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Learning is Diverse: The Dynamics of Change

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Learning is Diverse
The dynamics of change
Thesis Collaborative 2016 - 2017
Request for Approval of Project Book

Catherine Harter
Learning is Diverse: The Dynamics of Change

Thesis Statement:
Educational models of the 20th century in the United States responded directly to the then current economic circumstances and workforce needs. Schools throughout the United States were designed on those educational models of production and efficiently. While educational models have since changed in response to societal shifts, now emphasizing flexibility, diversity, and the integration of technology, the design of school infrastructure has not made that leap. By reconceptualizing the boundaries between elements and opening existing structure schools can be redesigned to align with the new educational model. This creates collaboration between different levels of expertise, the exploration of relationships between subjects, and the autonomous learner.

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Department Chair: Dr. Tony Rizzuto _____________________________________ Date __________
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Chapter 1
Propositional Essay

Flexible Design

Diversity

Integration of Technology
Educational models of the 20th century in the United States responded directly to the then current economic circumstances and workforce needs. Schools throughout the United States were designed on those educational models of production and efficiently. While educational models have since changed in response to societal shifts, now emphasizing flexibility, diversity, and the integration of technology, the design of school infrastructure has not made that leap. By reconceptualizing the boundaries between elements and opening existing structure schools can be redesigned to align with the new educational model. This creates collaboration between different levels of expertise, the exploration of relationships between subjects, and the autonomous learner.

Addressing flexibility, diversity, and the integration of technology brings about the idea of the autonomous learner, moving us away from the conformity of the traditional model of education. This concept should not be mistaken with self-instruction. Learner autonomy is a student's ability to set appropriate learning goals and to take an active role in his or her learning. Students accept responsibility, review their learning, and evaluate its effectiveness. While still being dependent upon a teacher, an autonomous learner needs to have an environment that is transformative, diverse, and integrated with technology. The environment needs to encourage collaboration and social interaction.

**Flexibility**

To be flexible is to have the ability to be easily modified and have a willingness to change or compromise. In order to experience growth and development in education our environments need to learn how to contend with the forces of change. Relationships between programatic elements have seen little too change in the last decade. Classrooms still sit along long halls dividing students by age and by subject matter. Students move from lesson to lesson with little to no connectivity between learning principles. Without the connection between concepts students are abruptly stopping and starting new materials, creating a rigid development in their learning. In order to encourage exploration between subject matter an environment should remain open and flexible, allowing the organic movement from concept to concept. The nonrestrictive quality of this type of learning environment allows for the opportunity of diverse environments that students can move to dependent upon their individual need.

**Diversity**

Diversity should be present among peers and through the types of environments available. Diversity among peers is an important aspect of a learning environment because the reality of our world is that it is diverse and heavily interconnected. Having exposure to different cultures teaches students to have an appreciation for diversity. Diversity in cultural background, age, and gender are all important factors that contribute to a students who will be socially successful among peers. Creating a diverse environment allows for the interaction between heterogeneous groups allowing students to relate to a society that is cross-cultured allowing them to have strong social competencies. A diverse learning environment is critical to individualized learning. Allowing the student to have a range of setting to choose from allows them to move organically from one lesson to another based on their personal needs. Most learning environments today were designed and organized around the industrial configuration of lines and rows facing the head of the classroom. The rigidity of this setting does not allow students to explore where a lesson might take them or align with the collaboration between students. Students need the possibility to work independently, in groups, and in pairs throughout the day, utilizing a defined boundary of space. This movement is important to the idea of diverse space, moving from one zone to another as a student acquires new information helps them learn and become autonomous.
Technology has played a major role in how we receive and compute data. The internet has changed learning that was based on assimilation of a single source to seeking and synthesizing of multiple sources. With technology becoming more predominant in the classroom we see that devices are replacing textbooks and we now have the ability to research almost anything on the internet. The way we use technology has drastically changed the way we live our lives. That being said, technology changes almost by the minute. This makes it difficult to predict what the future skills or needs are. It is important for us to recognize the need to develop technological skills in students so that they will be prepared for the workforce. Students also have the ability to use advance technologies to shape how they learn, most softwares allow for individualization so students can accommodate to their abilities and needs. Technology in the classroom can make learning more fun and interesting. Through virtual lessons, videos, or the use of a device lessons that were boring can possibly become exciting to students. Developing these skills are essential in order to be successful in our technology driven world. Jobs that did not previously have a digital component have the possibility of having one now. We have the ability to set our students up for a successful life inside and outside of the classroom by embracing the integration of technology.

Flexibility, diversity, and technology integrated into learning environments helps us manage the force of change and prepares us for the unknown future. We have attempted to gain the latest innovations and policies in the uphill battle of reform, however we need a new mindset about educational environments. The need to educate students to be academically and socially successful changes the nature of the learning environment into one that embraces change. By accommodating these advancements we can ensure key competencies in students that prepare them as a skilled worker in our economy driven world.
Flexible Design

To be transformative is to undergo a change in form, appearance, or character. In order to experience growth and development in education we need to learn how to contend with the forces of change. The design and layout of a school has seen few changes in the last thirty years. Classrooms still sit along long halls separating subject matter. Students move from class to class with little to no connectivity between projects and activities. This inorganic daily routine is in opposition with the concept of transformative and flexible environments that create fluid learning. A learning environment should remain open and flexible while also creating zoned spaces for both individual and collaborative learning. The nonrestrictive quality of this type of learning environments allows the classroom to evolve for future needs, be individualized, and diverse.
Precedent Survey on Transformative Space
SO-IL’s design aims to serve as a transformative link that connects the city to the Rhine River. Large and flexible programmatic volumes that were shaped by the surrounding context are designed to support the production and experience of culture, as well as create a place for reflection and wonder, creating a “transportive experience”.

The design is an open and flexible structure described by SO-IL as a ‘loose coat’ of sorts and “A multitude of spatial nuances in daylight, height, proportion”. This concept allows the building to adapt to an ever-changing culture-scape making it a productive place for both experimental and established forms of visual art, cinema, and design. Reaching a new mode of flexibility, the ‘micro-environments’ offer an endless catalog of possibilities.

Arnhem’s ArtA Cultural Center
SO-IL Architects

Figure 1.1
Demonstration of flexible space

The main volume of space is able to serve many different functions, "A multitude of spatial nuances". Here the space is being used to display video images on a variety of surfaces.

The ability to adapt to ever-changing needs of the occupants is what makes this volume of space special. Here the space is being used to display books and other objects.

This volume of space is an example of how flexibility allows the occupants to use space as an endless catalogue of possibilities.
This space is to be used as a studio/workspace for students. The objective of this design was to give the feeling of working outside while being indoors. To achieve the appearance of weightlessness, all four sides of the facade are wrapped with floor to ceiling glass. Preserving the transparency of the building, the plan is open so the viewer’s eye can stretch uninterrupted across the workspace. The building’s structure consists of 305 columns of varying size and although seemingly random they are placed to create the sensation of zoned spaces. However, their nonrestrictive quality provides a flexible layout to suit the changing needs of students. This building shows that structure can be used to create nodes of space while maintaining the ability to stay flexible.
Case Study
Unity Elementary School
Luthersville Georgia

Unity Elementary School, located in Luthersville, Georgia, is an elementary school in the Meriwether County School District that opened in 1998. Today it has an enrollment of approximately 453 students from pre-kindergarten through fifth grade. The objective of this case study was to observe different classrooms environments in an attempt to understand how they are currently being used and what limitations they have based on the lesson at hand. Teachers were limited to instruction being given on one side of the room, forcing students to face instruction and underutilizing the remaining sides.

Location
172 N Main St
Luthersville, GA  30251
The classroom was arranged with individual desks grouped in clusters of four. The class consisted of approximately fourteen students with two teachers present. During the instructional period I noticed students having to turn 180 degrees to 90 degrees in their seats to view the lesson at the head of the room. I found that this pivoting in seats caused discomfort and lead to movement of the student. As the lesson proceeded students became distracted by the discomfort from sitting on either their knees or with one leg on either side of the back of the chair. As the discomfort evolved into distraction other students joined in on the distraction. Resources were dated, like the pencil sharpener and white board, causing further distraction as students found the need to walk up to the board or hand crank the pencil sharpener.

From a social standpoint the clustering of desks allowed students to interact with each other. Helping one another on the assignment at hand. Not only did students collaborate within their clusters but across the room in other clusters.
The classroom was arranged with individual rows facing the head of the room. The class consisted of approximately twenty students with two teachers present. During the instructional period, students were broken into pairs and asked to take a seat anywhere in the room to review flash cards. I found that because the desks were in rows many pairs chose to sit on the floor. However, the ones that chose desks next to each other were having to rotate in a seat that was fixed to only face one direction. Again, this pivoting in seats caused discomfort and ultimately lead to movement of the students. As the lesson proceeded students became distracted by the discomfort from twisting 90 degrees to face each other or one student turning a full 180 degrees. As the discomfort evolved into distraction other students joined in.
Fourth Grade EIP Class

The classroom had three tables that were arranged similar to that of conference seating in the shape of a U. This configuration faced the whiteboard and the teacher sat in the middle of the configuration. The class size was much smaller than the typical class and consisted of approximately six students. Because all chairs were arranged to face the center of the table configuration no student had to pivot in their chairs to see the teacher, lessening discomfort and distraction. Because of the smaller environment, the teacher was able to engage all students and have them work collaboratively on the task at hand. This configuration coupled with the size of class resulted in a more engaged and on-task learner.

From a social standpoint, the clustering of desks allowed students to interact with each other helping one another on the assignment at hand. Not only did students collaborate with their peers but, they were also able to have one on one help from their teacher.
First Grade Music Class

The classroom was arranged with individual chairs in rows facing the head of the room. The class consisted of approximately twenty students with one teacher present. During the instructional period, students were asked to listen and watch a demonstration given by the teacher. The design of the room was such that the white board was on the left of the rows of chairs causing students to have to turn about 45 degrees to the left to observe the demonstration. Again, this pivoting in seats caused discomfort and ultimately led to movement of the student. This fact coupled with the distraction of a musical instrument in their hands caused heightened distractions. Students were asked to mimic the teacher’s demonstration often starting too early and not stopping when appropriate. I found that students were not able to stay on task or perform the task according to the teacher’s wishes due to the environment they were surrounded by.
Diversity

Our population has become more diverse and interconnected than ever and will only continue to grow. Activities that expose students to multicultural curricula and opportunities to study and interact with diverse peers affects student development. The goal of a diverse classroom is to forge relationships across the diverse populations that make up American society, be that by age groups and different cultures. Creating a diverse environment that allows for interaction in heterogeneous groups allows students to relate to a society that is cross-cultured and to have an understanding and co-operation both on a local and global level, allowing them to have strong social competencies for our very diverse population. However, a diverse learning environment is also critical to student achievement. Most learning environments today were designed and organized around the industrial configuration of lines and rows facing the head of the classroom. This model poses a challenge for teachers to implement new active teaching strategies. Today’s learners require new dynamics. These requirements include a balance of clustering, unimpeded access, learning zones, and movement. Creating a diverse environment allows educators to practice new teaching techniques within a space that is adaptable to a diverse number of configurations.

Students need the possibility to work independently, in groups, and in pairs at different times of the day, often utilizing one space. Arguably, learning does not begin when students cross the threshold of a classroom but when they enter the building. This being said, doors should not act as barriers between environments and classrooms should not be confined to one configuration. Clusters allow learners to interact in social learning and collaborate on tasks. Though they are smaller in number, pods offer a similar experience for the students. This collaboration allows direct interaction between peers and sets the stage for learning social skills. In a collaborative setting, teachers are no longer fixed at the head of the room. A mobile teacher allows students instant access to information as the teacher moves about the room as a facilitator. With a diverse environment, we can define learning zones that allow students to move organically to the zone that is appropriate for the task they have been assigned or based on specific student needs. This movement is important in the idea of diverse space, moving from one zone to another as a student acquires new information helps them learn and become autonomous.
Precedent Survey on Diverse Space
Agilent Technologies wanted to design a built environment to help their workers invent, test and refine ideas more consistently and quickly. The concept of this design is to disrupt ‘business as usual’ and provoke innovation. The building is a series of micro-environments for thinking, testing, knowledge sharing and production. The multi-layered, habitable facade creates alcoves for a small team or individual work, providing diverse space.

With the use of pods, environments that allow for virtual teaming, meeting, and small group work, the research space is able to keep an open plan while having ‘neighborhoods’ of production. This three story volume has spaces for individuals and groups to collaborate and relax while also offering an inviting social space accessible to the entire campus to come together to celebrate successes.
“Directly adjacent and visually connected to the open-plan research spaces are a series of highly flexible laboratory environments. The bespoke adaptable furniture and servicing systems can be transformed as inventions develop; transferred to specialist laboratories for testing; and even come into the workplace where safety allows.”

This image shows the connectivity between circulation and workspace. When boundaries between program are blurred there is an opportunity for spontaneous interaction between employees, this interaction is important to the disruption of ‘business as usual’ by evoking collaboration and innovation.

“Directly adjacent and visually connected to the open-plan research spaces are a series of highly flexible laboratory environments. The bespoke adaptable furniture and servicing systems can be transformed as inventions develop; transferred to specialist laboratories for testing; and even come into the workplace where safety allows.”

By having a social heart that connects this building to the rest of the campus is directly aligned with the importance of collaboration which is known to produce a more educated, skilled, and engaged workforce. The movement through this volume of space gives an opportunity for spontaneous interactions and when interaction occur, offers space for a continued conversation between employees.

“Directly adjacent and visually connected to the open-plan research spaces are a series of highly flexible laboratory environments. The bespoke adaptable furniture and servicing systems can be transformed as inventions develop; transferred to specialist laboratories for testing; and even come into the workplace where safety allows.”

While the importance of collaboration is vital to the workplace it is still important to have a personal workspace to go to when uninterrupted work time is needed. By offering collaborative spaces you must also identify individual space, allowing for connectivity between the individual within the collective.

“The ‘Town Square’ is the social heart of the building and connects it to the broader campus. Containing a museum star, cafe, sunken courtyard, Gen-Y space and clustered formal and informal meeting spaces, the Town Square employs a more richly textured material palette and geometry than the research spaces to create a sense of permanence and monumentality.”

“The open-plan research space is gently divided into small neighbourhoods by the careful placement of pods which are technologically rich environments for virtual teaming, stand up meetings, small group work or focussed individual production.”
Case Study
After visiting the four classrooms, seeing where changes needed to be made, I wanted to study the implementation of modern desks and how they have the possibility to solve the issues and create a more diverse environment. “SmithSystem” offers a wide range of desk options. Their objective is to create a more collaborative, creative, and dynamic environment for the student and teacher. I looked at four specific desk options and what they would look like in the classrooms I observed. I found that the configurations offered a flexible range of use but still posed the issue of students needing to rotate in their chairs.
Mini-Diamond Desks
SmithSystem

The Mini-Diamond Desk demonstrates the idea of the individual existing within the collective, having a clearly defined individual zone while being a part of the larger group. This desk offers a large range of configurations like individual, pairs, small group, and large group. Students can easily move the desks into different configurations throughout the day based on the need of the lesson.
Two Student-Diamond Desks

SmithSystem

The Two Student-Diamond Desk similarly has defined workspace within the larger group configuration, however, there is no opportunity for a student to pull away and work on their own. This desk only allows for the configuration of pairs, small group, and large group.
UXL Crescent
SmithSystem

The UXL-Crescent is similar to the Two Student-Diamond Desk in that it does not allow for a student to work singularly, however, it is a larger workspace area for students to use. This could be beneficial to older students who need the extra room. The issue with this desk is that it only allows for three different configurations.
Interchange 3:2:1

SmithSystem

Interchange 3:2:1 would be useful in classrooms that are smaller in floor area as it has the least amount of work surface area. This desk has only three configurations, similar to the Two Student-Diamond Desk and the UXL-Crescent desk, and takes up very little space when desks are in the group configuration.
Integration of Technology

Technology has played a major role in how we receive and compute data. The internet has changed learning that was based on the assimilation of a single source to seeking and synthesizing of multiple sources. With technology becoming more predominant in the classroom we see that devices are replacing textbooks and we now have the ability to research almost anything on the internet. The way we use technology has drastically changed the way we live our lives. That being said, technology changes almost by the minute. This makes it difficult to predict what the future skills or needs are. It is important for us to recognize the need to develop technological skills in students so that they will be prepared for the workforce. Students also have the ability to use advanced technologies to shape how they learn. Most software allows for individualization so students can accommodate to their abilities and needs. Technology in the classroom can make learning more fun and interesting. Through virtual lessons, videos, or the use of a device lessons that were boring can possibly become exciting to students. Developing these skills are essential in order to be successful in our technology driven world. Jobs that did not previously have a digital component have the possibility of having one now. We have the ability to set our students up for a successful life inside and outside of the classroom by embracing the integration of technology.
Precedent Survey on the Integration of Technology
Responding to the presence of people, Mes-Etoiles displays feedback on a wall as light patterns. Sensors pick up the participants’ motions while several hundred white lights on the semi-transparent surface become activated as a person approaches. This mysterious effect gives an impression that the participant, by using their movement, is drawing pictures with light. The interaction between person and wall creates an enjoyable experience of communication as a tool. The audience is allowed to be the creators of their own self expression through action and response; by stimulating the communication aided by this technology. Bridging the gap between physical and psychological boundaries this technology bring people and their environment together. A continuous relationship between media, design, and social tension is fostered in this new form of interaction.
The Búzios Coral Park is located in Rua das Pedras, in the headquarters of the Fishermen's Colony. The space offers a multimedia experience of diving in the marine life of the resort by combining leisure and environmental education. As visitors enter they are surrounded by a large projection of high definition screens that are placed to visually appear as coral reefs. This virtual ecosystem on interactive screens allows visitors to “swim” virtually between fish, corals, and seaweed present in the Búzios sea. Together, the screens create a mosaic virtual learning experience.
The technology used in this space creates a connection between the outside environment and the interior built space. By walking through the park you are immersed into a virtual classroom where you can interact with screens to investigate information further based on interest. This interactive technology allows the user to individualize their learning and explore the connectivity to nature.
Chapter 2
Atlanta, Ga

Atlanta is the capital of and the most populous city in the State of Georgia, with an estimated population of 463,878 people. Atlanta is the cultural and economic center of the Atlanta metropolitan area. Home to 5,710,795 people making it the ninth largest metropolitan area in the United States. Atlanta attained international prominence, and it became the primary transportation hub of the Southeastern United States, via highway, railroad, and air, with Hartsfield-Jackson Atlanta International Airport being the world's busiest airport since 1998. Atlanta’s economy is considered diverse, with dominant sectors including logistics, professional and business services, media operations, and information technology.
The City currently has a population of 691,893, 271,809 households, and 161,453 families residing in the county. Although Fulton County is more populous, DeKalb has the highest population density of any county in the Atlanta metropolitan area.

The median income for a household in the county is $51,349 and the median income for a family is $60,718. About 12.4% of families and 16.1% of the population were below the poverty line, including 24.2% of those under age 18 and 11.2% of those age 65 or over.

Of the 271,809 households, 32.6% had children under the age of 18 living with them. Married couples make up 35.8% of households. Female householders with no husband make up 18.3% of households. Of the total households 40.6% were non-families, and 31.4% of all households were made up of individuals.

The portion of DeKalb County not within the city of Atlanta or the city of Decatur is served by DeKalb County School District. The portion of schools considered within the city of Atlanta are served by Atlanta Public Schools. Schools considered in the city of Decatur are served by Decatur City School District.
The city of Dunwoody currently has a population of 48,733.

Upper Middle Class: 31.5% of Dunwoody’s population lives in an upper middle class household, or a household with an annual income between $75,000 and $150,000. The next most common household income level is wealthy, close to 21.6% of residents living in a household earn an annual income over $150,000. Making the economic profile of Dunwoody higher than the average percentage of householders in DeKalb County and Atlanta Metro.

Children and Teenagers: 26.57% of residents are under the age of 20. This is a similar percentage to the county average, but a lower percentage for Atlanta Metro.

Middle Aged: 23.26% of residents are between ages 45 and 64 years old. Making them the second largest age group in Dunwoody.

Dunwoody’s unemployment rate is 2.6% lower than the national average.

Close to 37.98% of Dunwoody’s population has attained a Bachelor’s Degree. Dunwoody has a higher percentage of people with a degree than DeKalb County and Atlanta Metro Area, suggesting that it is a well-educated city.
To select the project’s site, three schools were selected for comparison, located within a two-mile radius of each other. All schools are pre-kindergarten through fifth grade, ranging in size and construction date. The first school under consideration was built in the early 2000s, the second in the 60s, and the final in the 70s. Analyzing each school based on three criteria: year of construction, construction commonalities, the building’s shortcomings, I will select one school. This building will be renovated to align with my proposed thesis. The design is meant to be used as a guide for other schools to be renovated based on commonalities.
Dunwoody Elementary School

Chesnut Charter School

Kingsley Charter School
Dunwoody Elementary

Dunwoody Elementary School, located in Dunwoody, Georgia, is an elementary school in the DeKalb County School District that opened in 2009. Today it has an enrollment of approximately 998 students from pre-kindergarten through fifth grade.

Location:
1923 Womack Road
Dunwoody, Georgia 30338

- Dunwoody Elementary School's overall performance is higher than 93% of schools in the state and is higher than its district.
- Its students’ academic growth is higher than 81% of schools in the state and higher than its district.
- 81.0% of its 3rd grade students are reading at or above the grade level target.
Duwoody Elementary School

The Governors Office of Student Achievement (GOSA) presents its annual report on Georgia’s public education agencies. GOSA makes reports accessible to educators, parents, students, and all stakeholders to challenge communities to improve education for all of Georgia’s children. Information found in the following charts are pulled from these reports. (K-12 Public Schools Report Card)
Chesnut Charter Elementary

Chesnut Charter School, located in Dunwoody, Georgia, is an elementary school in the Dekalb County School District that opened in 1868. Today it has an enrollment of approximately 441 students from pre-kindergarten through fifth grade.

Location:
4576 N Peachtree Rd
Dunwoody, GA 30338

- Chesnut Elementary Charter School's overall performance is higher than 20% of schools in the state and is lower than its district.
- Its students' academic growth is higher than 5% of schools in the state and lower than its district.
- 59.4% of its 3rd grade students are reading at or above the grade level.
Chesnut Charter School

The Governor's Office of Student Achievement (GOSA) presents its annual report on Georgia's public education agencies. GOSA makes reports accessible to educators, parents, students, and all stakeholders to challenge communities to improve education for all of Georgia's children. Information found in the following charts are pulled from these reports. (K-12 Public Schools Report Card)

**Students Enrolled by Race/Ethnicity**

**Students Enrolled by Subgroup**

**Students Enrolled in Special Programs**

**Retained Students by Race/Gender**
Kingsley Elementary

Kingsley School, located in Dunwoody, Georgia, is an elementary school in the DeKalb County School District that opened in 1971. Today it has an enrollment of approximately 493 students from pre-kindergarten through fifth grade.

Location:
2051 Brendon Drive
Dunwoody, Georgia 30338

- Kingsley Elementary School's overall performance is higher than 57% of schools in the state and is higher than its district.
- Its students' academic growth is higher than 54% of schools in the state and higher than its district.
- 68.3% of its 3rd grade students are reading at or above the grade level.
Kingsley Elementary School

The Governors Office of Student Achievement (GOSA) presents its annual report on Georgia’s public education agencies. GOSA makes reports accessible to educators, parents, students, and all stakeholders to challenge communities to improve education for all of Georgia’s children. Information found in the following charts are pulled from these reports. (K-12 Public Schools Report Card)
Chapter 3
Site Analysis

55

Building Analysis

60

Travel Distances

69

Implementation

74
Site Analysis
Exterior Conditions

Five out of eleven exists open into designated outdoor areas for students. Outdoor access cannot be directly accessed from student learning environments, they must first walk through circulation space in order to reach the outdoors.
Exit Locations

Exits that do not directly open to designated outdoors areas for students open to sidewalks, parking lots, and the main road. This makes up six out of eleven exists.
Lighting Conditions

Lighting Analysis
Artificial Lighting is used in the majority of this building. Natural Light can only be found in the classroom. Hallways and classroom entrances are dark while the cafeteria and office spaces have no connectivity to the outside and are cramped isolated environments.
Building Analysis
Building Footprint

Kingsley Elementary School is located on a ten-acre site nestled into a residential area. The building has a total of 60,734 square feet with a large courtyard towards the rear of the facility. The building footprint is composed of three sections. The first is the main building, making up 36,788 square feet. The second section is an addition that was completed the year after construction to section one, making up 18,112 square feet. The final section, a detached gym, was built in 2003 and makes up 5,478 square feet.
Circulation:
Hallways divide students by grade and subject. They have the ability to act as the social epicenter of the school, but are not being utilized as such. The split-second interactions taking place in the hallways have an effect on the academic environment inside the classroom. By exploring the relationship between the classroom and the hallway, I can create a setting that promotes student interactions and serves as an aid in the learning environment.
Single Age Groups

Students are grouped into classrooms by their age. This spreads all grades throughout the building, discouraging the exchange between age groups. Classrooms are also relatively close in size and do not take into account the needs of each age group. This layout poses a divide between diverse groups of students and does not take into consideration of programmatic needs.
Teacher’s Perspective

Teachers have access to most programmatic elements. However, their resources are dispersed throughout the building causing them to have to travel from one end of the school to the other, depending upon their lessons. The teacher work room only makes up 476 SF of the buildings 60,378 SF.
Students Perspective

Students have relatively good accessibility to resources although they have to travel outside of their classrooms and along long hallways to reach them. While it appears that students have most of the building’s footprint available to them, they are usually confined to their graded hallways.
Structure
Based on images of current building I have assumed the structure of the building is that of CMU block with concrete infill.

Figure 3.7  Figure 3.8
Travel Distances
PK Traveling to Gymnasium

Total travel distance of 350' from classroom to gymnasium

SP - ED Traveling to Gymnasium

Total travel distance of 357' from classroom to gymnasium

PK Traveling to Media Center

Total travel distance of 100' from classroom to gymnasium

SP - ED Traveling to Media Center

Total travel distance of 72' from classroom to gymnasium
Implementation
Traditional Model

Traditional rows of desks allows you to pack in a large amount of students in a small space, there are few advantages in this setting for student interaction/collaboration. This institutionalized setting symbolizes the factory line and process of mass production. Students can be placed in twos in order to have pairs or in individual rows all facing a white board. This method does not encourage free movement to resources or the collaboration between students. Dense rows pose a disadvantage to teachers as it is challenging to get between desks to check students work.
<table>
<thead>
<tr>
<th><strong>Traditional Model</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lessons</strong></td>
</tr>
<tr>
<td>Group Learning</td>
</tr>
<tr>
<td>Lessons are given in groups, not accounting for student’s individual learning differences. Children may not be free to explore the classroom environment on their own.</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
</tr>
<tr>
<td>Distracting, Noisy Environment</td>
</tr>
<tr>
<td>Loud classrooms are generally a sign of poor classroom management and unsafe practices. Overly-decorated classrooms are usually distracting and overly-stimulating.</td>
</tr>
<tr>
<td><strong>Placement</strong></td>
</tr>
<tr>
<td>Single-Age Groups</td>
</tr>
<tr>
<td>Students are usually grouped into classrooms with students their own age, falsely linking development and academic ability with age. There are missed opportunities for learning how to interact with older and younger students.</td>
</tr>
<tr>
<td><strong>Curriculum</strong></td>
</tr>
<tr>
<td>Unit-Based Curriculum</td>
</tr>
<tr>
<td>Curriculum are usually based on single units and does not explore how subjects interrelate with each other. Computer software may be used to teach reading, writing, and math - oftentimes substituting for teacher-student interaction.</td>
</tr>
<tr>
<td><strong>Teacher</strong></td>
</tr>
<tr>
<td>Teacher as Instructor</td>
</tr>
<tr>
<td>The teacher instructs a large group of students of the same age, from the front of a classroom. The teacher may not tailor instruction to individual needs given the pressure of handling a large number of students.</td>
</tr>
</tbody>
</table>
Montessori Model

An educational approach with an emphasis on independence, freedom within limits, and respect for a child’s natural while also focusing on the psychological, physical and social development of the student as a whole. The approach looks at all aspects of development, not just gaining pieces of information for national tests. Students are always learning and have an inherent curiosity. What the student learns is largely dependent on what experiences cross their paths. Classrooms are open to encourage exploration and learning happens in uninterrupted blocks of time to get the most out of their experience.

Precedent Examples

Inside the Classroom

**Practice Life**
Practical life activities are meant to help children develop independence, fine motor skills, and concentration. Activities include zipping a coat, setting the table, or sewing a button.

**Sensorial**
Sensorial materials help students describe the world around them. Tailored materials are used to refine the student’s senses and heighten their awareness to the subtleties of the world around them.

**Language**
Reading is taught through phonics versus the names of letters. Students take home books and master parts of speech and grammar as early as the age of 4.

**Math**
Teaching the association between numbers and quantities prepare them to understand abstract reasoning and problem solving.

**Science**
We guide students through scientific reasoning and how to communicate their thinking with logic, evidence, and experiments. Each month has a unique scientific focus.

**Geography**
Students explore physical geography, current events, and history through peer interaction and guest speakers.
<table>
<thead>
<tr>
<th>Montessori Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lessons</strong></td>
</tr>
<tr>
<td>Personalized Learning</td>
</tr>
<tr>
<td>Lessons are introduced to the child at their own pace and time. Class sizes are small, so Montessori teachers can tailor instruction to each student’s needs and interests.</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
</tr>
<tr>
<td>Peaceful, Quiet Environment</td>
</tr>
<tr>
<td>A quiet classroom is generally a sign of deep engagement and happy children. Limited wall art creates a peaceful, calm environment for socialization and learning.</td>
</tr>
<tr>
<td><strong>Placement</strong></td>
</tr>
<tr>
<td>Mixed-Age Groups</td>
</tr>
<tr>
<td>Mixed age groups enable older students to demonstrate leadership and support younger students. Age is never a barrier for accelerated learning. Students learn to collaborate with different ages and different levels of expertise.</td>
</tr>
<tr>
<td><strong>Curriculum</strong></td>
</tr>
<tr>
<td>Mastering Skills</td>
</tr>
<tr>
<td>Learning is a process that is determined by the rate and speed at which a child can acquire one skill before moving on to another skill. Technology is never a substitution for learning and collaborating with others.</td>
</tr>
<tr>
<td><strong>Teacher</strong></td>
</tr>
<tr>
<td>Teacher as Guide</td>
</tr>
<tr>
<td>In a Montessori classroom, the teacher is a guide for students to their next stage of development. The teacher observes a student’s interests, strengths and weaknesses and guides them to materials that can aid in their own exploration. They adjust their teaching style based on each student’s personality and temperament.</td>
</tr>
<tr>
<td><strong>Thesis Model</strong></td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td><strong>Lessons</strong></td>
</tr>
<tr>
<td>Tailored Learning</td>
</tr>
<tr>
<td>Lessons are introduced based on a structured outline. Students, with guidance from teachers, decide how best to tackle outlined lessons. Some students learn best when working in collaboration while others need more individualized lessons.</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
</tr>
<tr>
<td>Student Placement</td>
</tr>
<tr>
<td>Gives students the choice between learning in groups, pairs, and individualized concentration space. Concentration spaces are strategically designed and arranged based on the type of environment they offer. This allows for an organic flow between learning environments.</td>
</tr>
<tr>
<td><strong>Placement</strong></td>
</tr>
<tr>
<td>Mixed-Age Groups</td>
</tr>
<tr>
<td>Offering a range of aged in a classroom allows for the collaboration between different levels of expertise. Students learn from one another, taking leadership roles.</td>
</tr>
<tr>
<td><strong>Curriculum</strong></td>
</tr>
<tr>
<td>Organic Curriculum</td>
</tr>
<tr>
<td>Students explore the relationship between subjects, moving from one lesson to another based on student drive and exploration. Technology is used as a movable device that reinforces lessons and is not a substitute for peer interaction.</td>
</tr>
<tr>
<td><strong>Teacher</strong></td>
</tr>
<tr>
<td>Teacher as Facilitator</td>
</tr>
<tr>
<td>Teachers need to understand each student on an individual basis, able to recognize strengths, weaknesses, and interests. They assist in the plan on how to achieve academic goals.</td>
</tr>
</tbody>
</table>
Existing Structure
Structure to Preserve
Axis to Preserve
Block Location
Individual vs Group
Individual vs Group
Classroom Scenarios

Scenario 1

Scenario 2
Classroom Scenarios

Scenario 3

Scenario 4
Classroom Scenarios

Scenario 5

Scenario 6
Site Plan
The new classroom block serves two units of what was a three unit block. By enlarging classroom area students are able to stretch out and use the space for many different uses. The envelope is preserved, however it is pushed back from grid to create pockets of space that can be used in a multitude of ways.

Along circulation there are pockets nestled into walls for students to retreat to when they have the need to stop and collaborate.

The connectivity to nature is important because it teaches students that everything is interconnected. By watching plants grow and the practice of caring for them students learn how all subjects are related.

Resources are dispersed along circulation based on groupings of age, however general resources are localized at the heart of the building in the media center.
Image References
Figures 1.1 - 1.5

Figures 1.6 - 1.7

Figure 1.8

Figure 1.9

Figures 1.10 - 1.14

Figures 1.15 - 1.16

Figure 1.17

Figure 1.18

Figures 1.19 - 1.22

Figure 2.1

Figure 2.2

Figures 2.3 - 3.6

Figures 3.7 - 3.8
Bibliography


