatic, maintained a vision of the school as a familiar supportive place, and that this helped to overcome difficulties with the building or the larger school system. Students were then more likely to attend school, stay in school, and succeed in school. The head guidance counselor observed:

*"The condition of the building is important, but there is a very strong "family feeling" which overrides it".*

Whenever asked, people at Industry High were able to pinpoint specific issues that were wrong with the school building. Afterward, however, they would say something positive about other non-physical aspects of the building. One teacher said:

"*Teachers can offset the effects of the environment. I am fortunate to have colleagues that also want their students to do well.*"

There is an ongoing tension between the physical characteristics of the building, the social environment, and the other social forces pulling and pushing the structure of the school that affords a certain emotional environment. This tension looked different at each of the schools. At Sears High, the perception was that the building was overcrowded, that the facility was in disrepair, and that academic performance was low. Contrary to the previous example, where school staff thought that the people in the school could change the nature of the engagement with the school; the view at Sears High was that it would not matter how much the

building gets improved or the staff changes their ways of dealing with the students. The problem they have is the quality of the students' performance. As the principal put it:

*" The good performing kids are taken away to magnet schools, that makes it very hard for this school to perform (…) 10-14% of my students should not be here. I have 30 students with ankle bracelets and 50 students pregnant."*

A security officer at this school offered that:

*"By now [*October*] there are less kids and I prefer it that way. Some have been suspended, some have dropped out."*

There is no "family feeling" at this school. From observations and interviews, the overall impression is that everyone is simply trying to carry out the basics: Teachers are trying to teach, students are trying to study, security guards are trying to keep the peace, administrators are trying to control the school and improve performance. This precarious "survival" mode taints everything that happens at the school and informs the students about "who they are" in relationship to others in their community. There was a feeling of despair in the voice of the students. One senior student at the school said:

"*We are underdogs, other schools don't like our school."*

Another senior student added:

"*There was a history contest and our school did not win because the other schools did not allow us to win*"

After further questions, it was still unclear *how* exactly was it that other schools did not allow Sears High to win. The student explained something about a tie and a final decision being made that did not favor this school. Regardless of the facts, it seems that the student's opinion about their standing in the community reflects negativity towards their school. Feelings of school pride have a hard time flourishing in these circumstances. Success is then personal and occurs in spite of, not thanks to, the school environment.

At Knowledge High, moving from a building that was condemned by the state to a cutting edge facility had an important effect on the perception that students and teachers had of of their expected performance. There was always pride in being associated with this school because of the excellent performance of the students and because of the solidarity and familiarity among all school members. One physics teacher who had been at the school for 39 years highlighted the uniqueness of their school:

"*This school was promised a new building in 1978. When we finally moved in, the students and teachers had to move everything from the old building to this one in the last three weeks of the school year. No other school would have done this. They moved books, breakable stuff…when they finished a subject in a class, they boxed up everything related to that topic.*"

At the beginning of the school year 2009-2010, the school was awarded the highest federal award for academic performance. The move to a new building was well received but also came with many structural changes. The school now housed 7th and 8th graders increasing the number of students and the number of teachers. The move was described by one teacher who had spent 17 years in the school:

"*The switch to the new building was experienced as the change from a club to an institution. Everything has to be more formal and more professional. Expectations are higher.*"

In the case of this school, the new building came with a new culture. The goal now is not only to do well in spite of the difficulties, the goal is to excel at a national level. Now that they have computers that work, two gyms, a swimming pool, a media center, and all the infrastructure that a good quality school needs, they have to perform at even higher levels.

However, even though now facilities were up to date and there were no excuse not to perform at top levels, all moves come with an amount of stress and reorganization that needs to be dealt with. The physics teacher interviewed described the situation after the move:

*"The first year in the building we could not find things. […] The former principal retired, as well as the vice principal and the head guidance counselor over concerns about their pensions. Many teachers left in that first year due to the same concerns"*

In this case, the reorganization was only indirectly related to the new building. It was primarily related to changes in the policies at the state and district level. The move to the new building, however, indicated which changes needed to be made such as adding teachers to the staff due to the addition of the 7th and 8th graders or other staff being needed as the building facilities now required more staff to teach and train. These changes may have tilted the balance for those long time teachers who felt safer retiring while their pensions were still safe and not having to face the heightened expectations in the new building. In any case, the school as a whole was strong and did not experience a decrease in its performance measures. Math scores were slightly lower for that year (from 99.3% to 95.3% scoring proficient and advanced) as well as lower attendance (92.4% to 89% average days attended by students). Other than that, the school did not have other indicators associated with the stress of the move. Nevertheless, the school was now reorganized and did not afford the same emotional qualities that existed in the old building.

The other new building, Main High, was only beginning its second school year when observations started. There was a sense in this school that the building was "earned" by the administration of the school and a group of involved parents who put pressure on the district and the constructors to open the building on time. This school was the hardest to read of all schools. On the one hand, the beautiful facility and committed administrators made it seem like an ideal place to study but, on the other hand, there was a strong sense of distrust of the higher administrative levels of the district and the state. This research coincided with severe budget cuts in the state and district and teachers were worried about their positions. Many older teachers retired fearing for their pensions due to a statewide fiscal crisis while other teachers

were nervous because the school was not performing at the expected level. The move to a new building came with higher expectations but, in this case, the comprehensive school was perceived to have a tougher job adjusting and producing a different result. The result of the higher expectations was that there was tension among the faculty. A math teacher who had been 10 years at that school expressed it:

" *Technology was upgraded in the district, but they have old teachers that don't want to use the computers. The staff needs to be upgraded*"

Teachers and administrators in this school perceived that they had a double burden. First, being a comprehensive school they have to serve all students regardless of their previous performance. Second, being in a new building with all the supplies that they can need introduced the expectation of higher performance. As one of the school's three vice principals said:

" *There are fewer excuses for the teachers to perform (…) the job is harder here, there are higher expectations for everybody. It is expected that we do better because of the building.*"

It was hard to communicate with teachers and students at this building. It was probably because the tension brought up by the scrutiny of the district and the state. Access to building users willing to discuss the building was very difficult. The school, for a second year in a row, had not achieved their adequate yearly progress (AYP) and feared the consequences of this.

Overall, the schools in the study offered different emotional landscapes. Their ability to afford feelings of familiarity, safety, and solidarity to their staff and students was related to the condition of the facilities. The ease with which teachers were able to teach, the expectations for both teachers and students, and the leadership of the administrators create an environment that promotes attachment as is the case at Industry High and Knowledge High, or promotes detachment as is the case in Sears High and Main High. Notice that the condition of the building as new or old does not automatically promote positive and negative feelings. The quality of

students' academic performance and the expectations of this performance interact to produce the schools' emotional landscapes.

Toward the end of the observations, it was clear that all four school buildings were designed to have similar spaces and configurations probably because they are intended to support a common pedagogical project. They all had a cafeteria, a media center, a library, a gymnasium (or area to exercise in the case of Industry High), a main office, classrooms, and an auditorium. All these settings afforded similar activities and behaviors. All cafeterias had the same elements. The tables were either round or rectangular and allowed for interaction and segregation in typical high school style. There was a food selling area, a cashier area, and vending machines. The programs of these settings are regulated by the school district that issues specific policies. Because of this, all the cafeterias in the study -for instance- had a similar ebb and flow. Lunch time is divided into three periods and, when entering the cafeteria, students have to show their ID which they usually wore around the neck. They also had to show the color coding of the lunch period to which they had been assigned. No students were allowed in the cafeteria at any time other than their lunch period. In this very uniform routine, it was observed that there was a consistency in the way in which lunch occurred in all the schools regardless of the condition of the facilities.

Were there no differences then between old and new school buildings? After I looked at the libraries/media centers in all the schools and noticed that they all had similar patterns of use and similar elements in them I started thinking that even though the spaces afford the same activities, in the older buildings these activities were being afforded at different levels in the social structure. Perhaps because of the aged technologies, the lack of intentionality in the design, the lack of natural light or legible layout, older buildings were affording school-related behaviors at a lower *status* than the new buildings. Older buildings were perceived as "less than" because of the existence of new buildings within the same district that were modern and

technologically current. The awareness of where their school stands in the hierarchy of schools is evident in students' interviews. A student from Industry High said:

*" The new building [Knowledge High] is the "jewel of the crown". They have the best students. This building is "older than old".*

The above quote speaks about the differential status that students attribute to teens that attend the new building and their own building which is older. The two schools mentioned are magnet schools and therefore considered to be good because they are attended by students who do well at school. There are assumptions of status and capability made about students based on which school they attend and this changes students' attachment to their school. The two magnet schools, Industry High and Knowledge High, are thought to have some of the best students in the district. However, Industry High does not have a new building. The student above implies that there is unfairness in the distribution of new buildings in the district. This is magnified by the actual absence of facilities that they experience every day. A female senior student at Industry High told me:

"*If I could change something about this building, it would be to build a gym. I am a year-round athlete and for each sport I have to go to another school to play*".

Both at the collective and at the individual level, the lack of a gym at Industry High affects the morale of students. This is not a perceived difference between their school and the other magnet school. This is an actual deficiency. Social comparison is common and particularly pronounced in adolescents. In the process of discovering and developing their identities, schools play a very important role in the life of adolescents. Identity affordances are discussed in a separate section.

The role of emotional attachment, or lack of it, is relevant as schools afford different levels of it. School staff in older buildings constantly tried to emphasize that they foster a positive climate for their students "in spite of" the physical environment of the school. But this attachment, which is sometimes called school pride or school spirit, has to be based in tangibles

such as performance, or building features. Prestige, which comes to students through their association with an institution invested with qualities considered to be special or extra ordinary, needs a place to thrive. The expectations linked to the new buildings highlight that, in the old buildings, expectations need to be tamed or lessened.

### d.Communicative School Affordances

While observing at the school, many pieces of written information were seen affixed to walls, boards, doors, or other places. From the elaborate poster boards, to the lonely flyer posted at a door, to the emblems, or the more permanent signs, each of these physical objects contained a vast amount of information about the everyday life of the people in that school building.

Many of the posted written messages had to do with signage and legibility of the building. Signs were more necessary and yet less prevalent in the older buildings. In these buildings, the use of space throughout the years has changed and the signs have not kept up with the changes. In the new buildings, signs are less necessary because the layout corresponds with the current use of the building and signs are also more prevalent. In a brand new building, the intended use of a space was indicated with the identification of the space by a sign. The denomination of a room as an office or a practice room starts with the sign that names the room.

Affordances for communicative purposes are considered here as those that state a message in a written or graphic way. Even though all affordances are very sensitive to time, place, and cultural practices, communicative affordances tend to be very explicit about the ways in which all of these factors may or may not influence person-place transactions. Signs, posters, posted information and all other communicative affordances have an explicit instruction, behavior, emotion, or expectation that they are trying to promote.

In this section, communicative school affordances are divided into five different kinds. The first are those related to signage and legibility. These afford orientation in the school building. They are also meant to label a space and indicate to users the purpose of that space.

The second type of affordance concerns those that encourage or promote learning. These are posted specifically to promote user interaction with academic materials or other types of information relevant to academic goals. Communicative affordances related to expectations are the third kind described. These state expected behaviors, emotions, or practices within the school and beyond the school. The fourth kind are those affordances that are meant to create inspirational exchanges with students. These intend to guide students' thoughts and emotions and align them with either the program of the school or with the behavior of the "ideal student". The last type of communicative affordance is those that present student work. These are meant to afford the possibility of pride and meaningfulness. The display of student work generally conveys satisfaction with student performance and is meant to engender pride in both students exhibiting work and observers of the work (other teachers, parents, other students, etc.).

i.Signage and legibility

Schools as institutions open to the public need to have clear signage to provide users with access to its different services. From the location of classrooms for specific subjects to the location of offices that parents and other community members need to access, the layout and legibility of a building are important factors in the experience that users have of that building. Good signage allows users to navigate school buildings and find their destinations. Only repeated experience with a space will allow users to find places that are unmarked. There is an important difference between places that have clear signage and places that do not. Places that are properly signed "democratize" the experience of the building by allowing everyone who can read the signs to know where they are or where they are going. In places where signage is poor, only those who "know" can find the places they are looking for. New building users have to rely on the information of those who "know" to find their destination. This type of person-building interaction divides people into groups of building knowledge and does not afford equal building

access. Well signed places go beyond the visual to provide Braille signs or other cues to users to facilitate building navigation.

At Sears High, there were old signs naming different areas of the building as “towers.” The signs for “towers” were usually posted near a staircase. They were not very clear, however, in indicating anything other than the tower number. The layout of the building was hard to navigate and, perhaps, the tower signs were meant to indicate the side of the building in which you were located.

The floor plan for Sears High is shaped like a letter “E”, which does not promote a smooth flow of traffic. There were no signs indicating what kinds of rooms could be found in the different areas of the building. People did not use the tower signs or other signs when giving directions. Some other signs were missing or written with permanent marker. On a bathroom door near the child care room, someone had written with permanent marker “Toddlers only, not students.” The room numbers were not clearly posted or did not have a sequential order. According to one teacher:

*“Everybody gets lost. The numbering of the building is confusing because the ground floor uses the two-hundreds for room identification”*

Near the guidance department, where students and parents come for meetings and advice, they are greeted by one sign that states “No Pass, No Entry” referring to the required hall pass that students need to be out of their classrooms. There is a sign for parents that indicates that they need an appointment to talk with their child’s counselor. This sign and all the others are in English only and it was noted during the observations was that most parents who came to the building were speaking Spanish, (25% of students at this school declared Spanish as being the first language spoken at home).

At Industry High, the other old building, the layout was also hard to navigate. There were no signs to compensate for this. The main office and the library/media center were relocated to the newer part of the building and therefore had new signs. There is an added complication at

this building in that the school comprises two buildings and even though they are connected by one passageway, they were not originally designed to do so. In order to go from one building to the other, users have to go downstairs to the ground level floor and find the passageway to the other building. If you don't know how to get from one place to the other, you have to rely on the directions of knowledgeable building users. An example of this was presented to me by the school's guidance counselor:

"*It is very hard for me to give directions to the nurse's office which is in the opposite side of the building, I sometimes have to walk people over there*"

This counselor has been at this school for seven years. Therefore, she is not a new building user and because of lack of signage and the difficult layout it is hard for her to convey directions to an office with which she has to interact regularly. The lack of adequate signage may be dismissed as a low priority problem but it is important to note that there may be school time misspent by people being lost in the building, giving directions, or walking people over to places.

At the new schools, the signage is clearer and, as mentioned above, the layout corresponds with the actual use that building spaces have. The use of construction materials is also different and there are more windows and natural light which allow for more direct visual interaction with school spaces. This means that people can usually see the place where they are going or someone giving directions can point to the place people are looking for. Both new buildings have a central atrium which allows one to see the different levels of each building.

An important aspect of this kind of affordance is that, once a space is labeled as dedicated to a specific use, then there is a stated mandate to use that space for that purpose. Undeniably, users may use a space for a different purpose than the one stated on the sign outside its door. Nevertheless, the character of the space is linked to the designation of its purpose as well as the characteristics of the space. The synomorphy between behavior and behavior settings will be discussed in the next section but signage here is considered to contribute to the creation of synomorphs, not in a mandated way, but clearly in a stated one.

ii. Encouraging learning and academic performance

The comprehensive schools in the study, in old and new buildings, had displayed throughout their hallways Math or Physics "challenges" where students were encouraged to solve a problem and bring the solution to the teacher. These problems were fun and easy to read but at the same time were challenging. This was an active way to use communicative affordances to engage with students in academic thinking.

At Industry High, there were math concepts defined and posted throughout the hallway connecting the two buildings. These were posted as dates for standardized tests were approaching and encouraged students to practice for their tests. Other than conveying the specific concepts that were being reviewed, these displays seemed to collectivize a sense of togetherness in which it was expressed that staff and students were trying to reach the same goal of obtaining good grades. This is consistent with the idea of the school as a "family" promoted by the principal of the school .

The displayed dates for SAT tests were also another communicative affordance that gave a sense of unity or solidarity in addition to the reminder aspect. The SAT dates were posted in all schools. However, at Knowledge High, the dates were posted on the LCD screen that hung on top of the Library/Media Center and rotated other school related messages. An advantage that a screen has over the traditional paper or cardboard displays is its ability to introduce visual information that is easy to update and is accessible to students entering the building.

Other displays were mostly informational and highlighted cultural aspects like Hispanic History Month and Black History Month. These displays were of the more traditional kind which were intended to be educational and instill pride and critical thinking in students.

iii.Expectations

What is expected of students and staff is sometimes available in material form in the school buildings. From the more explicit posting of norms of conduct and expected behaviors such as attendance to the more subtle posting of things encouraging specific things, expectations are a part of the landscape of the school. Expectations are important to school outcomes. Ainsworth (2002) found that expectations about the number of peers dropping out had implications for time spent on homework and math and reading scores.

One important expectation for high school students is that they attend college. Common to all schools were posters containing information about different colleges. Most of the colleges were located near or in New Jersey but there were a few that were geographically more distant. Information about scholarships was also available in all schools. At Industry High however, the cafeteria displayed additional information about some colleges. The posters were handmade, presumably by students, and posted facts such as tuition cost, ethnic make up of the school, required test scores, scores played, etc. This "extra" information is an example of how user agency can overcome issues of environmental quality. Even though this school did not have the dedicated display space that the new buildings afforded, the information presented was in an accessible area such as the cafeteria and was also extended with data thought to be relevant for students considering attending college.

The socioeconomic status of families is homogenous throughout the district and that is perhaps why the information about scholarships and loans was present in all schools in the study. New buildings, however, were better able to provide display areas that were prominent and visible. One disadvantage at Main High's new building was that the display of college information was on a large window up a staircase from the building's lobby. The display could be seen from the first floor but some pages printed on both sides were harder to read because of the sun light coming through the windows. In all high schools, information was on letter sized paper or legal sized posters and proximity was required to read the information. Only in one

instance were students seen reading the information on one of these displays. A group of students at Industry High was interested in the information posted about $10,000 scholarships for Hispanic students at a University in New York State after one of the students in the group called attention to it. This student was trying to get the other students to look at the information but one of those students looked annoyed and said *"yo no Spanish"* (literally "I don't Spanish").

Knowledge High had a noticeably higher set of expectations for its students according to teachers' interviews but also in the display of Ivy League school flags in its lobby. The flags were displayed towards the end of the school year and, when asked about them, a security guard said that these were flags of colleges and universities where Knowledge High students were accepted. The accuracy of this statement was hard to evaluate but flags for Columbia, Harvard, Cornell, and Princeton, among others, were visible to all building users.

As far as clarity of expectations goes, there is nothing more direct than the posting of rules of conduct. The bell schedule is posted in all schools indicating the time when students are supposed to move to a different classroom. At Knowledge High, in addition to the bell schedule, the schedule for the before and after school care program was posted. This program starts 45 minutes before the start of school at 7:15 a.m. and runs for two hours at the end of the day until 5:00p.m. The discipline and attendance policies were also posted at a board inside this school's Library.

All of these communicative affordances convey expectations for students. Whether the expectations come from the school administration, the district, the community, or their families, they are physically represented by material elements. Together with other building aspects, these types of expectations contribute to the creation of a space where possibilities are presented to students in a visual way. The "normalization" of affordances for expectations indicates desired standards for students.

iv.Desired behavior and self-monitoring

At Industry High, a poster board at the basement level offered advice on how to dress for a job interview. This was the only direct advice poster observed at a magnet school. It showed two pictures of outfits suggested for a male or female interviewee. At both comprehensive schools, there are signs about how to dress. Specifically, there is the banning of the "pants on the ground" style of wearing pants. Male students use their pants waist line below the waist showing their underwear which is usually boxer shorts. Variations of these posters, printed on letter size paper by desk printers, are posted through many areas of the schools. In the different variations, the posters suggest that: "*This is an official NBHO (No Butts Hanging Out) zone*" or that "*If you look like this*", showing a picture of a young black male with his pants lowered, "*You will never ride on this*", showing a picture of President Obama next to Air Force One; and finally "*Pull up your pants before entering this classroom*". In fact, the image of President Obama or the Obama family was used throughout the schools presumably as a role model for students. These direct suggestions on specific behaviors are found in both comprehensive schools. These posters were not observed at the magnet schools. At the entrance of Sears High, stickers on the book display case offer "Be all that you can be, US Army" and "Stay in School. Stay off drugs."

Another type of poster, more prevalent throughout all schools, is the kind containing words like "perseverance" or "responsibility". These are posted on poster boards in the older buildings. These posters do not recommend specific behaviors but suggest values or attitudes to students. On Knowledge High's second floor, there are two large poster boards that cover the length of one wall, -about 8 feet-. The first one, on one side of the floor, contains information about "*Gothic Period/Changing World*." The second one displays "*Essential Intellectual Qualities*" which is a list of the qualities with descriptions. The list of qualities follows:

*Intellectual courage vs. Intellectual Cowardice/ Autonomy vs. Conformity/ Perseverance vs. Laziness / Humility vs. Arrogance / Empathy vs. Closemindedness*

*/ Integrity vs. Hypocrisy /Fairmindedness vs. Unfairness / Confidence in Reason vs. Distrust of Reason and Evidence.* These "qualities" are prominently displayed. There is no citation or other indication of the source of these qualities.

There are other posted materials that are intended for self-monitoring or as reminders of the school's core values. Outside the main office of each high school and in a visible place, various school performance were posted. After noticing that they could be found at all the study schools, an inquiry to an administrator indicated that these are mandated displays by the district's Board of Education. At Main High, for instance, the display included the results of a "walk through" which is a mandated survey that the Principal does of the classrooms. What is recorded in this walk through is what the class was doing at that particular time. Student attendance figures are also displayed as well as faculty attendance for September and October of 2009. There were also the results of the CRT (Criterion Reference Test) and a poster prepared for the data on achievement but the actual information was not posted yet.

Other mandated displays include the "mission" and the "vision" for the school. All schools had this statement displayed in a visible place. The texts for these can be found in the addenda.

v.Inspirational displays

At Main High, the signs outside of offices and naming spaces were clear and sufficient. There were many signs that were made on wood and posted around the building containing inspirational or motivational messages. The signs contained quotes such as the following:

*" There is no such thing as liberators, the people will liberate themselves, Che Guevara"*

*" We have a 9000 year old culture, you have a 200 year old culture. I think we can figure out or own future, Anonymous Man, Bagdad, Iraq"*

*"A civilization that proves incapable of solving the problems it creates is a decadent civilization. A civilization that chooses to close its eyes to its most crucial problems is a stricken civilization. A civilization that uses its principles for trickery and deceit is a dying civilization, Aime Césaire"*

*" Once social change begins, it cannot be reversed, you cannot uneducate the person who has learned to read. You cannot humiliate the person who feels pride. You cannot oppress the people who are not afraid anymore, César Cháves"*

All of these signs are posted around the main lobby in the first level of the building. There are more sings like these posted in the other floors. These posters set a tone for what this school is about. These quotes are blunt and revolutionary. It is unclear the way these quotes were used in the day to day of the school. Main  High has held leadership camps for its students and perhaps these could have been used in this type of effort. Motivating students to "self-liberate" and take their future in their hands is something important in any community. However, these are the kind of quotes that you expect at a more liberal setting, or at a higher educational setting such as a college. This school has a charismatic principal who is also an elected official in the district. I was unable to have direct access to him. He was often busy and did not respond to my many e-mails, calls, or messages. Instead, I spoke with a Vice Principal who was very helpful. Among the posted materials at this school there were some words by the principal. This following quote decorated the entrance to the auditorium along with the school emblem. The words read:

*" To have children love you and enemies respect you; To find worth in the little things and light in the darkest places; To forgive those that have betrayed you; To admit your errors and learn from them.*

*To climb mountains of self-discovery and never turn back no matter the weather or terrain; To give when there is nothing left or teach to noisy crowds; To discover fire and share it; To face fear and live anyway"*

These types of displays directly point to certain values held in the school as inspirational. Just as some religious schools might post religious teachings around their facilities, secular, public schools may select values they wish to reinforce in their students. There were no inspirational displays at the other schools.

vi.Student work

Most schools displayed student work in some form or another. Notably, Sears High did not have many displays of student work. At Main High, the honor roll was posted in glass displays outside one of the school entrances. They were very visible and prominent, similar to signs announcing a new film to be released or a product. At Industry High, the other old school building, student art work is displayed in the corridor that connects the old building and the new building. Small paintings depict flags of the ethnic groups represented in the school. They are mostly Caribbean, Spanish speaking countries. One way in which student work was displayed was in allowing the students to design the Main Office and Library/Media Center. Observations ended before both spaces were completely rehabilitated. However, the hope is that there will be a sign or something telling future generations of students that the spaces in which they are were designed by previous students. This measure can afford student's feelings of control over the spaces in which they spend time. It is also beneficial for students' feelings of pride and empowerment that students can design spaces that are used and useful.

At Knowledge High, student work was displayed in their main lobby near the entrance. The work was related to the contents of the classes the students were taking. For the most part, student work seemed very complex depicting analysis of written pieces or scientific experiments.

### e.Identity School Affordances

Erikson (1968) viewed the psychosocial development of identity as comprised of three different but interrelated dimensions: a) the subjective psychological dimension or ego identity

as a sense of temporal-spatial continuity; b) the personal dimension, or a behavioral and character repertoire that differentiates individuals, and c) the social dimension or recognized roles within a community. All of these dimensions are relevant to the process of constructing a viable adult identity which makes adolescence the developmental link between childhood and adulthood. All these dimensions take place in the physical world. The physical environment of the school supports or hinders adolescent experience during this developmental stage.

Studies that use a developmental- ecological framework have shown that neighborhoods and economic well being matter for youth development (Brooks-Gunn et al. 1997). The influences are more profound and have more lasting effects during early childhood and late adolescence. Phillips and Pittman (2003) proposed that stressors, social stigma, and limited opportunities afforded by dangerous and or economically disadvantaged neighborhoods may inhibit the process of identity exploration during adolescence. In general, the theoretical perspectives that guide studies of high poverty neighborhoods suggest that these neighborhoods lack opportunities and therefore promote an environment of hopelessness where depression and other negative outcomes can thrive. Murry et al. (2011) have found that multiple studies show neighborhood poverty affecting adolescent development directly and indirectly. Some of the variables known to affect development can be read from the school building. Poverty itself, or low-income, is not only a bracket on census data. It is present in the landscape of the school. Crime, drug trafficking, gang violence, prostitution, lack of role models are all activities that take place in and around schools in poor neighborhoods. Students and staff are aware of the kinds of activities that occur in their community. School administrators try to compensate for these negative activities by providing positive ones.

At Industry High, where the staff is trying to provide a safe space through their “Cafe” so that students hang out in that area before games, they are introducing a choice for students. Do they want to hang out outside with the gangs or inside with their school peers? This has implications for their identity development. This safe space from the outside community

provides an alternative to the normative identity of the neighborhood. It is hard to experiment with different identities when the options are limited. This is a small project that school staff offers the students to compensate for the poverty and insecurity in the area.

Examples of the interrelation of spaces and identity development can be found in all schools. At Sears High, the concerted effort to unite students behind the "Blue Tiger" school spirit is an attempt to encourage students to identify themselves as members of the school community. The pep-rallies that take place in the school's gym are a means of instilling pride in the students at Sears High. In identifying with the Sears High membership, students are, however, subject to the social identity of the school. This is where the status of the school in the community matters. As the principal of the school put it:

*"There is a two-tier system in place in the district. They take the top performing students to the magnet schools and leave everyone else to the comprehensive schools. The same happens with teachers, they are rewarded by being moved to the magnet schools and punished by moving them to comprehensive schools. Comprehensive schools are designed to fail."*

Students are aware of the perceptions and realities about the school they attend. Overcrowding, lack of science labs, signs written with permanent markers, and other conditions that come with being in a low-income comprehensive school are at odds with the sign at the entrance of this school building at the beginning of the year "Welcome back to The Best. The Best School, Best Students, Best Staff". It is a tough balance to achieve school pride when it needs to be squared with the negative perception of the school in the community.

As a contrast, Knowledge High was awarded recognition for being a top performing school in the country. Identification as a member of this school is clearly a positive thing. However, there may be more complexity to this than it is obvious. In a low-income neighborhood, students who are atypical and attend the few magnet schools might need role models not that available in the community. Many of the students may be the first generation to

graduate high school or attend college and need mentors and other adults to guide them to opportunities perhaps not available to other members of their families. One simple way in which the building becomes a sort of mentor in this endeavor is in providing familiarity with a technologically rich, clean, purposefully designed environment. Students who are familiar with the way things work in these kinds of places are probably more likely to feel comfortable in a college setting where these characteristics are likely to be the norm. At a minimum, the quality of the building and its resources at Knowledge high will represent an important point of reference for its students and they will consider the quality of facilities in their post-secondary plans.

At Main High, the affordances for identity development are the least clear. This was the most difficult building to study as mentioned earlier. Even though the research was authorized by the school's principal, access to staff and students was very limited. I learned from external sources that the move to the new building was postponed from the original date because of construction delays. Parents organized and protested in order to get the building ready. The construction company had estimated completion in 2006 but it was finally ready two years later in 2008. Some parents thought that this delay would not have happened in a wealthier community. According to Main High's Vice Principal, they were hit harder than other schools in the state when there were budget cuts because a large percentage of their budget comes from the state. Because of these cuts, there are teachers who were not going to be rehired in the following school year (2010-2011) and some teachers were going to retire. The mood in the building became more tense as the end of the school year approached because it was becoming clear that this school had not met the Adequate Yearly Progress (AYP) established in the "No Child Left Behind" Act. With the new building, performance expectations increased. However, from the interview with the only teacher who agreed to talk with me, I learned that they are supposed to close the achievement gap in 3 years in order to meet the state standards. This teacher thought that the previous year was a "lost year":

*"There was a new system, a new curriculum. They compare this school to the other school with a new building and therefore they expect things to improve overnight (…) it is hard for the students in Math [this teacher's subject] because students cannot perform basic operations"*

The social and learning problems that existed in the old school building that Main High occupied still exist in the new building. There have been improvements in the provision of basic affordances and attendance improved in the new building from 84.2% in the 2007-2008 academic year to 90% in 2009-2010. According to the teacher interviewed:

*"Students don't want to leave the building. Some students go home and eat and then come back. They hang out, they find shelter in this building. If their home is not comfortable they will find comfort here".*

And this is one of the ways in which a modern, clean, safe school building can afford new identities for its students. Spending more time in a building that affords technological possibilities, safety, comfort, and other amenities that, perhaps, are not available at home, is likely to influence the experience of the adolescents who might be able to think about new possible selves.

## Chapter 5: Social Reproduction in Public Urban Schools: The Invisibility of the Quotidian

### 1. Synomorphy: The importance of having individual practice rooms

In behavior setting theory, synomorphy refers to the congruence between the topographic features of the setting and the activities that take place in that setting. According to Heft (2001). " Structurally, behavior settings are behavior-milieu synomorphs. The meaning of a behavior setting -that is, what kind of setting it is and thus what kinds of activities are appropriate in that place- resides in the perceived synomorphic relations between milieu features and action." (Heft, 2001, p. 287).

After a survey of settings, it was noticed that the schools in the study had many of the same settings in common. They all had a cafeteria, a library, a media center, a main office, a guidance office, a gym (except at Industry High), hallways, classrooms, and labs. All these spaces were observed except for the classrooms where observations did not take place. All behavior settings in the four schools shared similar elements and afforded students the same behaviors. The cafeterias had tables with shared seating, usually benches; they had vending machines, some kind of counter to order food, and a cash register. The libraries had tables for a group to sit together, computers, books, and a counter where a librarian could be reached. Auditoriums differed between new and old schools in the degree of professional equipment in them but, essentially, they seat a large group of people, had a stage and a sound system, and appropriately marked exits. These were all the normative behavior settings of schools shaped by the programming designed by the state and district. As such, they are all equally susceptible to the wide range of policies and pedagogical stances of organizations at higher social levels.

The activities that take place at these spaces are the most relevant for education. The main office is essential in processing the paperwork of students, handling communications with the district, with parents, and with other organizations. The cafeteria affords nourishment and

social interaction; the gyms provide physical activities and school spirit building, etc. These core building spaces are in synomorphic relationships with the stated pedagogical project of the schools. These settings are typical of public schools in present day America and make a building a school. Main offices, guidance counselor offices, cafeterias, libraries, media centers, laboratories, weight room, maintenance rooms, and security offices were present in all the schools in the study. In all four high schools, behavior settings and their main elements were consistent. The only "violation" of this order was the lack of a gym at Industry High, which was compensated for through the rehabilitation of a basement space for exercising (an area that was often flooded) and the use of gyms in other school buildings. Nevertheless, the normative settings designed to cover the core activities of a high school were all present in the four buildings.

In contrast, there were some non-core settings that were only present in some of the schools. The new school buildings, for instance, had swimming pools and an auxiliary gym in addition to the main gym. Knowledge High had a band practice room, a choir practice room, and individual practice rooms. Main High had rooms for the Parent Teacher Association and for school clubs. The relationship between a setting and the human activity that takes place in the setting is one of mutual reciprocity. The meaning of the setting can coerce people to follow its functional character (Heft, 2001; Barker & Wright, 1955). This is the essence of synomorphic relationships. Nobody forces people to play baseball at a baseball field but it is highly probable that whenever at a baseball field, people will follow one of the behaviors afforded by the setting (spectator, player, vendor, etc.). Existing behavior settings, as well as the affordances within those settings, encourage individuals' to follow their programs. The existence of a setting will encourage the existence of a behavior functionally afforded by that setting. This relationship is not a tyrannical one since people can deviate from the norm. Students, for instance, can decide to sit on a window sill if that sill affords sitting. There is a normal pattern of behavior, however,

within the program of the setting and it is encouraged by the physical characteristics of the setting.

It is because of synomorphy, the expectation of a matching action between the form of the room and the behavior of the room, that the presence of specialized classrooms or other defined spaces within a high school become important. The presence of those rooms establishes, at a minimum, the expectation of those practices occurring. Ideally, these spaces will support the behaviors they were designed to sustain. An example can be found at Knowledge High in which students have large, well furnished rooms for band practice and for choir practice. There is the expectation that some students will join the choir or the band. There is also the expectation that some students will excel in the choir and the band because also built into the school are individual practice rooms where they can work on their skills. Beyond the main, normative behavior settings of the school, the kinds of settings available can inform us about the overall expectations for the students at that school.

In this study, there were two main differences between the schools. The first was between magnet and comprehensive schools. Magnet schools were considered to have "good kids" attending and had additional specialized settings. The lack of concern about the students not meeting academic standards perhaps allows the school to afford extracurricular activities in a more generous way. In the case of Knowledge High, the magnet school in the new building, it has individual practice rooms, a media center separated from the library, an additional computer room for specific classes, among others. In the case of Industry High, the magnet school in the old building, the building had workshops for computer assisted design, automotive technology, heating ventilation and air conditioning (HVAC), computer assisted design (CAD) and one of the few Interactive TeleVision (ITV) rooms in the state. Industry High, not only provided these specialized spaces but also allowed its students in the CAD class to design and create the new main office as well as the library/media center which relocated to the newer building. The direct participation of students in the design of important settings allowed for

feelings of pride and accomplishment. Magnet schools were given specialized spaces that were meant to take education beyond the mere provision of basic skills and move it toward the promotion of extracurricular activities or skills.

The second difference found was between new and old buildings. The new buildings afforded many more kinds of activities that were highly specialized such as a PTA meeting room at Main High or the individual instrument/voice practice rooms at Knowledge High. These buildings were also designed to encourage more interactions with the community. Community wide meetings and orchestral presentations occurred in the auditorium of Knowledge High. These auditoriums were more up to date for comfortably hosting activities with large groups in attendance. The old buildings had to cope with whatever space they had available. They do have auditoriums, for instance, but they are older with less comfortable chairs, less capacity, and projectors and other audiovisual equipment has to be "rolled in". It is not part of the original design.

These main differences between the schools show that there is an unequal provision of pedagogical spaces and resources which places the four schools in the study on a continuum so that the best school is the magnet school in the new building (Knowledge High) followed by the magnet school in the old building (Industry High), then the comprehensive school in the new building (Main High) and the last school is the comprehensive school in the old building (Sears High). After this was established, a look at the percentage of students who tested proficient & advanced at the 12th grade state English language arts and mathematics test, confirmed this continuum (see comparison chart and trends for schools in addenda).

The two magnet schools in the district were able to provide an education to their students that would propel them to a future different from their peers attending comprehensive schools. The reproduction of the social structure of the community was broken in the magnet schools more so than in the comprehensive schools. All students attending schools might have a chance to reverse their socially prescribed future. However, it is more likely to happen for those

students attending Knowledge High or Industry High where 78.6% and 48% of students, respectively, intended to attend a 4 year college or university in 2009 (the lower percentage for Industry High might have to do with their technical concentration which does not necessarily lead to a 4 year college). At the comprehensive schools, the percentages are considerably lower. At Main High, only 22.2% planned to attend a 4 year college or university in 2009 and Sears High students will definitely have a harder time overcoming their odds with only 16.3% in 2009 intending to attend a 4 year college or university (http://education.state.nj.us/rc/).

### 2. Lack of Synomorphy: Temporary and permanent spatial solutions

According to Wicker (1984), lack of synomorphy at a setting is the evidence of a poor fit between what people are trying to do in a setting and the physical characteristics of the setting. In his book "Introduction to Ecological Psychology", Wicker presents some examples of this lack of fit. Lack of fit occurs when a behavior setting continues to operate during construction or renovation or when the behavior setting regularly contains too many occupants for the facilities. Lack of fit also occurs when the setting is run by people who are not competent or when a behavior setting program depends on an unreliable component. Non-synomorphic relationships also occur when a behavior setting occupies a space designed for a different purpose or for a different set of people or when a behavior setting is designed for multiple purposes. When a behavior setting has just occupied new quarters or is in temporary quarters, there is also lack of synomorphy (Wicker, 1984).

An example of a permanent lack of synomorphy is the lack of a gymnasium at Industry High. The space that is used as a gym is not built to regulation size and cannot hold home games. This space is also subject to flooding and therefore cannot be depended on regularly. The students at this school sometimes use the auditorium stage which can afford yoga classes or the parking lot which affords students an opportunity to toss the ball around and stretch. The problem of having a space in which students can exercise was temporarily solved but the

auditorium's stage was not originally design to hold a physical education class and, therefore, the lack of fit remains. This kind of situation is common at this old building. At this school, a deaf education teacher said:

*"I do not have an assigned space to work with my students, I work with them at a chemistry lab. This makes my job harder. Wooden floors make noise upstairs and there is echo downstairs. Most people don't think about that, but I notice it because of my students. I wish I had my own space where I can story my materials and be found by students and other teachers"*

The deaf education teacher laments that the conditions in which she works are not favorable to the activities she needs to undertake to educate her students. Teaching her class in a chemistry lab, is a permanent lack of synomorphy that as she states, makes her job harder.

Lack of synomorphy was more evident in the old buildings in which spaces were transformed in order to meet the more current needs of the school. However, these spaces still carried the character of what they were originally designed for. At Industry High, two classrooms had vestiges of what they used to be. One had a chimney that is not used any longer and the other classroom had mirrors and a bar attached to the wall because it used to be a dance studio. These characteristics might make some feel that the building "has character"; but when regular building users do not have the power to make decisions about these spaces, they can become a constant reminder of the lack of agency.

The occasional use of an adequate but non-intentionally designed space might not mean much to students or teachers who might even benefit from adapting their teaching and behaviors to a different environment. Flexibility is usually a rewarded skill. When the situation is chronic, though, and a school has no choice but to use alternative spaces on a permanent basis, the synomorphy of the school changes. The constant adaptation might become routine and, as any routine, it becomes invisible. Being permanently unable to host home games or having to teach your non-chemistry related class in a chemistry lab becomes integrated into the

routine and, as such, it disappears as an accepted fact of everyday life. This adaptation, nonetheless, exerts stress over building users who perhaps stop thinking about it explicitly but still suffer from the consequences of lack of synomorphy. A guidance counselor at Industry High said "*you adap*t" regarding her difficulties with the building.

The computer science supervisor added that:

"*Urban kids are survivors, they are resilient. Everyone is good adapting, they have limited supplies and support but you work with what you have*"

Faced with a chronic lack of fit, the attitude at this school was that people make the best of the circumstances because they have to "keep going." This attitude sums up the everyday life at schools with deficient facilities.

The constant adaptation to difficult circumstances makes it a success when students perform well. Teachers at Knowledge High who experienced both the old and the new buildings, conveyed that, when they were in the old building, it was "almost a miracle" that students got good grades given the constant problems with leaks, condemned floors, and lack of educational spaces within the building (students had to use facilities from a nearby YMCA). Now that the school is in a building that affords everything they need, the sense is that they need to perform above the level that they did before; now they don't have the limitations of the old building. As one teacher put it "*The bar is set higher here*".

According to Wicker (1984), lack of synomorphy is rare because people in the design professions, as well as behavior setting users, make sure that spaces are fit to afford the activities they were set out to support. There are modifications that can be made to make the space more suitable for the activity that people want to accomplish in that space. Wicker states that "users may be likely to arrange objects to be compatible with their activities. For example, a receptionist might move his desk to allow for freer movement of people from an outside entrance to the inner offices; a grocer might install heated floor pads for checkers who complain

of cold feet" (Wicker, 1984, p.23). In these examples, Wicker establishes the agency of behavior setting users to overcome the lack of synomorphy.

In analyzing real life behavior settings, like the schools in the study, it was possible to see that there is more complexity in the everyday life of a school building than was acknowledged in the ecological psychology framework. What happens when users do not have the means to overcome the lack of synomorphy? What happens when school districts cannot fix the leaks or cannot build the extra classroom? The ecological psychology framework is useful in explaining the complexity of people-environment interactions but it lacks a social dimension that connects the analysis of behavior settings to the larger circles that have influence over them. These circles of influence are social in nature and include economic, historical, and political factors as well as issues of ethnicity, culture, and geography. Widening the scope of ecological psychology to look into these larger societal issues can only enrich its focus on the ecological view of people. This more complex view of ecological psychology needs more theorizing and researching (Duran-Narucki, 2011).

Lack of synomorphy in the study's schools can be solved up to a degree but behavior setting users need to have, personal, political, and financial resources to do this. Returning to the example of Industry High, the lack of a gym is a complicated issue because there is no space available to build a new gym. This problem was solved, in theory, by some of its students who were enrolled in a computer assisted design (CAD) class. These students designed facilities that can be located in the rooftop of the school's main building making it possible to have a gym without acquiring new land which is in short supply in this urban area.

The theoretical problem was solved but not the material one in which there are no funds to finance the construction of the proposed gym. Public schools as institutions depend on public funds and, in a low income community, residents cannot provide additional funding to build much needed facilities. The state government already allocates roughly $2,000 more per student to the children in this district than the average spent in New Jersey ($17,515 vs.

$15,538). In addition, fundraising and other activities that can help solve the lack of solvency are specialized undertakings that require involved community members and parents who have the time, the knowledge, and/or the compensation to organize them. Most often, this is not the case for parents in low-income communities. Improvement or development of behavior settings at schools is also contingent upon political will. There are complex political issues that govern "who gets what" in a school district. Some students at Industry High expressed their complaints about how Knowledge High got a new building and they don't even have a gym. One student said:

"*Other schools have nice gyms. It is not fair, you apply here because of prestige, but then there is mold underneath the vinyl flooring, [in the basement area used for physical education] the gym is not a priority. Kids look forward to it, it is similar to recess in elementary school*".

Lack of synomorphy and the stress of constant adaptation are common in buildings that are outdated, overcrowded, or in disrepair. This is one of the ways in which the poor condition of facilities affects what happens to academic achievement.

### 3. The physical environment of the school: Where synomorphy meets social reproduction and social injustice

At the core of school behavior settings and school affordances is behavior. From an ecological perspective, behavior is a complex variable that includes larger social circles of influence as Bronfenbrenner (1979) pointed out in his ecological theory of human development. Behavior is understood here in terms of its interconnectedness to elements within the behavior setting and outside of it. Behavior is seen in its historical, geographic, political, social, and economic nature and in an ongoing interaction with the physical environment.

It is at this juncture where it is essential to include a perspective that looks critically at the everyday life of people in the places they inhabit. Until this point, behavior settings have

been understood as the basic units of person-environment transactions. Affordances, found within behavior settings, and active in the synomorphic relationships between people and their situated behaviors, have also been described. The concept that furthers the understanding of school facilities as they reproduce the social characteristics of the communities in which they are located is *habitus*. As explained in the literature review (Chapter One), Bourdieu defined "habitus" as a system of lasting "dispositions" or acquired schemes of perception, thought, and action (Bourdieu, 1972). Habitus is the vehicle of cultural reproduction which Bourdieu defines as embodied, objectified, and institutionalized (Bourdieu, 1986). In the case of school buildings, existing practices afford specific behaviors that have cultural value. This cultural value is crucial to the maintenance of the culture of the school or the community, or in the promotion of change.

In his chapter "The Silent Complicity of Architecture", Dovey (2005) declares that the relationship of Bourdieu's concept of habitus to architecture lies in the connection of habitus to habitat; the ways in which space frames social practice (p.285). It is because of the framing of social practice, that space is at once physical and social. According to Dovey (2005), the social and hierarchic divisions in the habitus (class, gender, ethnicity, age, etc.) become evident in the ways in which space is divided and organized. The author states that Bourdieu's work is relevant to architectural theory and practice because of its acceptance and articulation of the deep complicity of architecture with social order. In the same way, Boudieu's work is relevant to environmental psychology and an ecological analysis because it highlights the ways in which the built environment shapes the habitat of everyday life. In the everyday of schools, life takes place within rooms, buildings, streets, windows, shaped by the decisions of designers, policy makers, school administrators, custodians, etc. Buildings both constrain and enable certain kinds of life and experience but they are inherently coercive in that they enforce limits to action and enable social practices to 'take place' (Dovey, 2005, p. 291). The architectural programs at the different school buildings tend to promote certain types of interactions over others, certain experiences over others. These daily interactions and experiences are essential to the creation of social

capital, a desirable resource for any community, but crucial in low-income neighborhoods (Dovey, 2005).

School building quality matters because it impinges on the capacity of schools to afford socially valuable practices. School buildings play an active role in the reproduction of social class because they reproduce the social practices (culture) of the communities of which they are an integral part. The social conditions that produce and maintain the school buildings and its characteristics tend to be reproduced by the same school buildings. This occurs directly, in ways explained in the previous chapter, through the practices that the buildings afford or do not afford. It also happens by omission or due to the doxa, which Bourdieu defined as "that which is taken for granted in any society" (Bourdieu, 1972). An example was discussed in the previous chapter when the constant adaptation to an unfit environment was described as chronic and "disappearing" in the everyday of the school. According to Bourdieu (1977), education is the process through which a cultural arbitrary is historically reproduced through the production of habitus. This is why it is unlikely that a school is able to afford behaviors, practices, or ways of being that are not already supported within their everyday life. It takes awareness and a purposeful effort to overcome the doxa and change habitus to match a desired social category or status. In this study, the two new school buildings are not stereotypical of the community in which they are located. They were built to compensate for the lack of adequate facilities that the schools suffered for many years. They were also built with the hope that, in those buildings, users will be able to break away from the existing patterns in the community and provide a different set of outcomes.

In describing the ways in which built environments interact with historic individuals and social practices, it is important to note how difficult it is to disentangle the nets of influences between and within all the ecological levels of human activity. An example from the schools in the study is presented here to show how the "structuring structure" subtly acts in real life. Both comprehensive schools in the study had child-care rooms in the building while none of the

magnet schools did. Research shows that on-site childcare helps teen mothers stay in school and graduate; it also lowers repeat pregnancy rates (Gillis, Williams & Sadler, 2003). Given that expectations about academic achievement and community opportunities impinge on the incidence of teen pregnancy (Driscoll et. al, 2005), the role of the child care rooms in the expectations building users had of themselves and of becoming teen parents was of interest. In an interview with the principal of Sears High, the principal mentioned that the child care room was created due to the high incidence of teen pregnancy in this school. The need to keep young mothers engaged preceded the creation of the space. However, in the new building for the other comprehensive school, Main High, a child care room was included in the original planning of the building.

There is a connection between the expectations for students at a given place and this is represented in the built environment, intentionally or not. The expectations in the two magnet schools are that the students who attend them will excel in high school. This expectation is based, of course, on their selectivity as they only admit students who are already performing proficiently. The expectations in the comprehensive schools are not necessarily to excel but simply to graduate its students. Teen mothers attending comprehensive schools are being helped by in-house childcare to meet the normative goal of graduating from high school. Expectations about excelling in comprehensive schools seem to be minimal.

In bringing attention to "built in expectations", the risk is to imply causal connections between settings and behaviors. For some, this may signal determinism or lack of agency. This is not the intention here. Heft (2001) wrote about the need to move from efficient causality to formal causality. The nature of perceived meaning in the concepts of affordances and behavior-milieu synomorphs, establishes meaning as a result of action. No single cause determines a single behavior. School based child care for teen parents does not promote teens using the setting. The cultural and physical structure in which the child care room is located simply affords a possibility for teens. The relationship between the behavior setting and the behavior is

not one of cause and effect. What the application of the concept of synomorphy contributes here, is that there may be a subtle coercion of behavior in the shape of expectations. Even if a student does not use the services of the child care room, there is the expectation that some of her peers are using it or will use it. The school environment has a physical space reserved for those students who become pregnant. There is an expectation of teen pregnancy in the use of space in the building. The program of the school, the way in which this space is used, and the acceptance of its existence as a regularity in the everyday life of the high school are not value-free or inconsequential. In general, researchers have found that young people in more disadvantaged communities have higher rates of sexual activity, sexually transmitted disease, and pregnancy than teens from more advantaged areas (Driscoll, et. al, 2005). Neighborhood values have been found to affect adolescent behavior (Aneshensel & Sucoff, 1996). By normalizing child care for teenagers, the risk is that it will become part of what is normal and expected. The peril is that spaces that are meant to help or solve a current need may become part of the way things are and not considered one of many alternatives or may have iatrogenic effects (Ryan, 1976). This is the "doxa", what Bourdieu calls "that which goes without saying because it comes without saying" (Bourdieu, 1977, p. 167). The uses given to different spaces at a school correspond to the governing cultures/social practices of that community, state, and country.

Schools are at a crucial juncture because students will formulate possible selves according to the cultural practices learned there. There is extensive theorization and research within psychology that establishes the self as the product of ecological, economic, and historic factors as well as institutions and daily practices (i.e. Markus & Kitayama, 2010). So, at a developmental moment when adolescents are experimenting and trying to develop their current and future selves, what is considered normative or expected is deeply related to adolescents' sense of self, their sense of agency, and their sense of who they can become.

Bourdieu, theorizing at higher social and ecological levels, notes that education "considered as the process through which a cultural arbitrary is historically reproduced through

the medium of the production of the habitus productive of practices conforming with that cultural arbitrary [...] is the equivalent, in the cultural order, of the transmission of genetic capital in the biological order" (Bourdieu, 1977, p. 32). By sanctioning certain practices, schools legitimize them to maintain things "as they are" intentionally or not.

## 4. Breaking the social reproduction cycle

In order to break with what becomes a cycle of social reproduction, innovative action needs to be promoted with specific changes not only in the physical environment of the school but also in the program of its settings and the kinds of practices they promote. The Abbott v. Board of Education rulings attempted to equalize the role of public schools directing money to districts that would not otherwise have the means to introduce changes in the pattern of social reproduction. Even when breaks to the reproductive pattern are introduced, change will not happen automatically. At Main High, being in a new building created the expectation of change, of a "turn around". This expectation was clearly taxing on school building users. Stressed out teachers who could not magically increase performance scores were also burdened by the fact that there was now technology available that some teachers did not know how to use. In fact, in looking at the scores (see chart of school trends in appendix) for mathematics and English language arts for the years since this school has been in the new building, math scores remain flat and English scores go down a few points. Being in the new building might have added a stress to the school as a whole which could be reflected in students' scores.

In addition, coinciding with the first year in the new building, budget cuts in State funding resulted in some teachers not to being rehired, some teachers being laid off, and some deciding to retire to avoid penalties on their retirement funds. According to a local newspaper, at the end of the observed school year (2009-2010), there were 194 positions in 40 job titles eliminated. Talking to people at Main High was difficult presumably because they were suspicious of anyone asking questions. The adequate yearly progress (AYP) expected of all

public schools according to the "No Child Left Behind" act, was not met by either of the comprehensive high schools in this study. Sears High had not met the AYP for at least 4 years (2006-2010) whereas Main High did not meet the AYP in the two years that it has been in the new building (2008-2010). Perhaps the new building will improve academic achievement once the stress of the adaptation to the new building is over and students and staff are able to take advantage of the resources available to them. One sign of hope at Main High is that attendance improved in the new building (from 88.3% in 2008 to 90% in 2010) and attendance is a key factor in academic achievement. It has also affected staff's motivation to go to work, in the account of a teacher,

"*The older building was infected. I did not want to go to work. Leaks and rodents were at the school all the time. Here I want to be at school all the time. […] Students don't want to leave the building. Some students go home to eat and then come back.*"

Even though all schools in the district have similar configurations in their core spaces, as they are intended to support a common pedagogical project designed by the state, they afford things at levels that are differently valued. The differences are evident particularly to those who live through the move from an old building to a new one.

A history teacher at Knowledge High said:

"*I rather be in this building. It is good because it is easy. In the old building you could be complacent. Here you are pushed beyond local standards of excellence. Now you have to meet national standards. Instead of comparing themselves to students in other schools, now they compare themselves to students in other districts and in the country*"

The head guidance counselor for this school described how she felt in the new building:

"*When I moved from the old building to this building I felt like I had died and gone to heaven.*"

The new school building made Knowledge High probably the most sought after magnet school in the district. Students in the district apply to magnet schools and then visit them to select their priority. According to a Math teacher who works at this school:

"*Students are more likely to want to go to this school because they have access to more things like the fitness rooms or swimming pool.*"

A student interviewed at Main High had transferred from a private school. From his perspective:

"*The building made me want to come here, it is nicer than the school where I was.*"

As in every other setting, the excitement of the building wears off and the new facility becomes part of the doxa. As a student at Main High puts it:

"*The excitement wore off after the first year. Before we did not have a gym, now we have two and that is even not enough. Now we brag.*"

It is relevant for policy makers to consider the environment of the school as a whole that comprises the physical, the social, the political, and all other social levels of organization. New buildings are a good start for changing the culture of a school but they do not magically change it. Quality education requires the alignment of the different social forces that influence the school.

## Chapter Six: What is known until this point and what should be learned next

### 1. Discussion

The many overt and subtle disparities in the provision of education in New Jersey were revealed during the time spent at the four high schools in the study. The new buildings were undoubtedly superior in providing more and better affordances for education. Nevertheless, the division of schools into magnet and comprehensive showed the complexities of the social, economic, and cultural forces in which the built environment is situated. There were ample differences in the level of expectations, for instance, in the magnet schools and in the comprehensive schools. Nonetheless, granting a school a new building is likely to improve academic outcomes because of the expected match between the quality of space and the quality of the activities taking place in that space. The incontrovertible nature of the physical environment makes a statement beyond words and expectations. One reason for this might be that the new school buildings functionally afford current pedagogical goals through the intentionality of their design and their technological features.

### a.School Affordances

The behaviors, attitudes, emotions, and expectations afforded by the buildings in the study presented a direct connection to the overall performance of the school. In terms of functional school affordances, those schools that were able to provide adequate tools for education such as working computers, science labs, gyms, etc. were better able to provide the experiences their students need to perform proficiently. Whenever there were deficiencies in the quality of the aforementioned tools, there was a drop in the ability of students to perform. This was evidenced in the continuum established between the schools in which Knowledge High had the best facilities as well as the best academic indicators, followed by Industry High, which did

not have the best facilities but had a supportive environment for their students and staff. The third school on this continuum was Main High which had top quality facilities but was destabilized by the recent move by the highest level of expectations on staff and students, as well as the regular challenges that accompany a move to a new building and the use of new technologies. The last school was Sears High which is located at a building that is not able to afford a comfortable and adequate school experience. The lack of useable spaces such as science labs and the disrepair and lack of legibility in the building created an environment that did not contribute to the performance of its students.

It is important to note that, in this continuum, the social aspect of the school environment at Industry High places the school at a higher place than it would be if looking at the quality of school buildings alone . The social environment of the school compensates, when it is necessary, for the lack of adequate facilities if the expectations of student performance allow for it. The fact that the two magnet schools expect higher performance of their students interacts with the functional affordances of the school to produce an enhanced school experience. When there are deficits in the quality of school buildings, there is an increased need for the social environment to compensate for these deficits. Teachers at those schools were also innovative and dedicated which contributed to the overall success of the magnet schools.

It is therefore essential to look at the environment of the school as a whole and not discount the relevance of other kinds of affordances such as the social and emotional. At Industry High, the "family" environment created by the staff contributed to ameliorate the lack of adequate spaces (the gymnasium). Students were encouraged to design proposals for a gym on the rooftop that, even though is not being funded at this time, perhaps will be funded and built one day. In the meantime, students did have direct participation in the design of the spaces in which the main office and library/media center were relocated.

The same narrative about a "family" feeling was reported in the interviewees who worked or studied at the old Knowledge High building. Everyone had to face the many problems that the

building had together. Sharing the experience of adversity made staff and students at Knowledge High bond together. When schools afford social interactions that are positive, they are, in fact, supporting the creation of social capital (Putnam, 1993). When students feel comfortable approaching their teachers and staff, when they are able to congregate at the safe space of the school to either enjoy a game or simply "hanging out", they are better equipped to organize and access power. The new school buildings had more social affordances. Students were often spending time at the building after school and had to be asked to leave. However, those in the old buildings attempted to promote this kind of social interaction. Staff at Industry High attempted that through their "Cafe", and Sears High held a couple of "pep rallies" during the year to promote school unity. New school buildings were better at promoting the naturally occurring social encounters. Their buildings afforded everyday routines in which students regularly saw each other. The old buildings had to add activities to their schedule to promote social interactions. The opposite effect occurred with the teachers at the new buildings. The new buildings created an environment that felt less familiar and more "corporate". The emphasis on performance hindered the social interactions of teachers and they felt less connected to their colleagues.

Emotionally, students and staff's feelings of attachment and pride followed the pattern or continuum described earlier. The better the school, the more pride and attachment students felt to their institution. This statement needs to be tempered by acknowledging that the magnet schools are attended by students who chose to attend them. The comprehensive schools have a harder time convincing their students that they are "special" and capable because students are aware their best performing peers attend the magnet schools in the district. Here is where Main High's new building may make a difference once the stress of the move has dwindled. The material quality of the building might provide more than functionality to the students. It might provide a source of pride and motivation if the problems with disenchanted personnel are overcome.

Schools that afford clear communication with students and staff are in a better position to ask for improved performance. This is perhaps why the district mandated all schools in the study to post performance indicators in a visible space near the main office. Close monitoring of performance indicators give staff and students more chances to affect them. The school that had better display areas usually had more information posted (e.g. screen display at Knowledge High, large poster boards in the second floor of Main High). The quality of the information, however, differed with the type of administration the school had. At Industry High, detailed information about colleges was posted on the walls of the cafeteria consistent with the principal's expectations of high performance in her students. At Main High, the boards with political statements affixed to the wall were consistent with the principal's role as a community organizer and political figure.

Environments of poverty, such as the one in which the schools in the study are located, normally afford less opportunities to their students. Public schools have the burden to compensate for the lack of resources available in the community and deliver performance standards similar to those of resource-rich communities. The "No Child Left Behind" Act assumes that schools are able to "level the field" for students in their communities. All of this has implications for the development of identity in adolescents. As explained in Chapter Five, adolescents are at a critical stage where they need to rehearse different alternative roles and identities. What was observed at schools in the study was that there was a lack of variation in the schools. "Good kids" went to magnet schools, "everyone else" went to the comprehensive schools. This stereotyping was reinforced by the staff and the school's performance was taken as evidence that good kids, at magnet schools, performed academically better than kids at comprehensive schools. Derogatory self-relevant information can also come from the affiliation to the status of the school in the district which may be low in the case of comprehensive schools. The stress characteristic of low-income communities can be continued or exacerbated by the school building if it is not experienced as a safe place or a place of possibility.

In sum, the study demonstrated that school affordances are more nuanced than has been acknowledged. A detailed inventory and analysis of affordances and behavior settings can be a better indicator of school building quality than the scales that simply note the physical condition of the school.

### b.Social Reproduction in Urban Public Schools

The ecological paradigm was complemented by the inclusion of Bourdieu's concept of habitus. What was learned from schools in the study is that the collection of affordances at specific behavior settings promotes synomorphy, coherence between the physical characteristics of the setting, and what happens in the setting. Ideally, what happens in each behavior setting should match the program of the setting and the program of the setting should match the best pedagogical practices. However, the program of the setting is usually heavy influenced by administrators at districts and states who are not always careful in analyzing the effects of their policies. There is little participation by the daily users of the setting in the decisions that affect the quality of the setting.

Social reproduction occurs in schools because what is afforded at each school has already been established by the quality of the environment. The environmental knowledge in the school building acts as a groove which guides the direction of school practices. Students join a high school where habitus were already established. At each school there are patterns of actions that individuals come to expect at particular times and places and are socially validated. The everyday life of the school is made of defined affordances. As the afforded behaviors become routine, they are less visible and less questioned. It is easier to see and to react to a leak in a new building where leaks rarely happen than to a leak in a building where every time it rains there are leaks. Building users reported that they got used to the conditions in which they work. This happened in both new and old buildings. The implications are however diametrically opposite.

Getting used to a low quality building might bring up feelings of accomplishment in some but it hampers the overall ability to perform academically. Materially speaking, the standards set by defective technology or rooms that are uncomfortable or unavailable are lower. There is a Maslowian taste to this claim (Maslow, 1943). There are basic needs that need to be satisfied, for the most part, to achieve higher order needs. This was patent in the study's schools and it translated into the level of expectations for each school. Schools in good condition were expected to deliver good school outcomes. Knowledge High was expected to perform at an even higher level in the new building. Main High was expected to show improvement in its outcomes regardless of the recent move to the new building and regardless of its history of low performance. Expectations are explained within this study's framework as an issue of synomorphy. There is an expected match between the quality of a setting and the quality of the activities in that setting. The new buildings are expected to break the existing habitus in a positive way, improving academic achievement. Inasmuch as the buildings provide pedagogical and social practices that prepare students and staff to perform better, they are likely to succeed in this goal.

It is harder to break away from habitus when the buildings are in disrepair. The distractions and malfunctioning facilities of old school buildings consume time and energy that is not devoted to activities that further their educational programs. Old buildings sustain cultural practices that signal "lacking" or poverty. The experience of not having up to date computers or not having a space to exercise can indicate a disadvantaged position in society.

When talking about the school buildings, the accounts of shared adversity indicate that there are constant stressors that are present on a regular basis. The consensus by school building users is that people "adapt" to these stressors meaning that, after a while, they don't even think about the stressors anymore. Research on allostatic load shows a more complex picture. The cumulative exposure to socioeconomic disadvantage, racism, or discrimination along with environmental stress, can have detrimental effects on health that may lead to

premature death particularly when there is little responsiveness to indicators of stress in the home environment (Evans et al, 2007). What could be considered as invisibility, such as in Bourdieu's Doxa, is in fact acting at a physiological level.

The striking performance differences between the magnet schools and the comprehensive schools indicate that perhaps the principal from Sears High was right when he wrote in the local paper that the district had a "two-tier" education system. What is sometimes referred to as "cream-skimming" has been found to be linked with the distribution of students between public and private schools. Private schools usually have more white, high achieving students from well-educated, high income families. The families that send children to the magnet schools in the district might be skewed in the same way except for income level which is similar for all families in the district. This type of student distribution has been found to maintain performance gaps between private and public schools (Figlio & Stone, 2001). It might explain, in the case of the district in this study, the different performance of magnet and comprehensive schools. One reason for the performance gap can be the strong influence of peer groups on student outcomes. Adolescents tend to be sensitive to peer pressure and when high performing and low performing students are divided there is less diversity in their outcomes. In addition, as stated before, the environments of magnet and comprehensive schools are qualitatively and quantitatively different. Magnet schools have more opportunities and higher expectations for their students. Comprehensive schools have less specialized spaces and lower expectations for their students.

The main problem facing all schools in the study was beyond their walls. Living in a low income community affected everything that happened inside of the school. The focus of this study stayed mostly within the space of the school and external influences were described tangentially. Nonetheless, the culture of the community imbued all physical, social, and pedagogical practices of the school. The synomprhy of the school was highly influenced by this culture. The use of the "Cafe" room at Industry High was a solution to the gang recruiting

common in the area. A teacher at Industry High reported that they "lose" some students during the week of Halloween every year because the neighborhoods become very dangerous. Some families choose not to send their children to school those days. Some families also choose not to send their children to magnet schools altogether as a guidance counselor at the same school reported, because they are far away from their homes and they have to take a bus. Students may become victims of gang crime while waiting for a bus in the dark during the winter months.

The characteristics of the community influence many aspects of the schools but this influence can be altered by interventions such as the ones promoted by the Abbott legislation. The funding that enabled the construction of the new buildings created spaces where students felt safe, welcomed, and had available technological resources. In the new buildings, the staff said, on a few occasions, that the students didn't want to leave at the end of the day, they would hang out at the lobby or other allowed spaces.

Following Bourdieu's theory (1977, 1979), the habitus created by the new school buildings was meant to cause a fracture in the reproduction of structure. This break was noticeable at all levels but patent in the physical environment of the school. At Main High, one administrator reported that, in the new building there was no graffiti which he took as a sign that the students liked the new building (they had graffiti in the old building). At Knowledge High, they now had two gyms while in the old building they had to walk to a nearby YMCA to do sports. Without a doubt, the everyday life of the schools was different from the one they had in the old buildings. The new buildings were explicitly designed to improve and support the performance of students. As one teacher in Knowledge High said, "This building is a monument to students".

The other way in which new habitus broke the influence of the culture of the community was through the staff's manipulation of the social environment. An example of this was the active role of the principal at Sears High who motivated students to feel pride in their school. His promotion of the schools' teams and the pep rallies he held made an impact on the students,

who protested with a walk out when he was moved to a different school. Another example can be seen at Industry High, where the reliance on students to design the new spaces in the building was a demonstration of confidence. This confidence partially offset the disappointment that students felt by the financial inability of the district to build the proposed gym that the students had also designed.

The physical environment of the school is the most tangible part of a complex net of proximal and distal socioeconomic and cultural influences which in turn it helps to reproduce. It is therefore key to use of the physical environment of the school to affect the habitus at a school. These are the environmental correlates of culture. In the case of low income communities, this culture is one of disenfranchisement. An example of this was found on a pamphlet labeled "parent guide". This pamphlet was located at the main office of Main High School and it summarized the procedures that law enforcement and schools had agreed upon regarding students who bring weapons to school, students who bring drugs to school, or circumstances that can lead to the arrest of a student. The bulletin stressed that the clarification of the established procedures was a concerted effort to provide a safe environment for students. Publications like these are not common in schools in wealthier communities.

The quality of the school space and the culture it represents are directly and indirectly relevant to the self identification of students as capable to succeed or not, as graduates or dropouts. What schools afford matter for student self-perceptions as well as for the real possibilities they have after graduation.

## 2. Limitations

This study was designed following the main tenets of ecological psychology. As such, it would be disingenuous to pretend that I was an unbiased observer detached from the subject of study. At the same time that I entered the schools in the study, I became a part of the behavior settings of the schools. This position, however, allowed me to experience some of the practices

occurring at the schools. I was being afforded the same things as other building users. Special attention had to be paid to the routines, policies and other programs of the settings that were not evidently afforded by the building. The degree to which the setting and the program diverged (lack of synomorphy) told me about the patchwork that public education can be in lower income districts.

One limitation of the methodological approach used is the lack of comparable studies. An exception can be found in the work of Werner, Brown & Altman (e.g. Werner, Brown, & Altman, 2002). In general, the publications found in peer reviewed journals that use ecological psychology are about theory building and very few are empirical studies. Research that documents and attempts to understand the human experience of school buildings, or other built or natural spaces, uses traditional approaches that do not consider the reciprocal constitution of perceiver and environment. It is hard to document the transactional nature of people and environments.

While the subject of "meaning" is addressed in this dissertation, the level of specificity in relationship to environments can be improved in further studies. What has been operationalized in this dissertation as environmental meaning, is just of the possible levels of meaning making. Environmental meaning was used here its functional dimension, as it informs building users about possible behaviors and selves. However, meanings can go beyond this functional level to become separate concepts that inform not only behavior but also thought and theorization.

This study was meant to be an in depth description of the kinds of transactions that occur in school buildings with different qualities and how they affect school outcomes. In looking for depth, breadth was partially sacrificed. Being that I was the only researcher, further studies should be undertaken by teams of researchers who could look at more schools, more behavior settings within schools, and more affordances within schools. The lack of a research team, however, is a common limitation of dissertation work.

### 3.What comes next: Future Research Directions

There are many more questions that remain after this study than those that were answered. This study initiates a research program that includes the investigation of environmental meaning, environmental knowledge, school building quality, and social justice.

Environmental meaning is a research topic that is bound to be in flux. More than a fixed concept to be defined, the situated nature of environmental meaning is likely to become one dimension to be included in the research of different kinds of settings. The environmental meanings of health care facilities, public spaces, or libraries among other settings can be collected and described as a way to enrich the design of new settings or improve existing ones.

The concept of environmental knowledge is already embedded in the research of Barbara Rogoff and others who study guided attention in the socialization of children (e.g. Rogoff & Morelli, 1989). Future research should focus on how people in different developmental stages use environmental knowledge to guide their behavior.

This study has provided clues to be followed by those trying to understand how it is that school building quality affects academic outcomes. Studies that look at school practices, behavior settings within the school, or what schools afford to their users will complement and enhance what this dissertation has begun to sketch out.

A study that focuses on the experiences of students as told by students would be very important to understanding the unique perspective that they have. More could be know about the subjects addressed in this dissertation by giving more of a voice to students. Studies that follow individual students throughout their day, or that make use of journals, could be particularly helpful.

Issues of social justice should be at the core of the study of urban public schools. The reproduction of inequality is a serious and challenging issue that should be tackled with sound research and clear recommendations for policy makers. However complex it may be to try to "tame" all the variables that constitute reality at these schools, responsible social scientists

should connect with that sense of urgency described by Martin-Baro and others who practiced social science from “limit situations” (Martin-Baro, 1994).

Specific questions also remain unanswered. These are some of them: Are ratings of the condition of common areas of the school a better predictor of attendance than the ratings of individual classroom conditions? Is it possible to quantify school affordances in a way that is useful to categorize schools in terms of its physical condition? Can research on school affordances benefit from participatory action research?

## 4. Recommendations for architects

I join Dovey (2005) in recommending that architects engage architecture as a social practice. Dovey encourages architects to invent the habitus in both formal and functional terms “As an art carries the obligation to imagine a future world; as a profession it carries the obligation to practice in the public interest” (Dovey, 2005, p. 294). There is so much that is determined by design that it is unrealistic to expect that an architect or a group of architects can create spaces that fulfill all the needs of modern education. It is critical to engage stakeholders in the process of design and construction of spaces. Students, educators, parents, and community members have unique knowledge that can contribute to the creation and/or improvement of school buildings for the benefit of the students and the community.

## 5. Notes for lawmakers

Studies such as the one undertaken here are usually time consuming and require the involvement of school authorities as well as community members. The kinds of knowledge that have come out of it, nevertheless, are relevant to the planning and support of school buildings, school practices, and academic curricula. It is hard to argue that this study will directly affect decisions about school buildings. Elected officials are usually interested in concise numbers that tell them how to make the most impact out of the resources devoted to education. Nonetheless,

to improve schools and education, it is crucial to take into account the role of school buildings, This is an uncontroversial action that will go a long way in showing students, teachers, and administrators that their local and state governments care about the quality of their education.

## 6. Conclusions

The show "School Pride" used in Chapter One exemplifies how important the physical and built environment of the school is for students, teachers, and their communities. Public schools in the United States are indexes of the life of the communities in which they exist. School buildings in disrepair, dirty, or dangerous not only impair the quality of instruction, but are also indicators of the social and economic health of a community and its ability to invest in education and its future. Students need to feel proud of the school that they attend. This pride is not only based on the academic performance of the school, but in the overall quality of the school environment. The physical part of this environment is a mute, yet crucial, aspect of what makes students, teachers, school administrators, and community members proud. This is the rationale behind "School Pride" and other television shows which try to match the quality of buildings or homes to the quality of the people that use them. There is an implicit assumption that there should be a consistency between the two. Beyond the expectation of synomorphy, there is the expectation of matching social status or value.

Society places a high value on the aesthetics and quality of the environments in which we spend time, whether they are private or public, individual or collective. In the case of public schools, it is practically incontestable that clean, safe, well designed and welcoming schools are the most desirable. They also speak about the well being of a community and its hope for the future. However evident it may be that the quality of the physical and built environment is related to what we humans do and how we do it, it is the duty of environmental psychologists to substantiate this claim with adequate conceptualization, research, evidence, and theory.

# Appendix

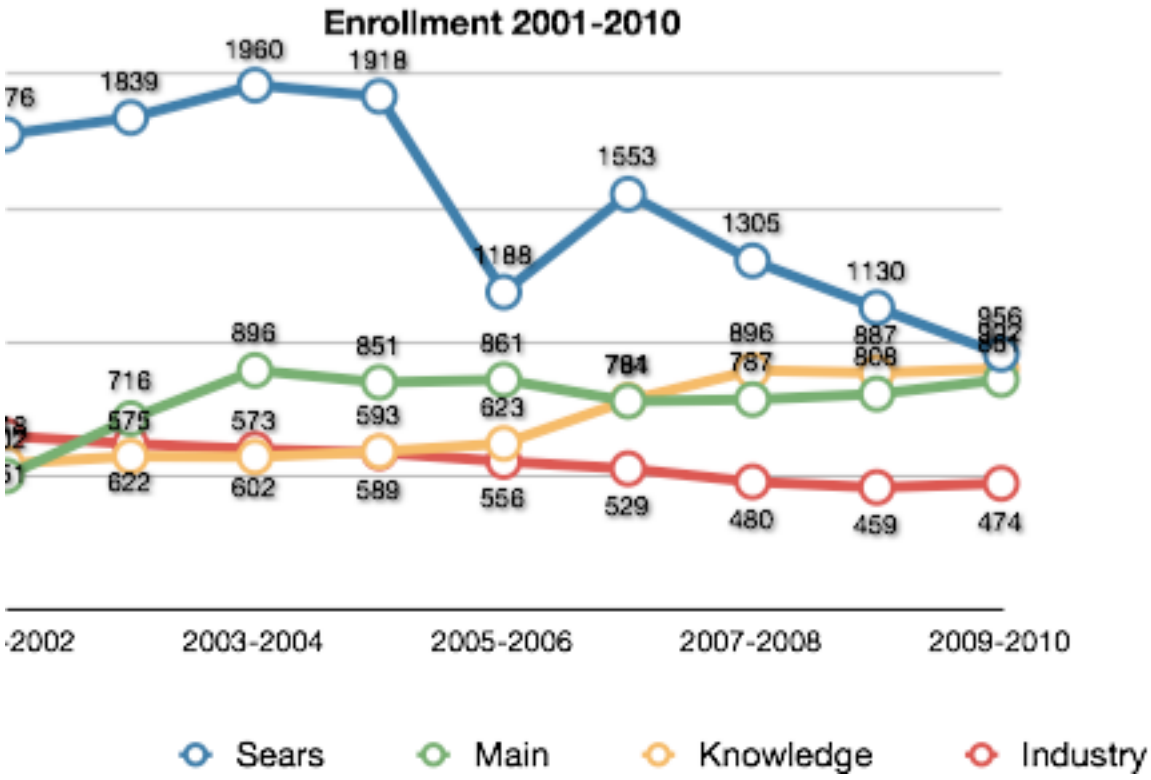



**Chart 1.** Number of students enrolled. All schools in the study from 2001 to 2010. Data from the State of New Jersey School Report Card (http://education.state.nj.us/rc/)

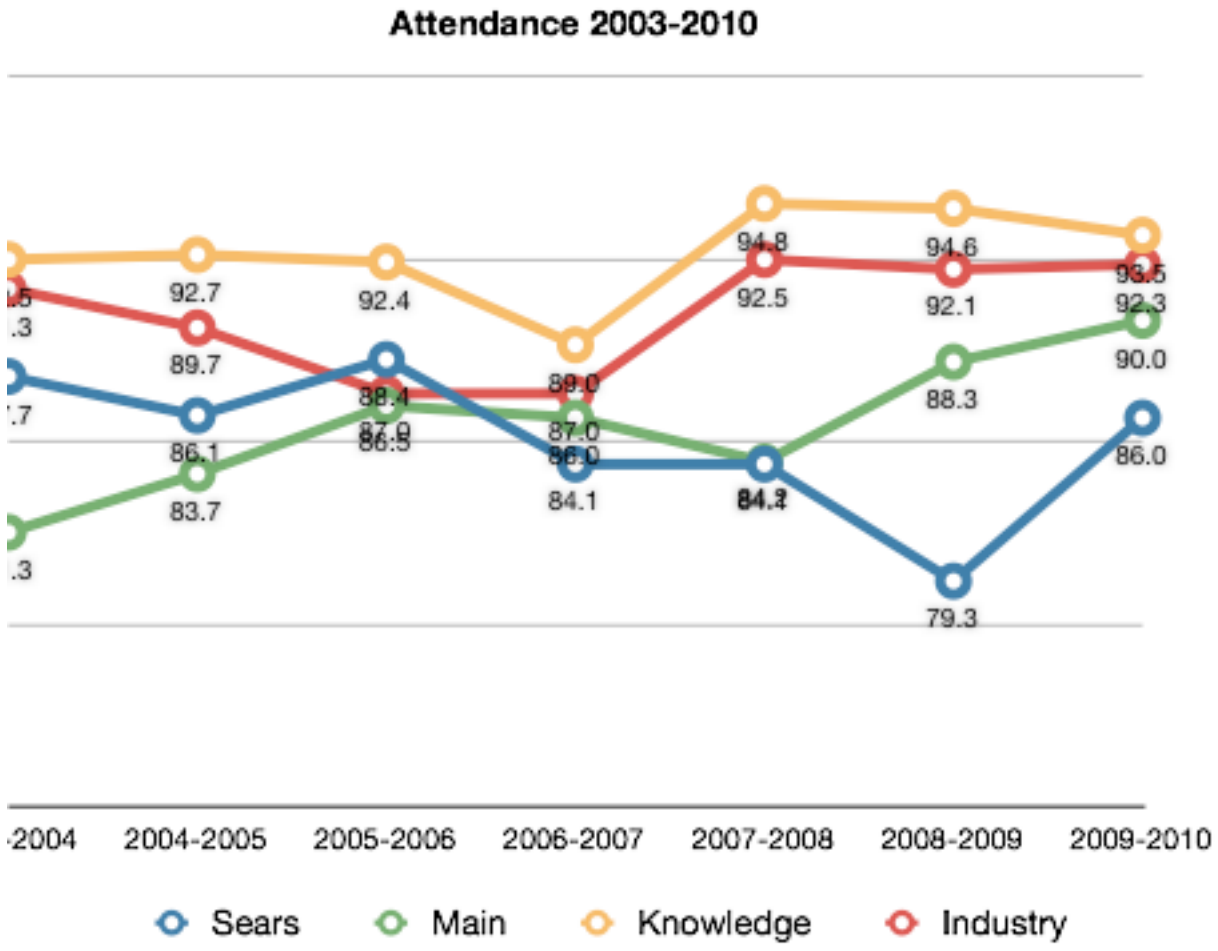



**Chart 2.** Percentage of days attended by students. All schools in the study from 2003 to 2010. Data from the State of New Jersey School Report Card(http:/ /education.state.nj.us/rc/)

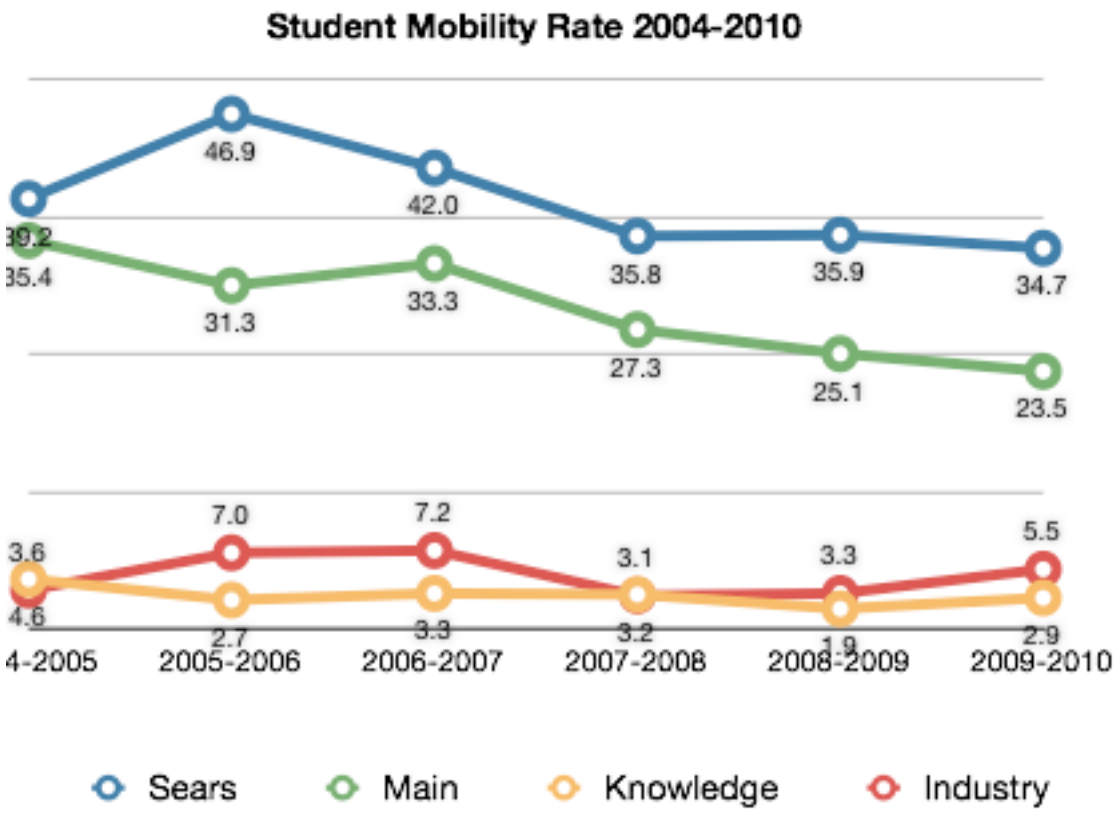



**Chart 3.** Student Mobility Rate. All schools in the study from 2004 to 2010.
Data from the State of New Jersey School Report Card (http://education.state.nj.us/rc/)

**Percentage of Students Scoring Proficient and Advanced Proficient English Language Arts Standardized Test HSPA 12th Grade 2002-2010**

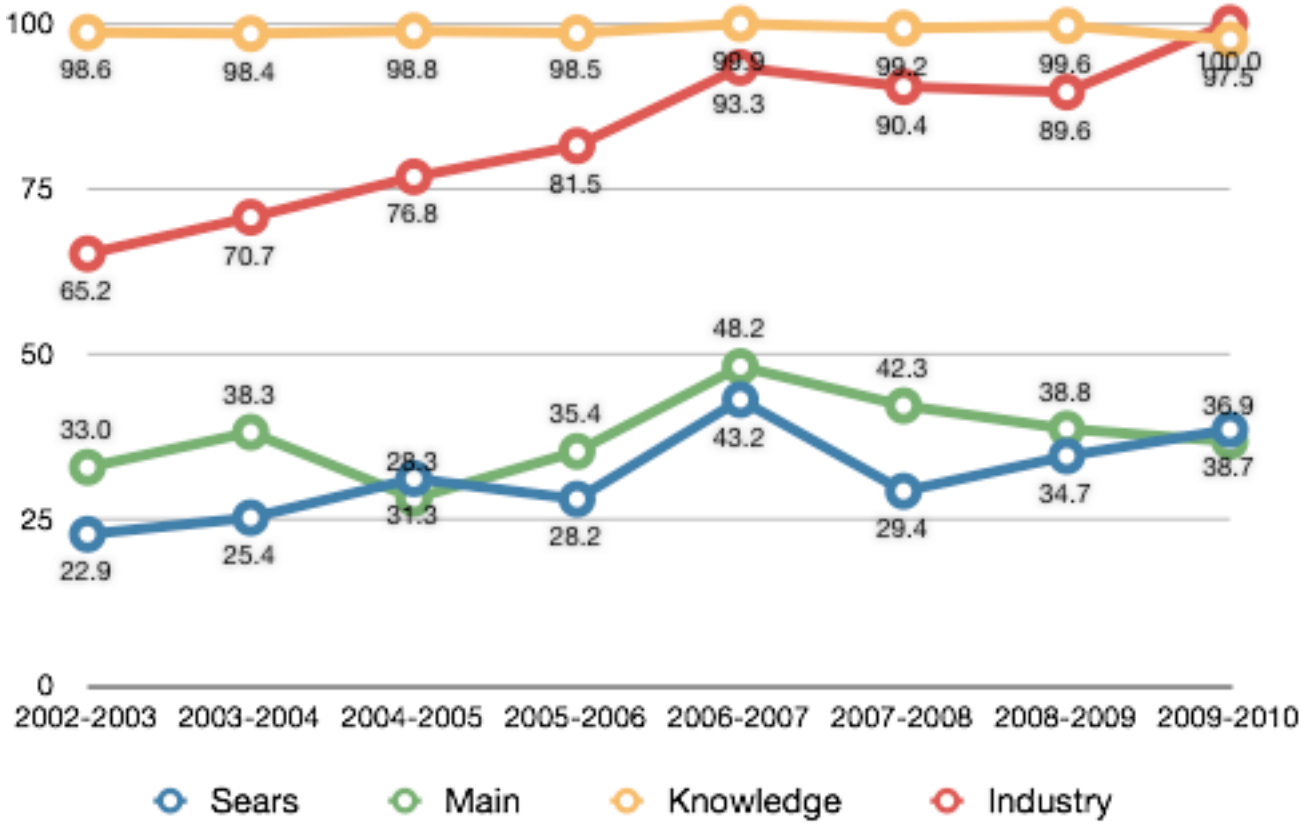



**Chart 4.** Student academic performance in English Language Arts. Standardized test (HSPA). All schools in the study from 2002 to 2010.
Data from the State of New Jersey School Report Card (http://education.state.nj.us/rc/)

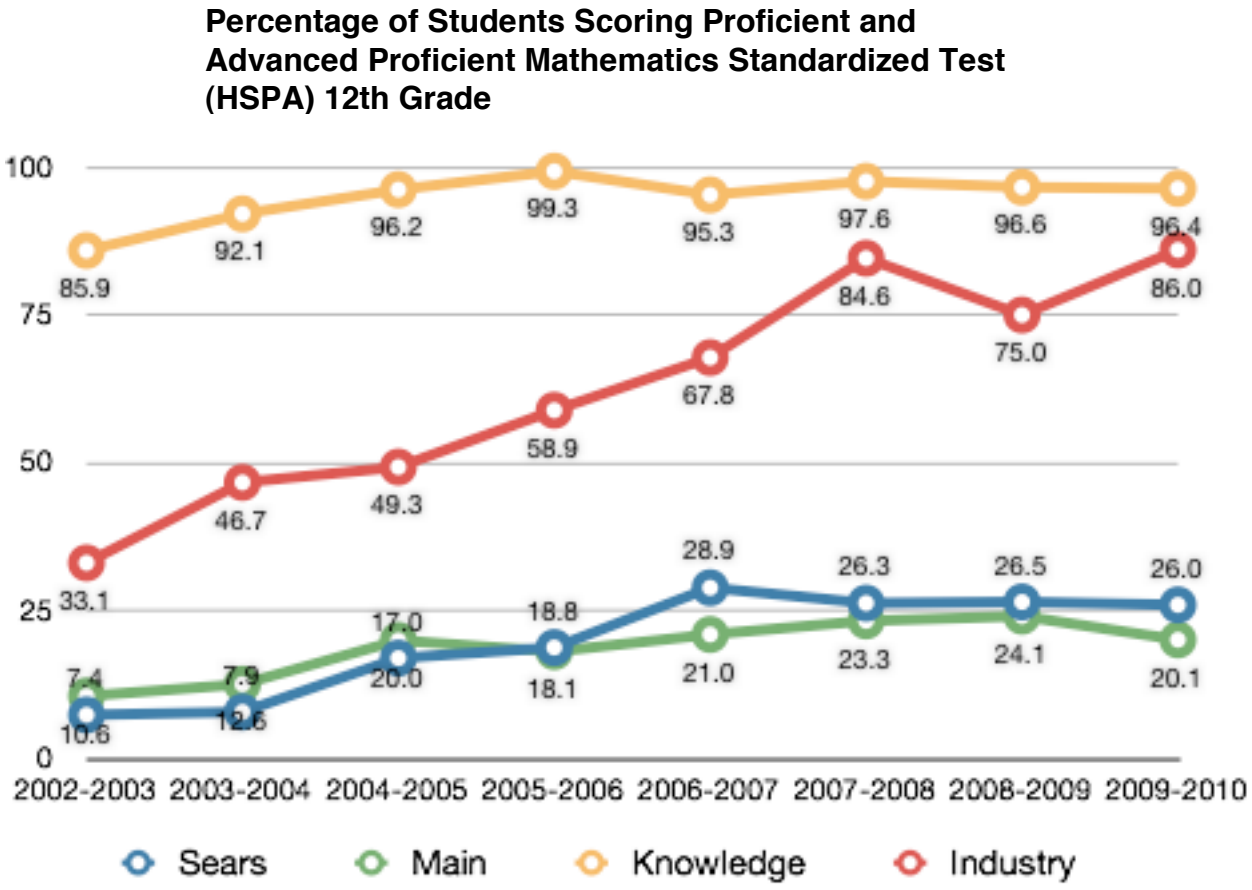



**Chart 5.** Student academic performance in Mathematics. Standardized test (HSPA). All schools in the study from 2002 to 2010.
Data from the State of New Jersey School Report Card (http://education.state.nj.us/rc/)

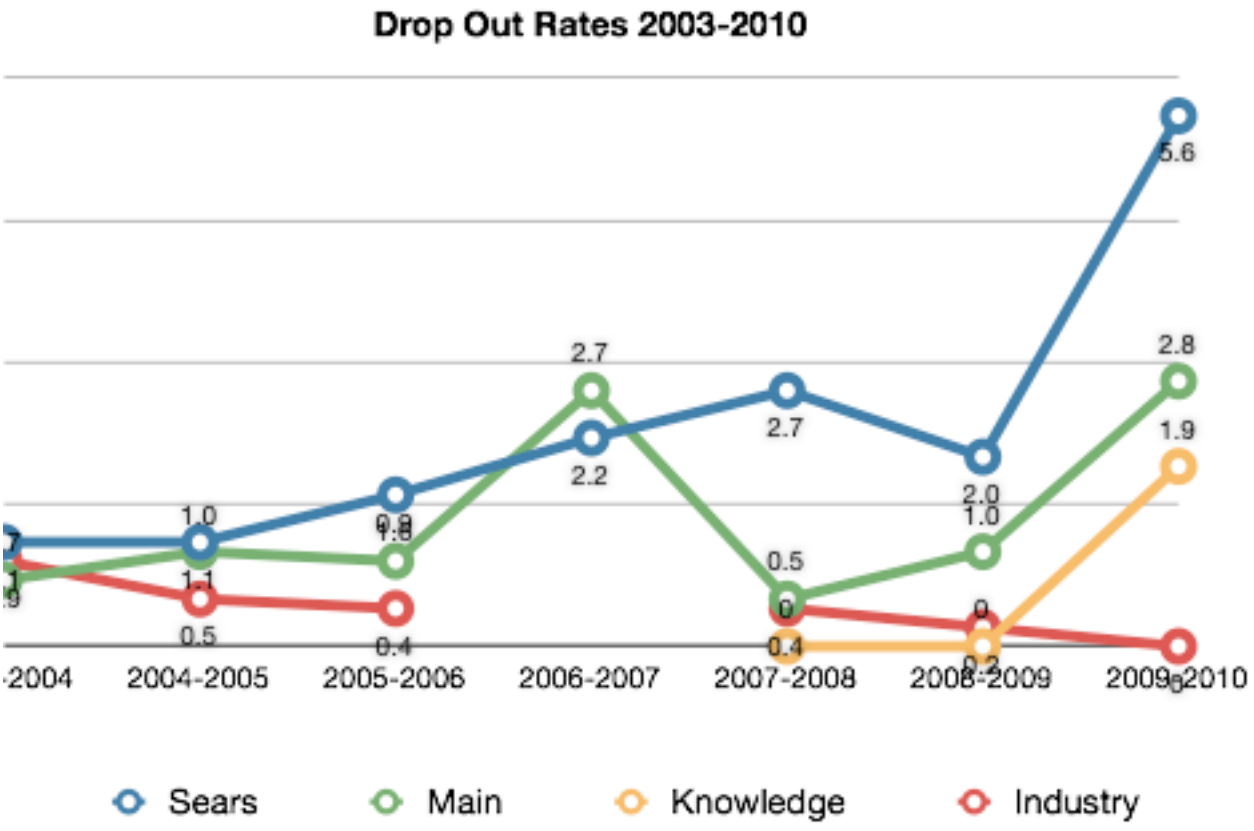



**Chart 6.** Student dropout rates. All schools in the study from 2003 to 2010.
Note: There was missing data for Knowledge High and Sears High for the academic year 2006-2007
Data from the State of New Jersey School Report Card (http://education.state.nj.us/rc/)

**Percentage of Students that Graduate**

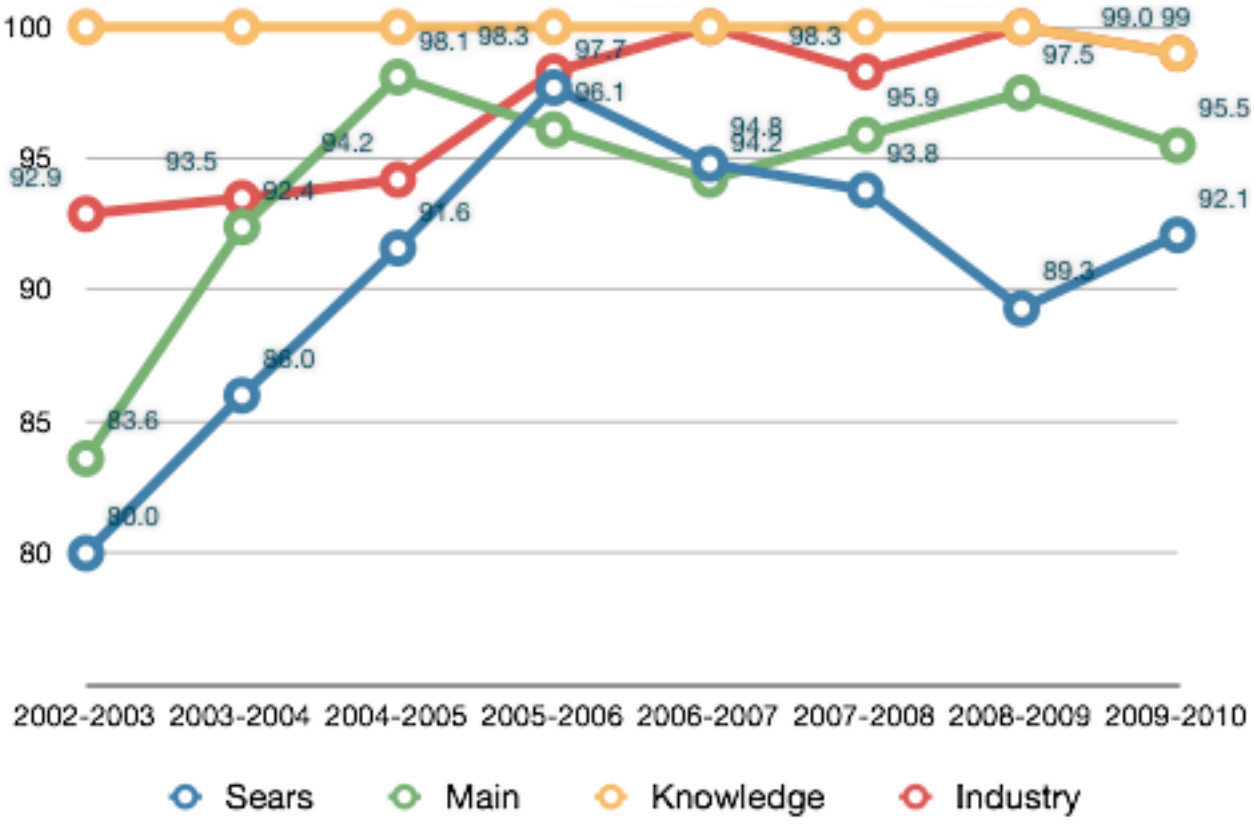
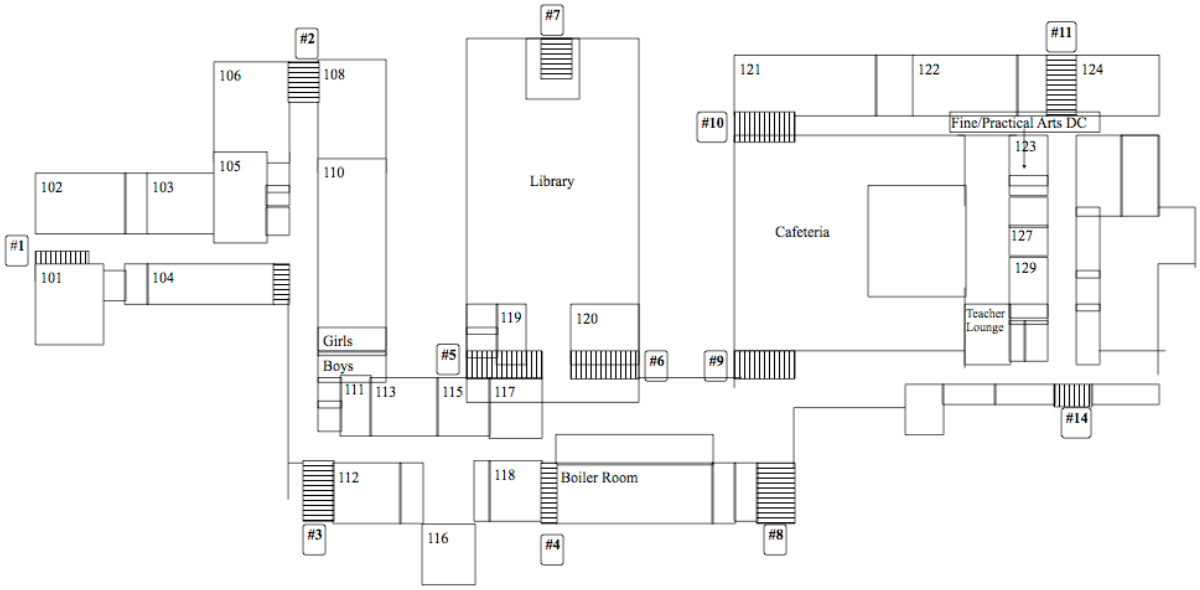


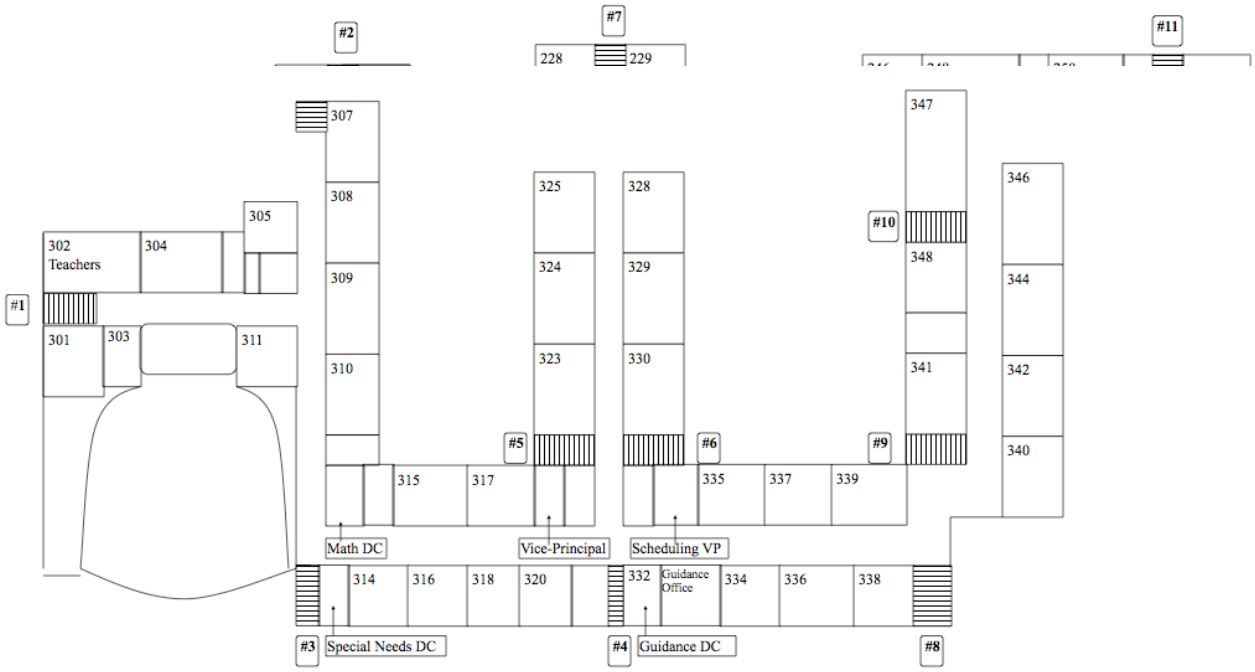

**Chart 7.** Percentage of students that graduate. All schools in the study from 2002 to 2010.
Data from the State of New Jersey School Report Card (http://education.state.nj.us/rc/)

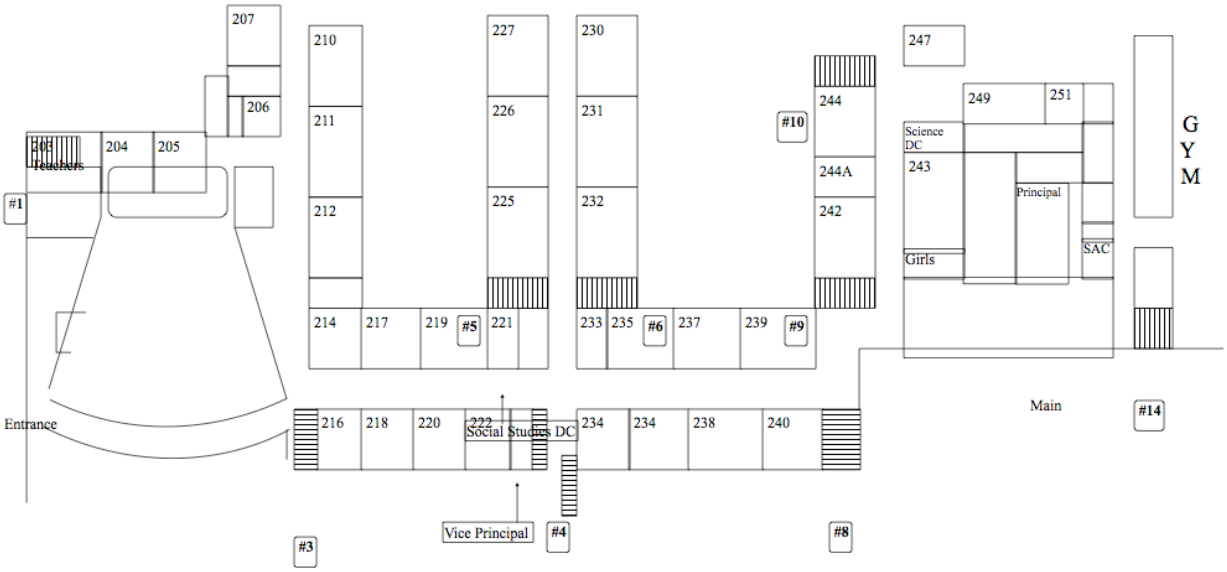
**Floor Plan – Sears High School**
**Provided by the School's Principal**

First Floor




Second Floor

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Science DC
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Principal
Girls
SAC
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Y
M
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Teachers
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205
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#5
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233
235
#6
237
239
#9
Entrance
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Social Studies DC
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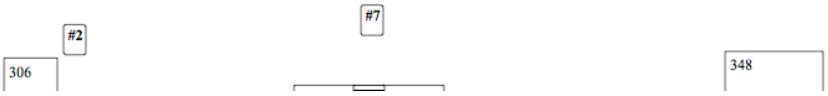
Main
#14
Vice Principal
#4
#3
#8

Third Floor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## Questions for Focus Groups:

School:_____Date_____

No. of participants_____Age range:_____Gender breakdown:_____

Range of years at this school building:_____

**INTRODUCTION**: I am a graduate student in Environmental Psychology from the City University of New York, and I am doing my dissertation research at this school. I am particularly interested in learning about the way school buildings and people interact. I want to know whether the condition of the school building helps or hinders academic achievement. I have done some observations at this building and now I would like to know your opinion about these issues.

***Perception of the school building***

1. What do you think about the way this school building looks?
2. Do you like this building?
3. What do you like about it?
4. What don't you like about it?
5. Are there features of this building that you think need to be fixed?
6. Are there features of this building that impede or slow the teaching here?
7. Is there something that you would like to change in this building? How would you change it?
8. Do you think that the condition of this school building affects the way you feel about coming to school?
9. Do you think that the condition of this school building affects your school work?
10. When you see something that you don't like about the school building, how do you feel about it?
11. Do you think that students get used to this kind of environment/these kinds of ugly/bad features, or do they always bother you?
12. Do you think that your grades would be better if this building was more up to date/better looking/better maintained?
13. What kinds of things do you do at school (activities, i.e. sports, clubs, etc) Do you think that these activities are encouraged or discouraged by the building characteristics?

***Social perception of the school building***

14. What do you think people think about this school building?
15. What do you think people think about students that attend this school?
16. What do you think most students in this school think about this school?

17. What do you think people think about the teachers, administrators and other staff that work at this school?
18. Do you think that most students in this school are able to do well academically?
19. Do you think most students in this school are going to graduate?

***Questions specific to the mechanisms through which school affects its students***

20. Do you think that the condition of the school building has to do with students' grades and/or attendance?
21. Why do you think that the condition of the school affect/doesn't affect grades and/or attendance?
22. Do you think that the condition of the school building has to do with the plans that students' have for their lives, if so why?
23. What do you think happens when students' attend schools that look ugly or in disrepair?
24. What do you think happens when students' attend schools that are good looking and functional?

***If the school has been renovated, or it is on a new building***

25. Were you at the old building?
26. Why do you think that they build a new building/renovated this building?
27. Do you like this how the school looks now?
28. Was there something that you liked or disliked of the "old school"?
29. What do you think people think about students that go to this school?
30. Do you think that you will "do better" at school on the new school?

## Interview Questions for Teachers, Administrator and other School Staff

School:_____Date_____

Position:_____
Age:_____
Sex:_____
Years at this school building:_____

**INTRODUCTION**: I am a graduate student in Environmental Psychology from the City University of New York, and I am doing my dissertation research at this school. I am particularly interested in learning about the way school buildings and people interact. I want to know whether the condition of the school building helps or hinders academic achievement. I have done some observations at this building and now I would like to know your opinion about these issues.

Individual experience of the school building

What do you think about the way this school building looks?
Do you like this building?
What do you like about it?
Is there something that you don't like about the building?
Are there features of this building that you think need to be fixed?
Are there features of this building that impede or slow the teaching here?
Is there something that you would like to change in this building? How would you change it?
Do you think that the condition of this school building affects the way you feel about coming to school?
Do you think that the condition of this school building affects the way you feel about your work?
Do these building problems prevent you from doing your job in the building?
Do you think that people get used to broken, ugly or non-functioning features in the building, or do they always bother them?
Do you think that your could do a better job if this building was more up to date, better looking or better maintained?

Social perception of the school building

What do you think people think about this school building?
What do you think people think about students that attend this school?
What do you think most students in this school think about this school?
What do you think people think about the teachers, administrators and other staff that work at this school?
Do you think most students in this building are able to do well academically?
Do you think most students in this school are going to graduate?

Questions specific to the mechanisms through which school affects its students

Do you think that the condition of the school building has to do with students' grades and/or attendance?

Why do you think that the condition of the school affect/doesn't affect grades and/or attendance?
Do you think that the condition of the school building has to do with the plans that students' have for their lives, if so why?
What do you think happens when students' attend schools that look ugly or in disrepair?
What do you think happens when students' attend schools that are good looking and functional?

If the school has been renovated, or it is on a new building

Were you at the old building?
Why do you think that they build a new building/renovated this building?
Do you like how the school looks now?
Was there something that you liked of the "old school"?
Was there something that you disliked of the "old school"?
What do you think people think about students that go to this school now did the perception of them changed?
Do you think that students will "do better" on the new building?

Thank you very much for your time, if you have any questions or think about something that you would have like to tell me afterwards please feel free to contact me by e-mail or phone ***(give interviewee personal card).*** If you are interested in learning about the results of this study, I will gladly send you an executive summary when the dissertation is finished.

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