

GESTALT
A HIGH SCHOOL
OF INDIVIDUALS
WITHIN A WHOLE



GESTALT:

A HIGH SCHOOL OF INDIVIDUALS WITHIN A WHOLE

A Design Thesis Submitted to the Department of
Architecture and Landscape Architecture of North
Dakota State University

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How will this design of a high school be different than any other high school in America? Within this school, each student will not come out like a manufactured replica of a utopian society. Instead, students find their individuality within the larger whole. Transformable group settings and spaces allow a meeting place for different aptitudes, skills, and horizons. This atmosphere is important so students learn from more than the teacher - they also learn from each other. The architecture facilitates an exchange of people within a community of knowledge.

Following the artefact, the architecture explores layers and diffusion that provide a labyrinthine experience that weaves the individual to the larger world, and information with true knowledge. The layering and diffusion of the labyrinth creates a better learning environment than standardized methods.

These strategies could be well implemented in Boston, Massachusetts, because it hails as number one state for education in America. Working against the status quo of the standardized educational approach, this school will serve as a new precedent in education by prioritizing the individuals within the whole as opposed to focusing on pushing the students through the system.

Explanation of the Thesis Connecting its Dots

Massachusetts is one of the top states for education in the United States based on standardized tests (Bernardo, 2016). Since Massachusetts's has a long investment in standardized children's education, it is an exemplary illustration of standardized testing as a whole. Standardization is not ideal for all student's learning, because not every student learns in the same way & standardization lends itself to limited learning styles. The United States have students who are failing, because they cannot keep up with the pace that standardization requires. In some cases, students spend so much of their effort simply trying to pass these standardized tests that they don't actually gain knowledge, just the ability to recite information. This failure to learn happens because of the strict guidelines laid out by the institutionalized way youth are educated. Further, standardization of children's education leads to unsuccessful students who don't actually have the ability to learn successfully within a group. Given these issues Boston, Massachusetts will require a new high school that will fulfill the needs of the diverse students. This school will give students the opportunity to escape the outdated standardization through a school designed to stimulate the students with various methods, thus creating a successful and engaged learning environment. Success will be seen through higher graduation rates and lower mental illness rates. There will be more successes in this high school due to the advanced design that focuses on the individual rather than creating a standard for all students.

Definition of Project Typology

This project is a high school in Boston, Massachusetts that will compete against the normal standardized high schools surrounding it. This will not be like all the other schools, but it will prove that the design methods used in current schools are failing the students. Education is a very important part of our lives today, so the design of this high school must be something innovative.

Project Emphasis

The emphasis of this design is to provide a space that fits the needs of all the students and to make sure the design of the school engages them to learn. In the end all the students should be successful learners, but the design must overcome all the standardizations that require the students to

learn the same things in the same way. There should be spaces created that allow for change and transitions so the students can individualize their learning within the group space. To do this the design must bring mood and meaning to influence their learning.

Goals of Thesis Project

The goals of this project are to create an environment where students can learn in their own ways and not have to follow the strict rules of learning. Each student will be different, so to create an environment where different is good will help reinforce their learning abilities. The students should not be coming out of high school all being the same, they will all keep their different individual aspects of themselves. Standardization will be a limited part of this new high school and not overpower the

learning environment. We cannot continue to force students through the same education making them all come out with the same 'knowledge'.

Client and Audience Description

The high school will be designed by a rich, elderly man from Boston for students in the Boston area that choose to switch from their original high school. This man who is contributing to the Boston school district would like to see a change within in the school systems, making them move away from standardization. Massachusetts is supposedly the number one state for education, so what a better place to create a better option for students to learn. The students within the Boston School District will be given the opportunity to switch to

this school to test their education. There will be no extra admissions fees or tests, because it will be a part of the public school system in Boston. If this school is a success and needs more room for growth the man funding would be willing to give additional funds to help the students succeed.

Project Justification

Hopefully by designing a school that breaks away from standardization there will be other schools that design in a similar way by making it fit the needs of the students in their area. Students will be able to learn in their own way with in a group, making them more successful. With the positive outcomes of the new school this will affect the surrounding communities, by having more knowledgeable students within the community.

Research Design Plan

Design Methodology

Descriptive, interpretive, and design research will be done to help create the high school. Facts and information will be collected and analyzed to help understand the design. When this information is analyzed the design is strengthened by having statistics to back up the reasoning for design decisions. Next is interpretive research which will be done through philosophical readings and a designed artifact. The philosophical reading will help strengthen the main points of the project by connecting the particular ideas to the bigger picture. These reading will then help the design of an artifact which is the transition between the readings and the design of a high school. The artifact will allow design to be seen and understood in a

new way, which is helpful when dealing with such a large project. The design will be altered various times until it meets the goals that are established.

Design Process Plan

Documentation

- Theoretical Context
- Artifact
- Site and Historical Context
- Design through theoretical, site, and history context and an artefact

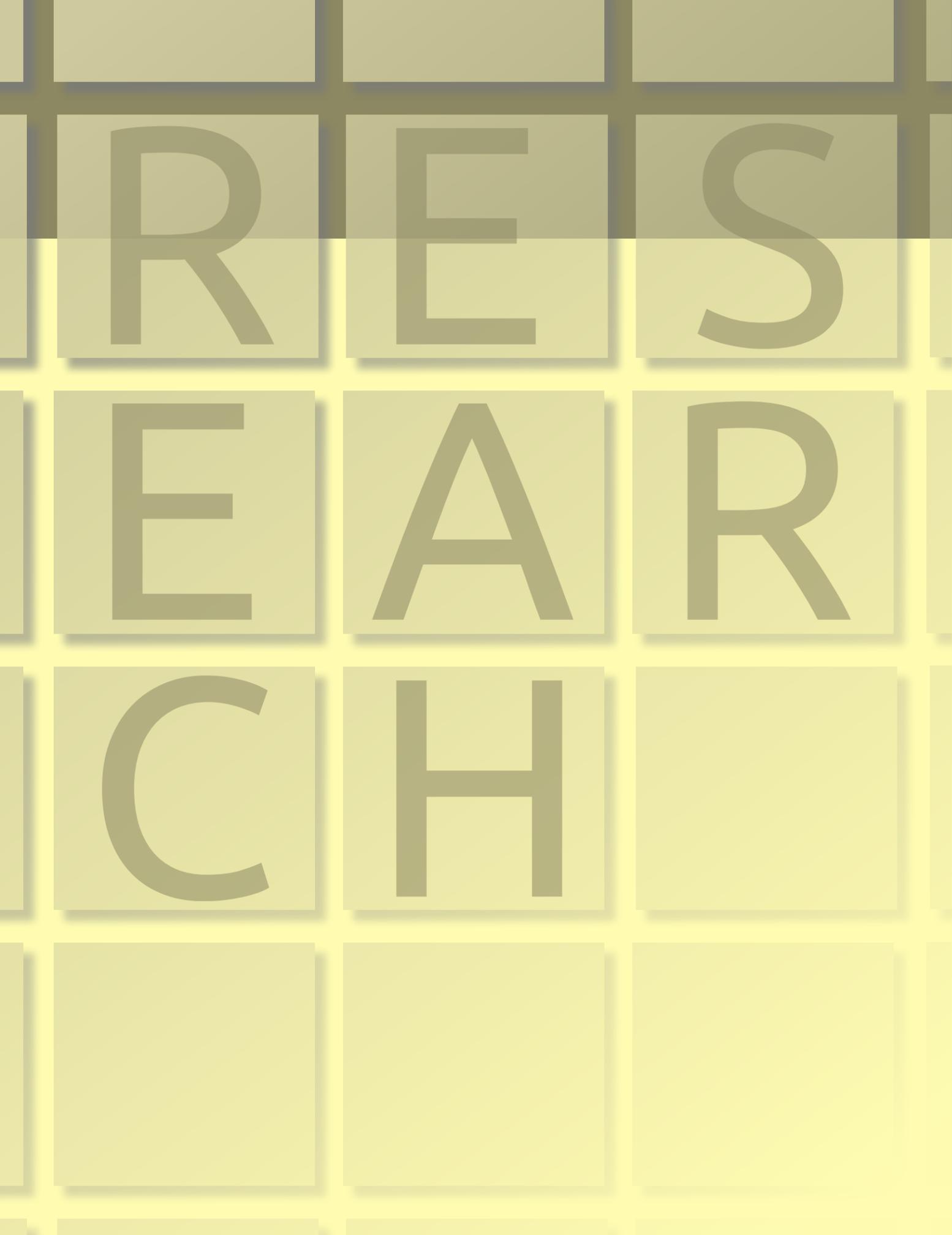
A theoretical context of the topic will be understood to get a deeper meaning out of the project. This will include reading previous theorist works and understand what has been done before me. With the information that is provided by theorists it will influence how to understand the problem that is trying to be fixed. Next an artifact will be designed. An artifact

will be the connection of the theoretical to the architecture. This helps the design of the architecture, by understanding it in a new way. A broader understanding of the site and its historical context will be important to know to help relate the architecture to it. Once the site and history are understood the physical design of the building can be started. Multiple iterations will be created to make sure the right design is created for the right use.

Project Schedule

The schedule for the spring semester will build on the work that has been done during the fall semester. During the fall the theoretical context and artifact have been started and will continue into the beginning of the spring. Once these have been completed there will be the start of more

research that will help with the design of the building. Starting with what will be needed to help the students become successful in their learning. The design will follow this shortly after with multiple iterations to make sure that the design has reached the best possibility. Once the design has been finalized it can be put into software to create it digitally. Renders will follow shortly after the project is put into the software. Boards for the thesis presentation will be designed along with making the final alterations in the book. Once all of this is finalized the thesis presentation will be created to complete the story of a new high school in Boston, Massachusetts.



Architectural Influences on Education

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The United States ranks 14th in education out of all the other countries around the world according to Ranking America. The United States is supposed to be the greatest place to live according to most people, but is lacking within their education systems. The U.S. education system needs to reassess its existing methods by improving the knowledge of students and heightening their success. This can be achieved by creating stimulating learning environments in which students can learn individually within a group setting to improve their overall erudition. The history of education, learning styles, and learning environments will help reinforce this concept of education.

History

To help understand the problem in the U.S. education we must start in the beginning of education. If there is no history to look back on nothing will be learned from it.

The first school in America opened in 1635, and it was a Latin grammar school in Boston, Massachusetts (Dexter & Edwin, 1911). After this school was opened, more schools were built and more students were able to access an education. According to Moments that Changed Public Education Timeline, by 1918 every state had free public school and it was mandatory for the students to attend. It did not take very long for the government to take a large control over

“The first school in America opened in 1635, and it was a Latin grammar school in Boston, MA.”

“It was only five years later that standardized testing was implemented into the education systems...”

the education systems. After schools became mandatory the government’s involvement in education grew exponentially. The Timeline also shows how federal funding came into play in 1965, but it did not allow for a standardized curriculum. It was only five years later that standardized testing was implemented into the education systems requiring that all students achieve a common goal. In 2001 the No Child Left Behind Act was signed into law by George W. Bush (Timeline Moments that Changed Public Education, n.d.). The No Child Left Behind was created to give all students and equal opportunity, this act was not working the best so now Every Student Succeeds Act is implemented into the American society, which is an alteration to No Child Left Behind.

Now that the history of education is set in place, the existing problems of America’s education system can be identified. The most recent instance of this is No Child Left Behind. This act that George W. Bush initiated had good intentions for the education systems in America. One of the goals was to allow for students of the lower class to have an equal opportunity within the education system. The Government was trying to prevent the students from dropping out and motivating them to work hard to get into the advanced placement courses since they were available for free. The American Government was

able to help fund the systems to help create an equal opportunity for all (Berkhart, 2007).

No Child Left Behind had great intentions for our education systems, so how did it fail? They were trying to make everything equal for all the students, but in doing so, students fell behind. There was a common curriculum for all the schools across the United States, causing no room for individuality. John Chubb provided us with recommendations to help us alter No Child Left Behind and design a system that would be useful for students to learn.

“NCLB laudable asks that “no child” go uneducated. Yet the law gives schools no credit in adequate yearly progress (AYP) calculations for students that make academic progress below and above a state’s proficiency threshold, thereby discouraging schools from paying equal attention to the education of all students. NCLB should be amended to give schools AYP credit for academic growth everywhere along the performance continuum, bottom to top, as long as it projects to proficiency by the end of high school. Schools should also receive financial reward for students they help achieve at the highest levels. Finally, states should be provided incentive grants to develop online adaptive tests to provide the most reliable tests possible for students well below grade level and well above.” (Chubb, 2009, p. 26)

“No Child Left Behind had great intentions for our education systems . . .”

“ Visual someone who prefers to use pictures and images.”

This is just one of the many recommendations that would provide help to the education system. Even though a lot of these problems will need to be fixed within the learning styles, the classroom setting will need adjustments to help influence the students’ abilities to learn.

Learning Styles

The way in which students learn is important to understand. There are multiple styles of learning that teachers will encounter within their students. There are seven learning styles which are explained in Overview of Learning Styles as follows:

Visual – someone who prefers to use pictures and images.

Aural – someone who prefers to use sound and music.

Verbal – someone who prefers to use word in speech and writing.

Physical – someone who prefers to use their body, hands, and sense of touch.

Logical – someone who prefers to use logic, reasoning and systems.

Social – someone who prefers to learn in groups.

Solitary – someone who prefers to work alone.

It has been scientifically proven that each learning style uses a different part of the brain to learn and understand life (Overview of learning

styles, n.d.). With multiple learning styles, this makes it hard to teach in a group setting, but a 1:1 student teacher ratio cannot be achieved due to funding that most schools are given. An alternative style of teaching will need to be used. The author of Learning Style Perspectives, Lynne Sarasin, describes similar types of learning styles based on how they attain the knowledge and how it is processed. These learning styles are as follows: logical/mathematical, linguistic, musical, spatial, bodily/kinesthetic, interpersonal, and intra-personal. The learning styles correlate in the article, Overview of Learning Styles and Learning Style Perspectives, but in the book Learning Style Perspectives, Sarasin goes into depth with auditory, visual and kinesthetic learning as those are the three main learning styles. These can be combined together to create a more cohesive learning environment. Auditory learners are usually independent and memory oriented. These students can usually listen to a teacher lecture and understand what the concept is. Visual learners “are in a sense completely opposite of auditory learners: these students get nothing from merely hearing information.” (Sarasin, 1999, p. 57) This makes it very hard to teach both of these if they are opposites, but compromises will be made to incorporate both. Kinesthetic learners learn by doing. This active style is also different than auditory and visual learning, so how can all three

“Auditory learners are usually independent and memory oriented.”

“A high school can benefit from these learning styles . . .”

be a part of a classroom daily? Incorporating all three types of learning in one class will help reinforce the knowledge and the students may be able to understand multiple ways of learning. It is much easier to apply these styles to elementary students compared to a high school setting.

A high school can benefit from these learning styles in similar ways without it becoming too elementary. The application of the learning styles stated above can be easily applied to elementary schools, but that’s not the same for high schools. In the elementary school the students like to play games and make art that helps them learn their basic needs, whereas in high school they are expanding their accelerated knowledge. According to Sarasin, the students need to be able to relate to the real world to create a meaningful understanding as to why they are learning certain subjects. In order for them to relate to the world it is a good idea to have an active learning style in the subjects that are necessary. Some examples of active learning are case studies, debates, problem-solving, and role plays (Sarasin, 1999). There will always be courses where it is difficult to apply this style, such as math, so an alternative way of teaching would be used. In these courses the students must be able to apply the knowledge to the real world to keep the information applicable to their lives.

“It is critical to acknowledge that individual differences increase with age, including differences in learning styles. Adult learners have developed strategies to learn better – sometimes to adapt to a variety of learning styles.” (Sarasin, 1999, p. 20)

Based on what Sarasin states in the quote above the learning styles at the high school level need to be more individualized than they would be at a lower level, which makes it hard to integrate individuality within the group settings. This is where the environment will influence the students to gain the most out of their education.

Environments

Once the history of education and learning styles are understood an environment where students needs are accomplished can be designed. When the student-to-teacher ratio is high the students are not able to understand the lesson to the fullest. Henry Sanoff, author of School Design, explains that when students are in a high density classroom their moods become worsened versus when they are in a low density classroom their moods are better. The Trump Plan, a plan created by J. Lloyd Trump, offers a way for there to be large settings that are broken into smaller settings to improve the mood of classrooms. As stated by Sanoff, larger classrooms will be available for lecture time and can be manipulated to create smaller spaces for students to use their

“When the student-to-teacher ratio is high the students are not able to understand the lesson to the fullest.”

“Learning is an active process.”

individualized skills to learn. Decatur-Lakeview High School in Illinois tested Trump’s approach. The community was able to agree on how students learn according to Sanoff:

- Students learn when they see purpose to learning.
- Learning is an active process.
- Change in behavior is the central goal of instruction.
- Students learn at different rates and on various levels of comprehension in different content areas.
- Students learn best as a result of the appeal to the senses: seeing, hearing, touching, and smelling.
- The environment for learning, psychological and physical, is contributing to successful outcomes.
- Learning is affected by the students’ concept of themselves and their attitude toward others.

This understanding of The Trump Plan can be an example of how to design a school where individual students become successful within a group setting. What has been designed in the past will influence future spaces for students.

Another design that has shown to be successful in large schools is breaking the building down to create smaller buildings. This creates a

campus feel and new connections are made while students and teachers are moving from building to building (Sanoff, 1994). The perfect arrangement of the buildings would be by subject as Mark Dudek states. This will cut down on travel time once they are in a specialized subject, but in high school, students must gain an overall knowledge of each subject. The travel time is crucial for students, because they will get a break in between classes and be able to communicate with friends and teachers.

“The point was made that the primary function of school is to structure and organize a complex community; to consider the architecture of schools as anything more than this was a waste of scarce resources.” (Dudek, 2000, p. 72)

There are a few things that could be changed in the room to help mask the problems such as lighting, temperature, noise, and furniture/ desk arrangements (Dunn & Dunn, 1993). The arrangement of desk is important, but it is just a small part of the whole problem. When arranging the class room, the teacher’s desk should not be between the board and the students as shown in Figure 1.1 and 1.2 (Dunn & Dunn, 1993). Dunn and Dunn state that it is important for the students to be comfortable within their environment. Adding living spaces to the room gives the students more options to study, because

“The point was made that the primary function of school is to structure and organize a complex community..”

“The way the school gets designed will influence the way that teachers teach and use their spaces.”

there are some who would like to be comfortable on a couch while others would choose to stay at their desks, as seen in Figure 2.

The way the school gets designed will influence the way that teachers teach and use their spaces. The Dunn and Dunn Model, shown in Figure 3, shows how this process can be achieved and added into new schools, starting with the administration and ending with the achievement of the students (Dunn & Dunn, 1993).

Outcomes

If improvements are made in the education system there will be multitudes of positive effects such as individuality, mental disorders, excelled knowledge, and readiness for the future.

A school can be designed to help students learn individually by creating an environment that stimulates their brains. Each person has a different way of learning therefore there will be more than one environment in which they learn. When they have an environment that is relevant to them, their mental health will be improved, because they have found an environment in which they feel comfortable.

The mental health of high school students is important for everyone within the environment to understand. What occurs at this age can affect the students for life. Symptoms that appear when depression is present include; sadness, anxiousness, emptiness, hopeless, guiltiness,

worthless, helpless, irritable, restless, loss of interest, lack of energy, problems concentrating, problems with sleep, loss of appetite, thoughts of suicide, or bodily pains. (Depression High School Students, n.d.) The article also states that participating in activities, breaking large projects into smaller tasks, and spending time with friends will help improve depression. There is never an easy answer with depression, and there is not one case that is the same. Once students are able to get over this mental hurdle they can learn more and better their knowledge.

With learning environments that fit the students' needs and help their mental health, each student will be able to excel their overall knowledge. All the factors that are provided are aimed to help the students succeed in their everyday school lives, by creating environments that improve their moods and stimulate their brains.

After the students are able to learn better they will be more ready for college. Also, by creating a campus environment, they will be more ready to learn at the college level. This orientation of classrooms will help each of the students become more independent and prepared for the college environment where they need to be independent.

The design of a high school is very important for many reasons, but the reality of

“After the students are able to learn better they will be more ready for college.”

“Students need a school where they can learn individually within a group environment.”

every high school being able to be changed is not that easy. If the design cannot be executed, there still needs to be an alternate way of creating a learning conducive environment for students. It is such a crucial part of their lives that this idea will require a major collaboration among teachers, principals, architects, interior designers, and most importantly, the students.

Students need a school where they can learn individually within a group environment. For students to be able to learn in new ways they will need a building designed for their learning types and a place where they can be comfortable. Once they have a building that will fit multiple learning needs there will be positive implications to follow. The building design will influence the students learning abilities, so they can become successful within the environments. The United States will rise to number one in education if the designs of our spaces can influence the students to learn better.

Annotated Bibliography

Berkhart, P. (Ed.). (2007). Part A: Improvising Basic Programs Operated by Local Educational Agencies. In *No Child Left Behind: Issues and Developments*. New York: Nova Science Publishers, Inc.

In this Chapter, Paul Berkhart describes the realities of the No Child Left Behind Act. This book gives information about the act in great detail for the people to understand and breakdown what it is about. This chapter does not give a stance on the topic, it just gives pure information about the act. Based off of the details of the act we can decide if they were successful within our school systems or if they were unsuccessful. After this act is understood the design can process can start and be influenced by the outcomes of No Child Left Behind.

Paul Berkhart successfully explains the details of the No Child Left Behind Act. The knowledge he has of this subject is very thorough. The language he uses is hard to understand because it is so technical, but once the technicalities are understood the information is useful.

Chubb, J. (2009). *Learning from No Child Left Behind*. Stanford, CA: Hoover Institution Press.

In this book, John Chubb describes what can be learned from No Child Left Behind. He also

describes how there were achievements made by students. There were many positive things that could be learned from No Child Left Behind, but also many negative things. Chubb gives his recommendations for No Child Left Behind based on the positive and negative influences of the Act. He gives a total of ten recommendations, each is elaborated to be understood better based on what has been learned. The information that Chubb provides can influence the design of an educational building.

John Chubb explains the positive and the negative effects of the No Child Left Behind Act. The examples that he uses creates an easy way for the readers to understand what can be learned from this act. The knowledge Chubb has of the subject is significant and he provides great feedback for people to learn from.

depression-high-school-students.pdf. (n.d.).

Retrieved from <http://permanent.access.gpo.gov/gpo34455/depression-high-school-students.pdf>

In this article provided for students, there are questions and answers about depression listed. These questions start out to be very basic for people to understand what depression is and how it can be treated. Once the viewers have an understanding of what depression is they can now ask more questions to understand it further.

There is not a single way of how to understand depression, because it is different for each person. Based on the article there are needs that students with depression need to learn in a positive environment.

This article is a great resource for anyone to use who is looking for information about depression. The author, unknown, provides great information from basic to detailed about depression and its effects.

Dexter, Edwin. (1911). *History of Education in the United States*. London: The Macmillan Company.

In this book, Edwin Dexter provides a detailed history of education in the United States. He starts with the beginnings of schools in the United States. He then describes how the education in each of the states developed in order of schools being developed. After he breaks the history down by states he gives historical information about the development of each level of school. The information that Dexter provided helped understand the basics of the United States education development.

Edwin Dexter provides a large amount of detailed history of education within the United States. His information is very useful to understand and he wrote in a way for the readers to understand clearly. This book was published in 1911, so

the more recent history is not available within Dexter's book.

Dudek, M. (2000). *Architecture of Schools: The New Learning Environments*. Architectural Press.

In this book, Mark Dudek explains how education has evolved and how architecture has influenced it. He uses different case studies to show which schools have successfully used architecture to help the learning environments. Each case study shows a part of the school that is successful and how it can be used in other buildings. He provides information that supports architecture being an influential part of students' education.

Dudek offers great information on how to arrange a school environment to help the students succeed. This information is useful to help decide how to arrange the school properly. The information that Dudek provides is used to understand what is successful for the education system and what is not successful. Most importantly his view of architecture being a major part of education is a great support to research.

Dunn, R., & Dunn, K. (1993). *Teaching Secondary Students Through Their Individual Learning Styles*. Allyn and Bacon. In this book, Rita and Kenneth Dunn write

about the basics of learning styles to understand them and how they will help design a school. They go into detail and describe how these learning styles directly influence the design and how each of the students with different learning styles can work together in the same classroom. Dunn and Dunn provide their examples along with a model that they have created to evaluate the spaces. This information is useful to further the design in more ways.

Rita and Kenneth Dunn provide a wealth of knowledge about the learning styles and how they can influence the space. Their model that they describe in the book helps show that they have a large body of knowledge about this topic.

Overview of learning styles. (n.d.). Retrieved October 3, 2016, from <http://www.learning-styles-online.com/overview/>

In this article, they talk about the different learning styles that each person has. They explain what each style means and how a person learns with these styles. This article also describes each learning style by what part of the brain is used. Each style is a different way of learning and therefore a different part of the brain is used each time. The information that was provided helped set up evidence for there being different learning strategies and how those can be used later when designing.

This article does a good job of providing the information about the learning styles and how the reader can understand what theirs is. The article provides further resources that allow you to take a test to know which learning style you have and then gives information on how you can use that to better your education.

Sanoff, H. (1994). *School Design*. Van Nostrand Reinhold.

In this book, Henry Sanoff hot to design different levels of school starting with child care center and ending with higher education. Most of the information that was needed is taken form the elementary, middle, and high schools. Sanoff describes how the environments influence the students based on the design of the school. He provides options for how the schools can feel smaller even though they are large. This information is important, because most schools are large and overfilled with students.

Henry Sanoff shows he has detailed knowledge of all levels of education. He is able to give examples for the readers to understand his design ideas and make them relevant to the education environments. His information about the education could be stronger if he was proficient in on level of education versus all levels.

Sarasin, L. (1999). *Learning Style Perspectives Impact in the Classroom*. Madison, WI: Atwood Publishing.

Lynne Sarasin writes in her book about the learning styles of students and how they can be applied to the classroom environment. There is a basic overview of seven different learning styles, but she goes into more depth with three of them. The three that she explains more are auditory, visual, and bodily. In each of these she explains them in detail with how the students learn and how it can be used in the classroom. The information that Sarasin provides helps get an understanding of students learning styles and how it can help them learn within the classroom.

Sarasin provides basic knowledge of seven learning styles. She is able to go into detail about three of the learning styles, and the information she provides about them is useful. If Sarasin were able to provide the same amount of information about the other four learning styles this would help readers understand more of what she is trying to help people learn.

Timeline-Moments-that-Changed-Public-Education.pdf. (n.d.). Retrieved from <http://www.collinsblaha.com/pdfs/education-reform/Timeline-Moments-that-Changed-Public-Education.pdf>

In this timeline, there are a lot of facts about

the history of education. This timeline is just a brief overview from the start of education to what is happening now. The information that is provided does not go into great detail, so if there is more you want to know more research needs to be done. The most important part was to see all the dates together and see the progression over time. No Child Left Behind was one of the last pieces of information and was helpful for my research, which I found more readings on No Child Left Behind.

This timeline is a great visual resource to help understand the major points in history of education. The timeline had some information that was less relevant and could have used more major parts of the history of education.

Figures

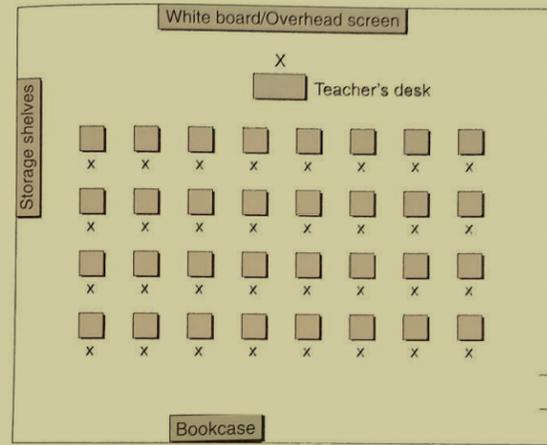


Figure 1.1

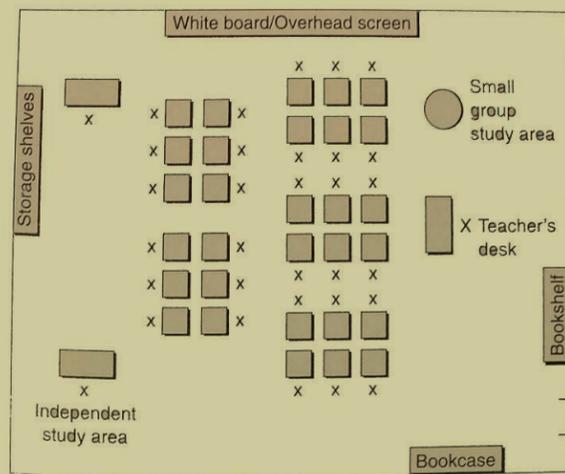


Figure 1.2

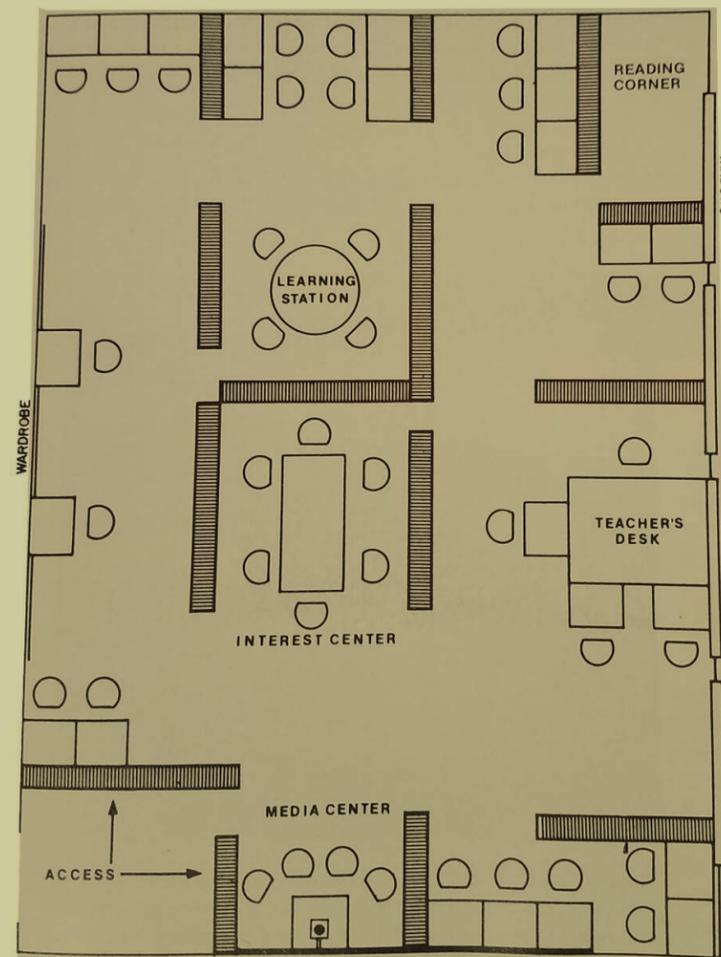


Figure 2

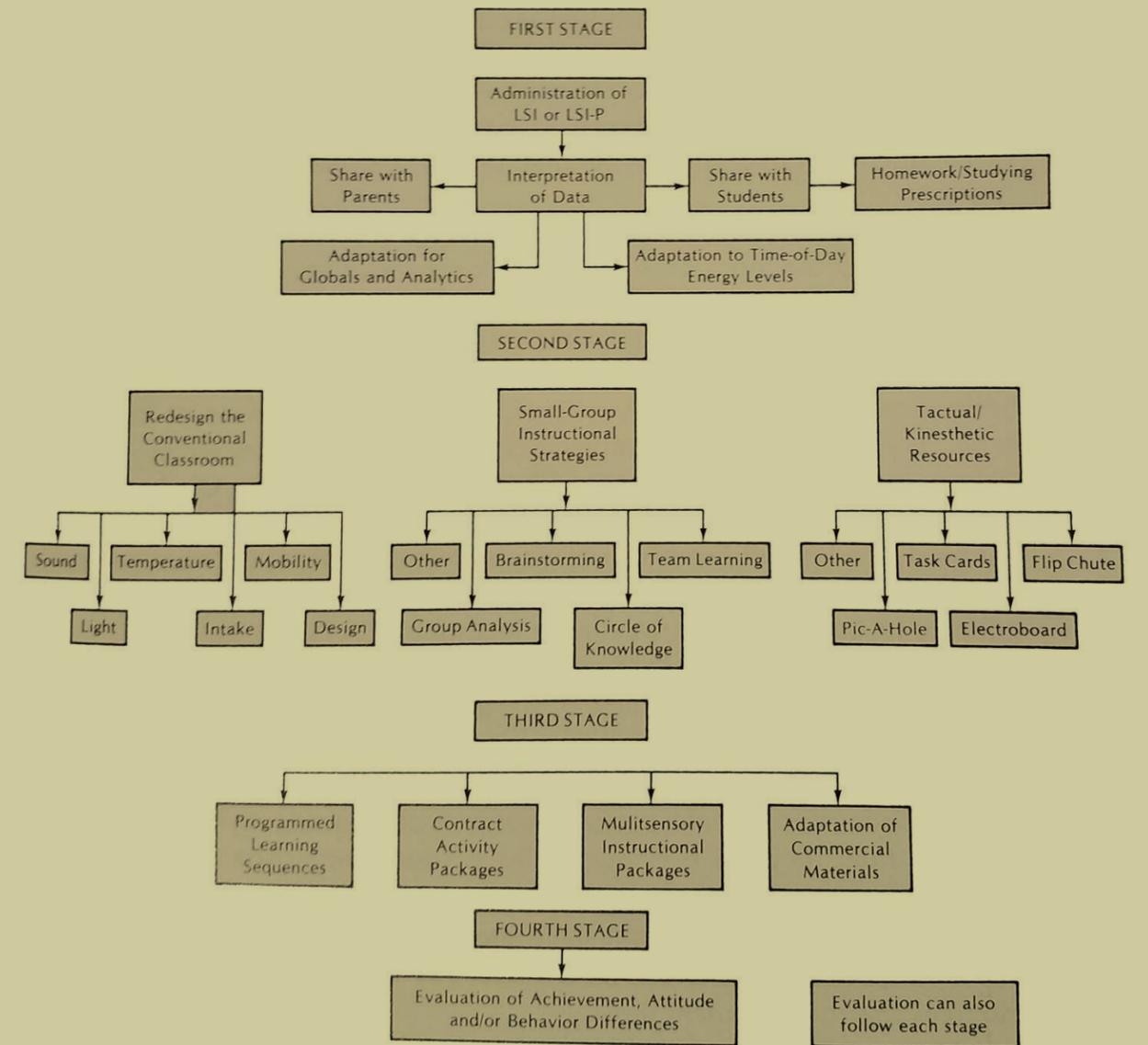


Figure 3

To understand what a utopia and education have in common we must understand what a Utopia is and why it is important. This thesis is designed to show how our modern day educational facilities are similar to utopias and why we need to change the current conditions. When the learning environments change they will become more successful and standardization will become eliminated.

Utopia

Thomas More, author of *Utopia* (1516), was one of the first to use the word Utopia. He described it in his book *Utopia*, as a fictional society based on religious, social, and political ideas. He further explains how the word Utopia is derived from the Greek prefix 'ou' meaning 'not' and suffix 'topos' meaning 'place'. When these two pieces are combined, they make the word utopian, meaning nowhere according to Thomas More (1516). A similar definition is produced by J. Max Patrick and G.R. Negly. They give it an analytic definition of, "fictional, describes a particular state or community, and its theme is the political structure of that fictional state or community." (Powers, 2011) Both of these definitions align, especially by describing them as fictional.

This is one example that is brought forward by Tommaso Campanella in Campanella's *City of the Sun*, an early utopian

CAMPANELLA
SONNENSTAAT



Figure 4

work.

"It is divided into seven rings or huge circles named from the seven planets, and the way from one to the other of these is by four streets and through four gates, that look towards the four points of the compass." (Powers, 2011)

The cities that Campanella describes are designed to be a perfect representation of the universe based off cosmological or mythical order. The heliocentric universe is an example of how each planet works together to create a whole. The community described in Campanella's work is made up of people who claim to be entirely equal to bring together their entire community. This is the start of the perfect utopian society.

A Solarian Society is similar to what Campanella's *City of the Sun* describes, but is different based on hierarchy. It is a hierarchal society based off of what is known to the human eye. Each person is ranked based on how well they know a category and once they have mastered the category they become the highest rank, which is different than Campanella's *City* where the people are all seen as perfectly equal. This leads to the problem of their knowledge being based off of "identifiable, nameable, or indictable" knowledge, which is when we lose metaphors in learning. (Powers, 2011)

To understand the concept of a solarian society the movie Snowpiercer (Bong, 2013) is a good example. This society is controlled on a train where everything is perfectly designed to work and everyone must play their part. The low-class people are at the very end of the train whereas the high-class people are closest to the front. Each person plays a specific part within the society. The only problem in this movie is that they have no chance of moving up in society, because they only have a select knowledge that they are allowed to learn.

We link the visible world and knowing about it as knowledge, but we lose meaning, metaphors, and symbols. Once we are able to understand the meaning of metaphors and symbols within the visible world we can become knowledgeable. Knowledge is what is imagined. If we only learn in the way that we see the world without metaphors and symbols we will become a utopia based off a hierarchy of our “identifiable, nameable, or indictable” knowledge. An example of how metaphors are used is with the Latin Alphabet. There are letters that are linked to pictures and pictures linked to meanings, just so letters can be learned. In the chapter Utopian Knowledge, the idea of becoming a utopian society is described. An example of the transition to a utopian society is explained in the quote



Figure 5

below. (Powers, 2011)
Objects should be placed before the eyes of the student in their true character, and not shrouded in words, metaphors, or hyperboles... Clear internal perception of the world leads to perfect knowledge and perfect knowledge leads to utopia. (Powers, 2011)

The idea of utopian societies is used often in modern day books and movies one of which being the book and movie, Divergent (Roth, 2011). This is a society where people are divided into different factions based on what type of traits and personality they have. Once the children are old enough they take a test that tells them which faction they should be a part of. The children do not need to choose the one that their test puts them in, but if they cannot follow the rules within their faction they will become a part of the slums. Each person is meant to do their part within the society to make it a perfect working place.

This utopian society and divergent are very similar to New York City Department of Education Specialized High Schools, which is consisted of schools that are designated to be specialized learning. There is a total of nine schools that are specialized for the students within the New York City Education System. Even though these schools are a part of a public school system each school has an extra admission test, the SHSAT, to get into

the school, so only limited numbers of people can get in. These schools are specialized and divided into different types of learning like the factions are divided. These high schools are not designed to be like a utopian society, and they are currently working to fit the needs of the students in New York City, but ultimately seem as if they could fit within a utopian society. ("Specialized High Schools - Specialized High Schools - New York City Department of Education," n.d.)

There are some cities that have been designed to be utopian cities such as the Garden City and the Octagon City. Both of these cities were started and failed due to various reasons.

The Garden City was a movement where many planned social cities were designed by Ebenezer Howard. He wanted the people to live in harmony with nature and not allow for the city to be filled with the slums. It was partially attempted and failed due to people not wanting to live in these strict ways. There were also a lot of outsiders who thought they were not being resourceful, because they were taking up so much space and not using it wisely. ("garden city | urban planning | Britannica.com," n.d.)

The Octagon City was the Vegetarian Utopia just south of Humbolt, Kansas. This was a city created by vegetarian Henry Clubb

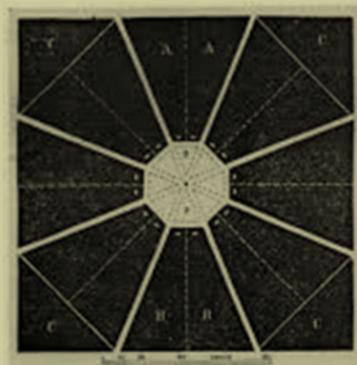


Figure 6



Figure 7

for only vegetarians. It was attempted and had some success in the beginning, but the technology for living conditions were very bad. People were dying due to improper nutrition and living conditions. By the end there were only four people left and the city failed and now no longer exists. ("Kansas: A Vegetarian Utopia - Kansas Historical Society," n.d.)

Even though these cities were unsuccessful there are still plans for future utopian societies. Hopefully these cities will learn from the previously attempted cities. Two examples of future utopias would be the Dragonfly and the Lilypad.

The Dragonfly: Vertical Farming in New York City is a future Utopia that is proposed to be in New York City. This building is designed to be self-sustaining similar to the previously mentioned train in the movie Snowpiercer. There will be multiple crops grown here as well as living areas and offices. It will be designed to help with our environmental problems that we are currently creating. ("Seven amazing cities of the future - About us | Allianz," n.d.)

The Lilypad: Floating City for Climate Refugees will work similarly to the Dragonfly. Another future Utopia that would be used for when our current living conditions are destroyed and we need a new place. This

design will also be self-sustaining, because if our current living conditions are destroyed we will no longer have anything to live off of. These lilypads will also be moving through the water depending on where the current takes them. The future utopia is very far from happening, but it is an idea that needs to be considered. ("Seven amazing cities of the future - About us | Allianz," n.d.)

All of the examples provide an understanding of what a utopia is: a society that is designed to generate something perfect. The earlier utopias are using this against what society is wanting them to be for whereas the future utopias are supposed to be helping our current societies. These are all trying to create the perfect living space, which is what one would think to be good. When they are trying to be perfect is when it end up becoming negative. When we strive for perfection we lose the ability to be a person.

If there is a utopia there must be an anti-utopia. An anti-utopia would be almost the opposite of the utopia, a city that looks like it could be perfect but is just fooling the eye and is not perfect whatsoever. Therefore, the anti-utopia is not exactly the opposite because it still wants to look like everything is perfect and fool the eye.



Figure 8

The story of *The Labyrinth of the World and the Paradise of the Heart* (Comenius, 1660) helps explain how the anti-utopia and the anti-anti-utopia work. *The Labyrinth of the World and the Paradise of the Heart* is a story about a pilgrim who is going through life and experiencing it in different ways. He comes to the point where he is dealing with the deceiving world, which is the anti-utopia. He then needs someone to look to such as God who gives him the ability to see the world as a machine, the anti-anti-utopia.

The anti-anti-utopia is the machine, the part that creates and defines the utopia. The anti-anti-utopia passes over the gaps between seeing, saying, and knowing. These gaps are used to create metaphors and symbols and if these gaps are closed we lose metaphors and symbols. The machine is working for us to automatically generate a 'perfect society'. The machine is working as us and becoming us. It is the keystone of the perfect world. Juhani Pallasmaa, author of *The Embodied Image: Imagination and Imagery in Architecture* (2011.), explains it best: "do our mass-produced and computer-generated images already imagine on our behalf?" If the machine is us and working as us we lose the ability to imagine on our own and we automatically see everything literally as it is.

An example of how the machine works in education is in the song Another Brick in the Wall by Pink Floyd (1979). It is best seen in the music video, but can also be understood by the lyrics.

We don't need no education
We don't need no thought control
No dark sarcasm in the classroom
Teachers leave them kids alone
Hey teacher leave them kids alone
All in all it's just another brick in the wall

The music video shows a dramatized education system, but it is very effective to get the point across. The video starts off with a student getting yelled at for reading and writing poetry, the literature that gives us metaphors. The students are only allowed to follow the exact lesson that is given to them for the day and to make sure that happens they go through a machine. All of the students go into the machine looking different and being individualized, but when they come out of the machine they look and act the exact same way as every other student. There is no room for individualization with the machine creating an automatic society of people or education system.

No Child Left Behind an act that was created in 2001 to give equality to all the students by using standardized tests. George



Figure 9

W. Bush was the man who signed off on this act thinking that it would be a great addition to our education systems. All the intentions that the act had seemed as though they would work great for the United States school systems, but this did not turn out to be true. The amount of standardization that the act created was too much for the education system, making it hard for some students to stay at the same level as others. They wanted every student to succeed, but by creating one path that every student had to follow the individual students were failing because they couldn't work in the same way as other students. Our school systems correlate what is happening in the Pink Floyd video with the No Child Left Behind Act of 2001. (Chubb, 2009)

After the utopia, anti-utopia, and anti-anti-utopia are understood the following questions are then brought fourth:

Is our education system a Utopia? And if our education system is a utopia how did we escape after going to school? Are we already living in a utopian world beyond education?

How can Architecture Influence Our Education Systems Away from Utopian Society? Our mind and body are not separate. They come together to create our consciousness. To understand our consciousness, we need to look beyond our heads and into the environments we inhabit. First, we should understand that

“mood is contagious.” The first person to experience the room will pass their experience onto the next then that person will pass their experience onto the next person and so on. Therefore it is important to make the initial mood of the space able to reinforce the students working abilities. Architects play an important role to make our consciousness become embodied in the space. A great example of how this is done is at 41 Cooper Square New York City, New York. This project was designed by the architect Thom Mayne of Morphosis for The Cooper Union in New York City, NY. This is an academic building that was successfully designed to allow the students within in different disciplines to collaborate. Thom Mayne explains what the role of the architecture is in the following quote.

“In the spirit of the institution’s dedication to free, open and accessible education, the building itself is symbolically open to the city. Visual transparencies and accessible public spaces connect the institution to the physical, social and cultural fabric of its urban context. At street level, the transparent facade invites the neighborhood to observe and to take part in the intensity of activity contained within. Many of the public functions - an exhibition gallery, board room and a two-hundred-seat auditorium - are easily accessible one level below grade...Responding to its



Figure 10



Figure 11

urban context, the sculpted facade establishes a distinctive identity for Cooper Square. The building’s corner entry lifts up to draw people into the lobby in a deferential gesture towards the institution’s historic Foundation Building. The façade registers the iconic, curving profile of the central atrium as a glazed figure that appears to be carved out of the Third Avenue façade, connecting the creative and social heart of the building to the street.” (“41 Cooper Square by Morphosis,” 2009)

He does not want the architecture to blend into nothing, but to be something that stands out and creates an atmosphere that is conducive to learning.

There is room for interpretation in architecture because it does not have an exact equation to follow. When we can leave room for interpretation we can escape the Utopian society. The environment around us is very important and works against Comenius and Campanella’s worlds that are designed to create the ultimate being. The world we live in is invoking us to think and move within it to give us a challenge. A good example of how architecture can challenge us is through Fredrick Kiesler’s Endless House designed in 1950. (Robinson & Pallasmaa, 2015) He designed an environment that responds to moods. It forced us to think with our imaginations versus just pleasing us. He

envisioned the moods to be never-ending, but challenging, which is why the organic shape is necessary. The architecture of the Endless House is designed in the way that your everyday activities are not the normal ways of doing things. You have to think through every step you take while moving through the space, which is one way to make the architecture challenge the ways you move, think, and live.

This technique could be used within the school to engage students to think more than they would in a typical classroom. Constant connections to the environment will keep the minds engaged, because our mind and body work together. An example of how this could be done is seen in the Ørestad High School in Copenhagen, Denmark, which was designed in 2007. ("3xn - Ørestad College," n.d.)The school is designed to have learning areas that are separated, but overlap to allow for different learning styles in each area. This new design is supposed to allow for the students to have flexibility within their learning between the group to the individual. This all allows the individual to be successful within the group, which is the main goal of the architecture. By using architecture we should be able to evoke the mood of the people using the space. It is good to look back at previous classroom designs to see where we have evolved from. The style will never be static,



Figure 12



Figure 13

but always changing. This changing technique could be used within the school to engage students to think more than they would in a typical classroom. Constant connections to the environment will keep the minds engaged because our mind and body are working together. An example of this is the Telefonplan School Stockholm, Sweden. This project was designed by the architect Rosan Bosch in 2011. ("Vittra Telefonplan / Rosan Bosch," 2012)The spaces are created to have a certain level of discipline, while keeping the space interactive, based on the level of concentration needed in the space. There are no walls to define the classroom, but there are spaces created to challenge the students in a different way than a normal classroom would. Rosan Bosch explains some of the ways his architecture works without having walls to define a classroom.

"I created the school's interior with spatial divisions and significant custom design. The interior takes its point of departure in Vittra's pedagogical principles and serves as a pedagogical tool for development in the everyday of the school. Instead of classical divisions with chairs and tables, a giant iceberg for example serves as cinema, platform and room for relaxation, and sets the frame for many different types of learning. Moreover, flexible laboratories make it possible to work hands-on with themes and projects." ("Vittra

Telefonplan / Rosan Bosch," 2012)

The designs of Rosan Bosch are the next step away from a classroom with four walls and desks aligned in a very particular grid. There can be much learned from this design and can be applied differently at a high school level.

Another school that achieves this is the Fuji Kindergarten in Tokyo, Japan designed by Takaharu Tezuka. (Berman, 2015) This school is designed in an oval shape and has very minimal walls in the building. The style of learning that is used allows the students to move around a lot and learn through experience. There are lessons that are taught, but there are also distractions that can be happening at the same time due to other classrooms' activities. If a student wanders off during a lesson they allow the student to do so, because they would rather they get the experience than forcing them to sit. The architect was very intentional in the design of the building, because there is a lot that the architecture can do for the students. Takaharu Tezuka (2015) states, "I think architecture is capable of changing this world, and people's lives. And this is one of the attempts to change the lives of children." What is a better place to start changing the world than through children?

If we are trying to better our education systems, what is the best place to design a



Figure 14

new high school? Boston, Massachusetts. Massachusetts is ranked the number one state for education according to WalletHub's online article, 2016's States with the Best & Worst School Systems. ("2016's States with the Best & Worst School Systems," n.d.) This rank is based off of standardized testing that is done all throughout the United States. Are these students really learning if they are trying to follow standard learning techniques? No. The goal of this new high school is to design an environment that provokes the thoughts that students have so they can create metaphors and symbols within the learning process. Placing this high school within the state with the highest ranking allows a new design to prove that the students are not really learning. The high school will be placed in an area where there is already a high school for the students to attend, because this gives the students the option to attend a school in which they will be able to learn better.

Boston, Massachusetts is also the home of the first public school, Boston Latin School. This school was founded on April 23, 1635 and is also the second oldest school in the United States. (Dexter, Edwin, 1911) Being in Boston will allow for the historical context to be a part of the design, giving the students a sense of comfort. There is also a bunch of other historical context within the area that would

relate the place back to its context.

Starting with the Puritans arrival in 1630 to the Boston Tea Party in 1773. Shortly after the American Revolution started (1775) leading to Massachusetts becoming a state in 1776. Massachusetts was the first state to abolish slavery, which allowed for Boston to grow. This then lead to the Industrial Revolution and ever since it has been a very populated city. (Present, n.d.)

The demographics of the city are also very important to know, because if there are a lot of students who struggle with school, this could be the place where they can get a proper education. Boston Public School Facts and Figures (n.d.) article offers information about students' drop out rates and more. The following statistics are from the article and are important information to be used while designing a high school:

- Graduation rate 70%
- Graduation rate for African American students 69.6%
- Graduation rate for students with disabilities 51.5%

The design of this building will attempt to engage the students in new ways in and out of the classroom. A way to help understand this design is through an artifact.

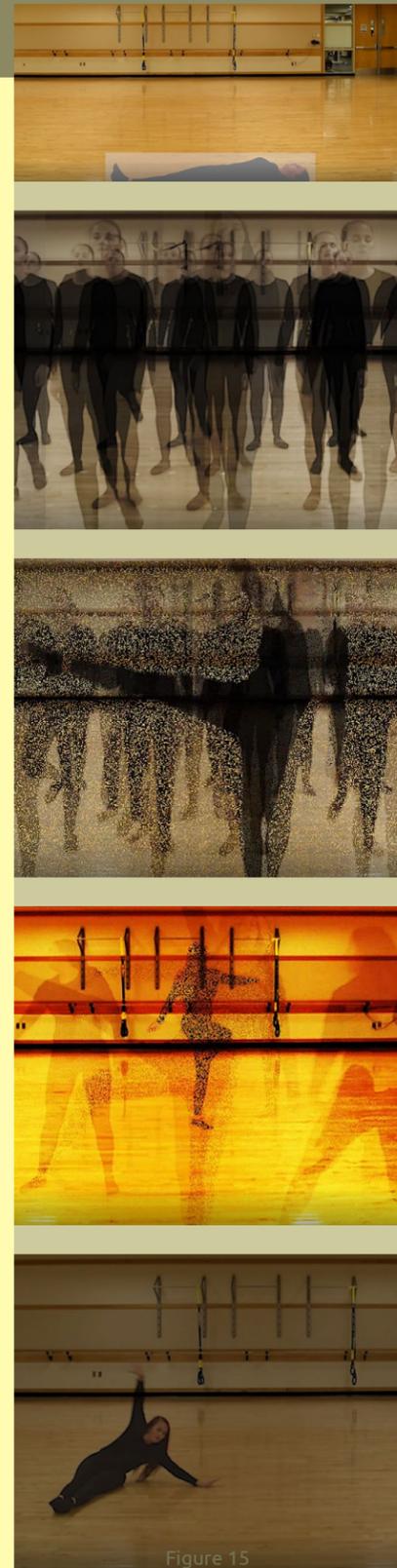


Figure 15

Artifact: The Dance

It is time to break away from the standardization and create a building that can provide consciousness throughout. Choreographing a dance is much similar to designing. The mood is a very important part to creating the story.

By starting with a very strict way of dancing it creates a rigid form, showing how the standards are not working for our current education systems. This is dramatized with multiple layers of the same person doing the same marching motion. This allows us to see the loss of individualism in the education systems. We are now trying to create an individualized system while keeping the group as an important part of learning. By showing a fluid organization of dance we allow for the freedom and interpretation of dance to be understood. When these pieces are layered, they are working individually to compose a dance that works together. The transformation between the two styles needs to be fluid in order to show that we are evolving and learning from the strict ways to create something better. To add another dimension to the project there are physical layers that are choreographed to frame certain motions in the dance. This piece can act as a distraction to fool the eye and make you fill the gap within the metaphor.

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Precedent Analysis
The following pages contain a series of case studies about education facilities. The analysis of the school buildings is to help in the research of the design of a new high school. These studies are to help create a successful design by learning what has worked and not worked within the education systems. There are various levels of education, but by looking at other levels hopefully information can be applied to high school education.

Fuji Kindergarten



Figure 15

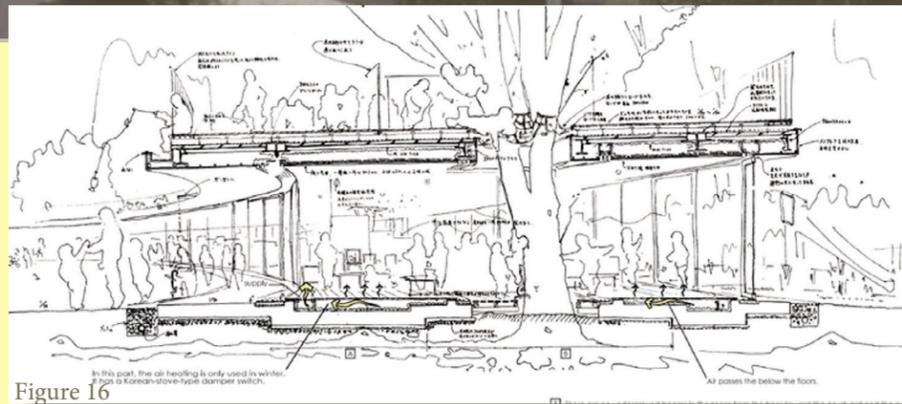


Figure 16

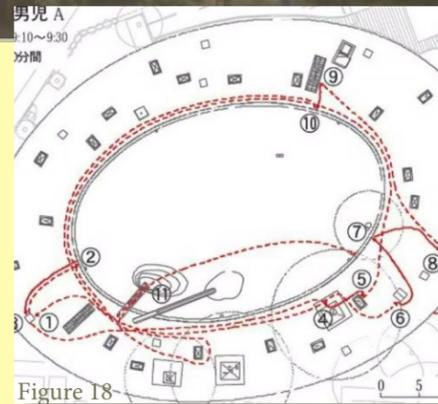


Figure 18



Figure 21

Conclusion
 The Fuji Kindergarten is a circular school with only a few walls. The school allows for the children to learn by experience. Children are allowed to leave the lesson; they will end up coming back on their own due to the school being a circle. This school has applied this learning style and environment to young children. High School students should be able to work in the same style, by experience. The environment that has been designed for the students influences how they are learning. The open setting provides a whole new understanding of learning which the students can learn from. I would like to apply these learning styles and environments to the design of a new high school in Boston, Massachusetts.



Figure 17



Figure 19



Figure 22



Figure 20



Figure 23

Vittra Telefonplan

Figure 24



Figure 25



Figure 28



Figure 30



Figure 33

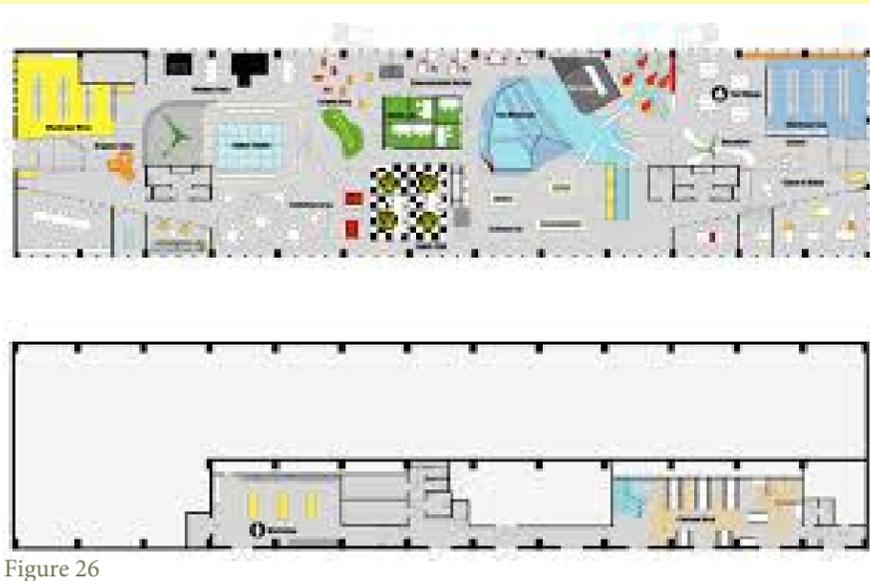


Figure 26



Figure 29



Figure 31



Figure 32

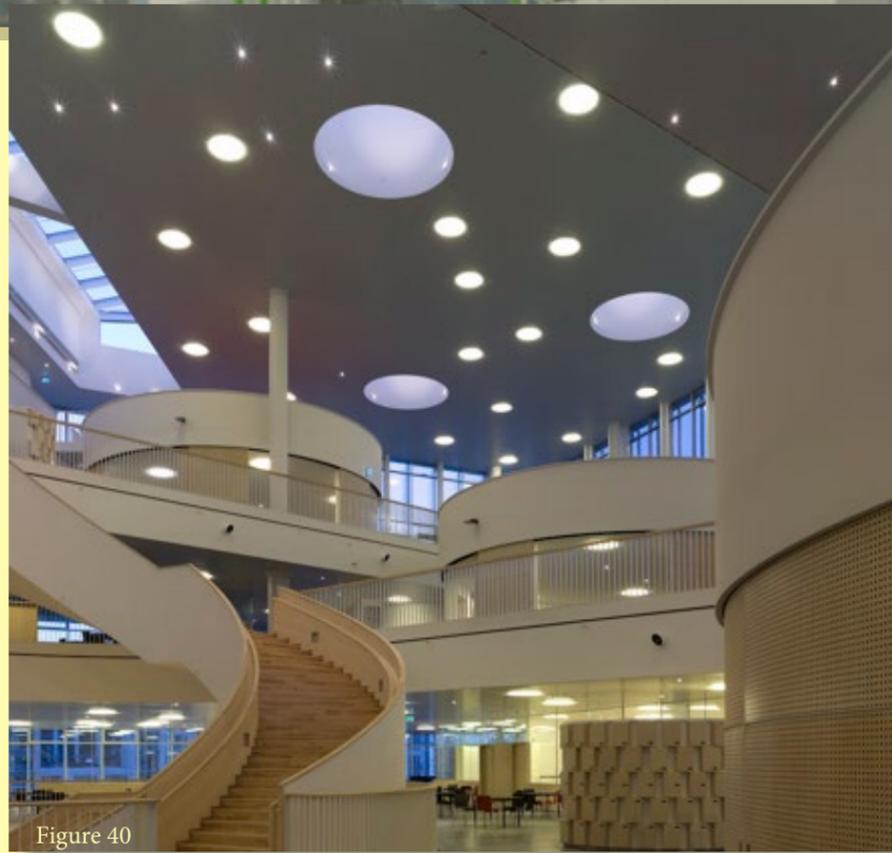


Figure 27

Conclusion
The Vittra Telefonplan School has a completely open floor plan allowing for the students to roam around. There are different areas that allow the students to work and learn in the way that works best for them. Using this open floor plan design will help the students learn better by being able to adjust to their learning needs.

Ørestad Gymnasium

Figure 34



Conclusion
Ørestad Gymnasium is a High School in Denmark that has an open floor plan with different areas for students to learn and be comfortable. At this school the students are able to individualize their learning styles within the group setting.

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Methodology Plan

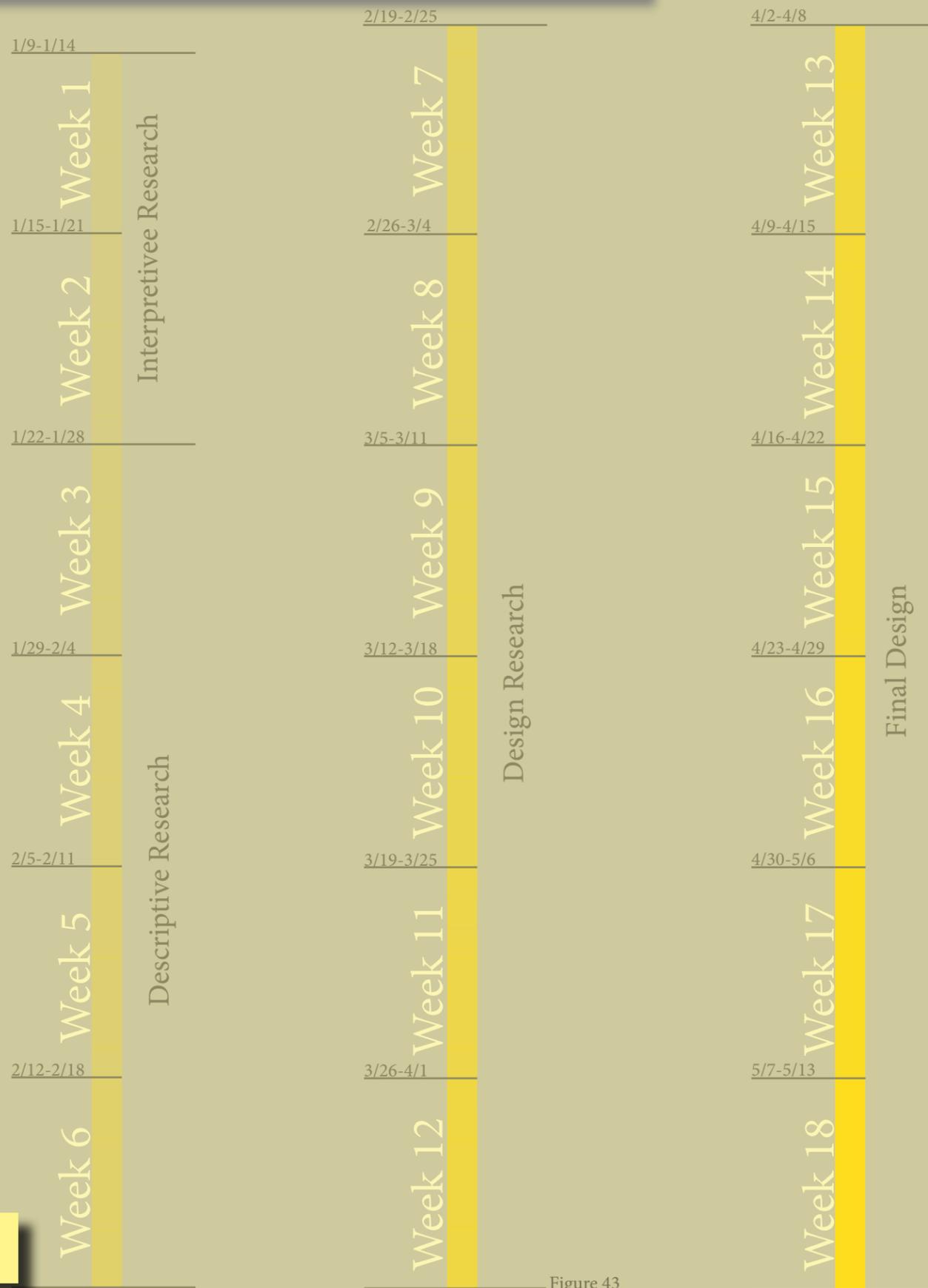


Figure 43

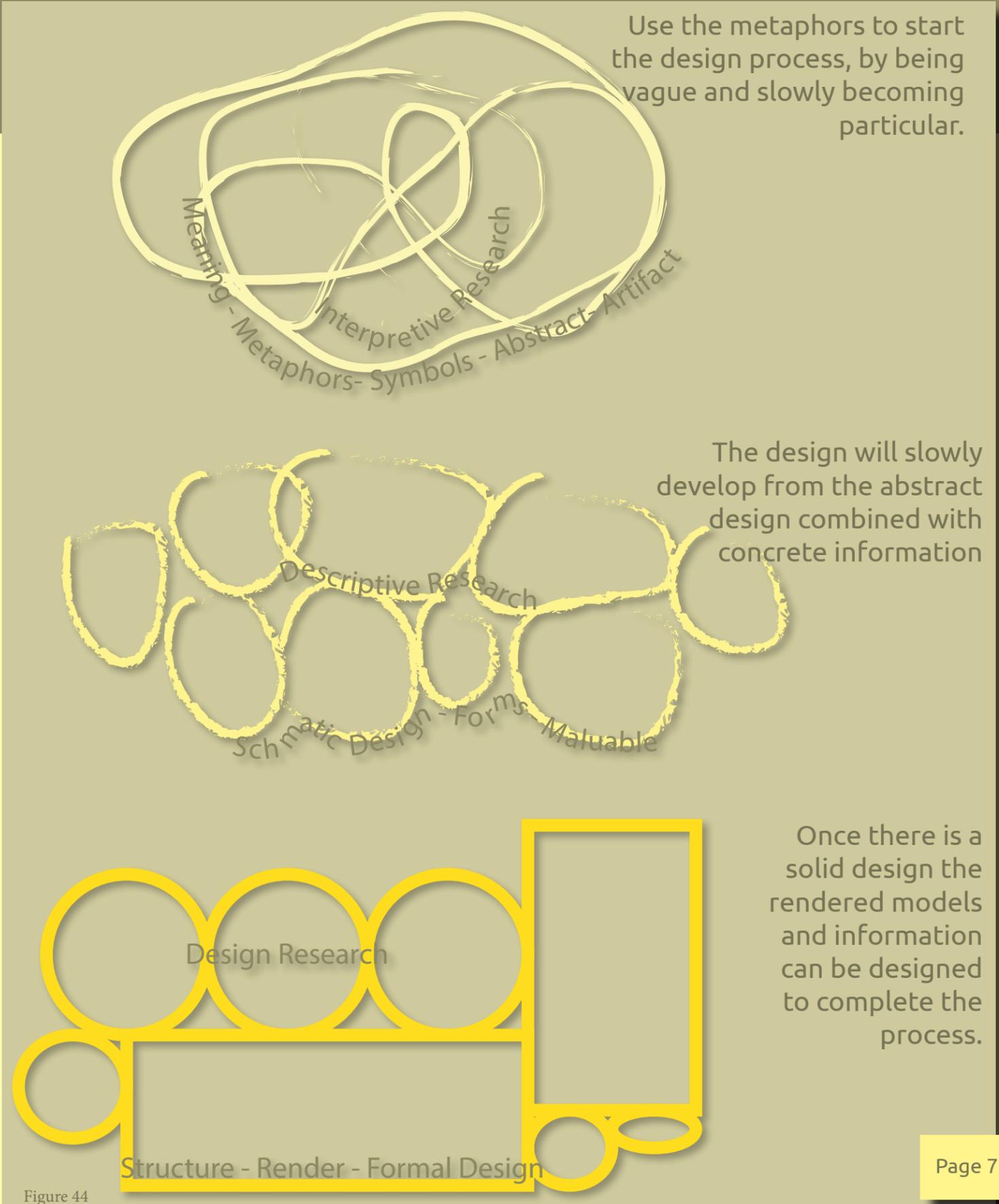


Figure 44

Documentation of Design Process

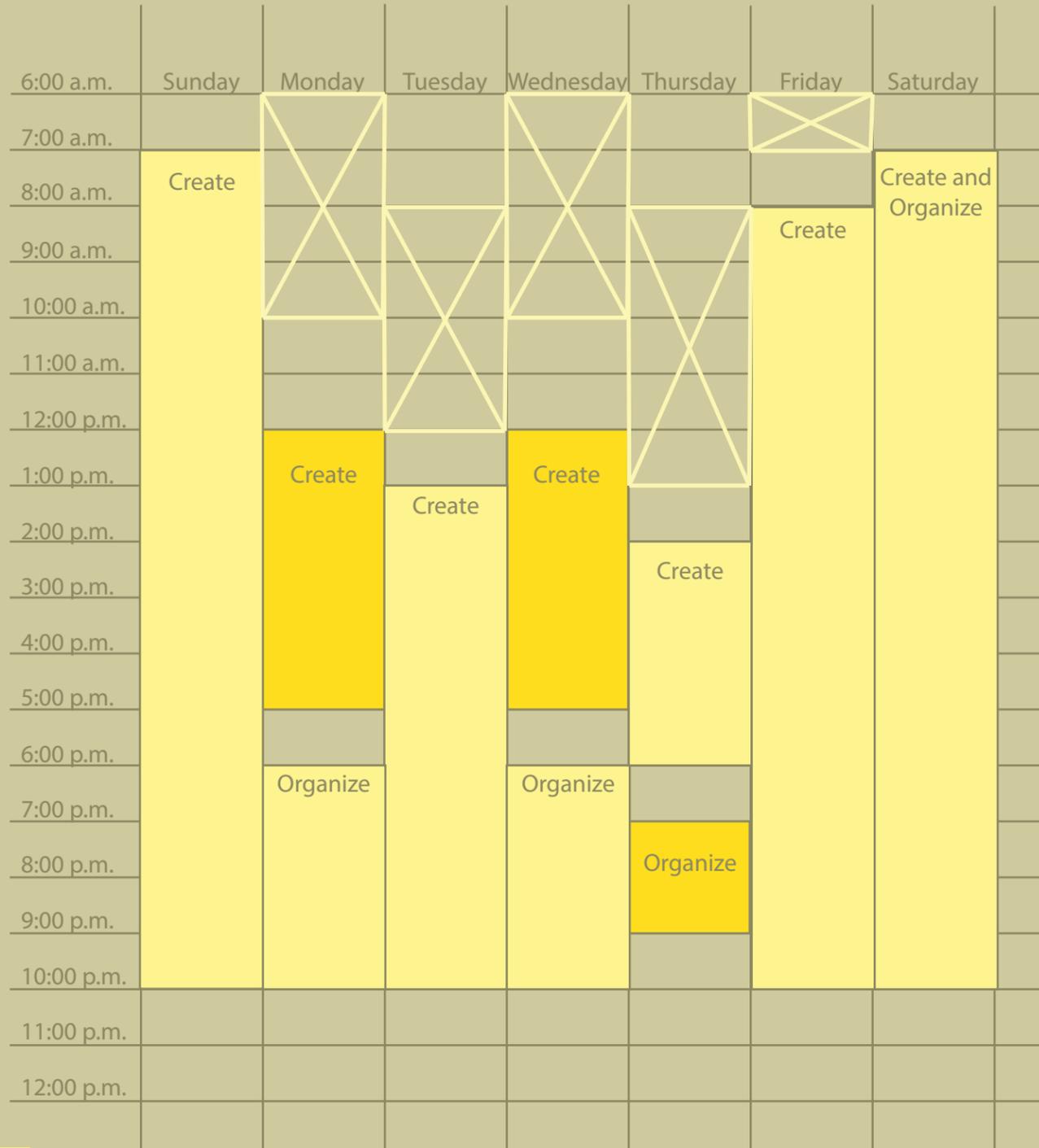


Figure 45



Figure 46



Figure 47

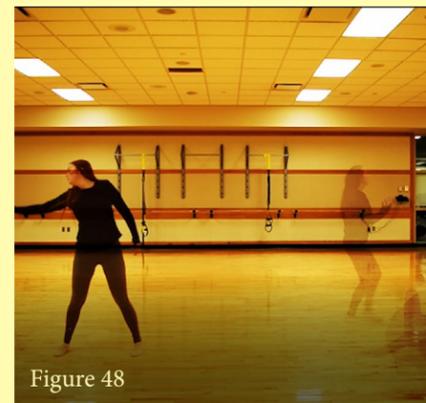


Figure 48

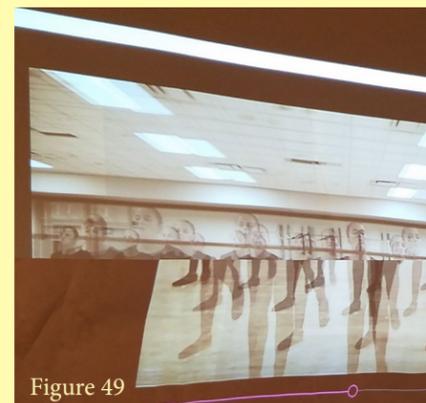


Figure 49

Documentation of Design Process

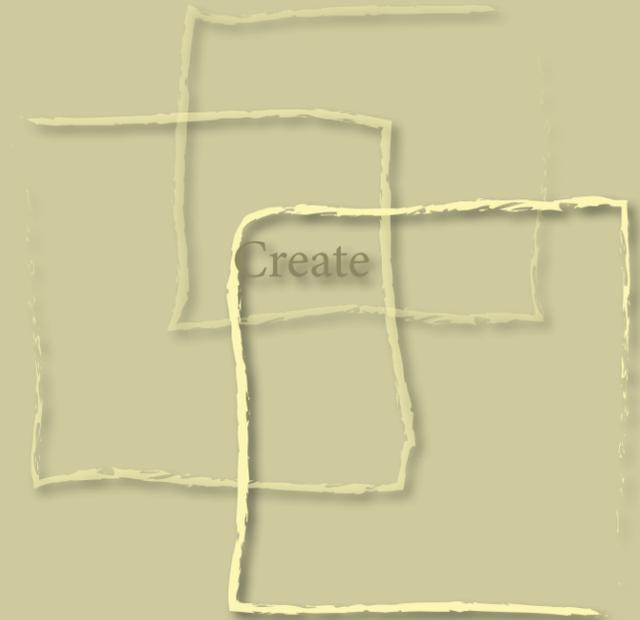


Figure 50

Semester Schedule

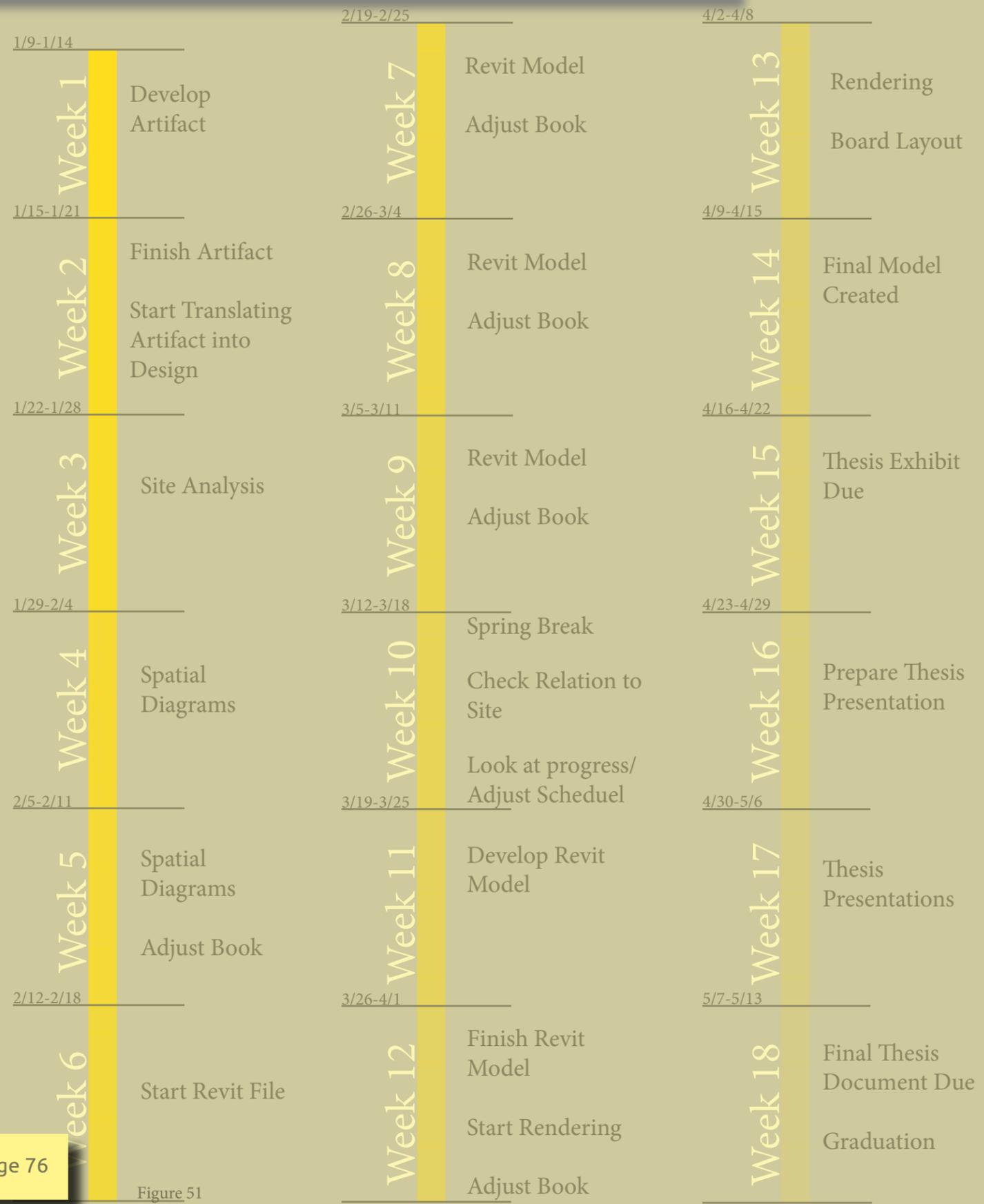


Figure 51

Predicted Weekly Schedule

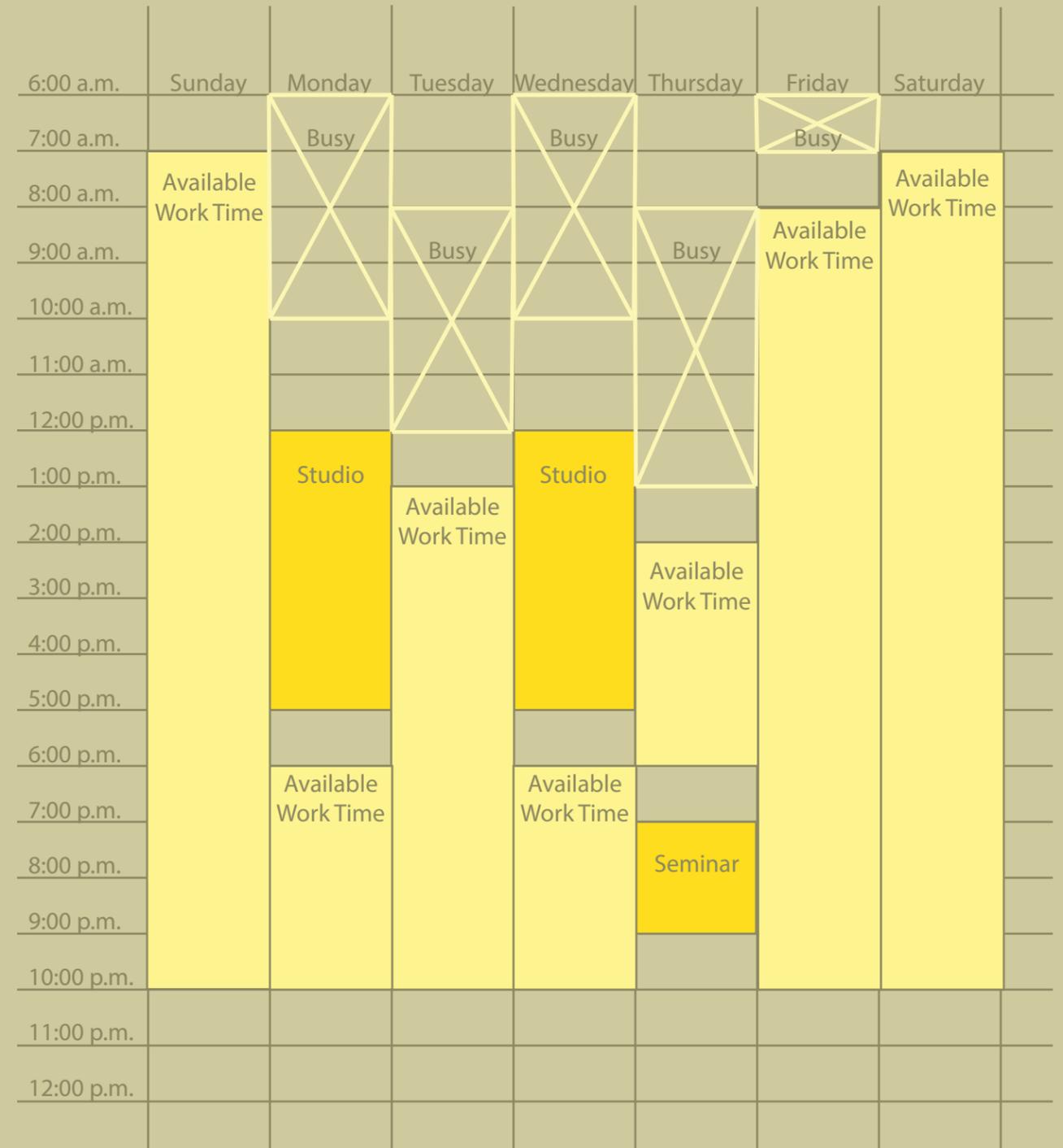


Figure 52



Program Project

The following pages are to help understand the program of the building. There are certain attributes that are needed within a high school building. Looking at size requirements helps understand how much space is needed to fulfill the needs of the students with the allowed land limits. Diagrams help understand the importance of spaces and how they can work together to create a successful learning environment.

Project Program

Function

The building is meant to stimulate the students minds by creating an environment that can fit the individual needs of all the students. To achieve a stimulating environment that works for all students will require there to be changing elements. The classrooms will no longer be 20'x20', white wall, square rooms. The spaces will be larger to allow for varying classroom sizes. With the larger space the room can be used for a group lecture, group conversation, small group conversation, individual work, etc. Classrooms should be able to help the students learn in group setting, because the students often learn best from each other and not just the teacher.

Form

This high school will provide spaces for optimal learning. Not only in the classroom, but outside of the classroom as well. Not every student learns in the same way, so we must provide multiple ways for the students to learn and study. As already explained the classrooms will be designed to provide variation within the room to help the students learn in the best way that they can. There will also be open lounge spaces that are separated from the classroom where students can sit and talk or study the option is theirs. By providing spaces where they get to decide what they are doing will force them to become more responsible and choose to study over socializing with friends. There will always be students in the area socializing, so the area will force the students studying to work in distracting conditions. Being able to

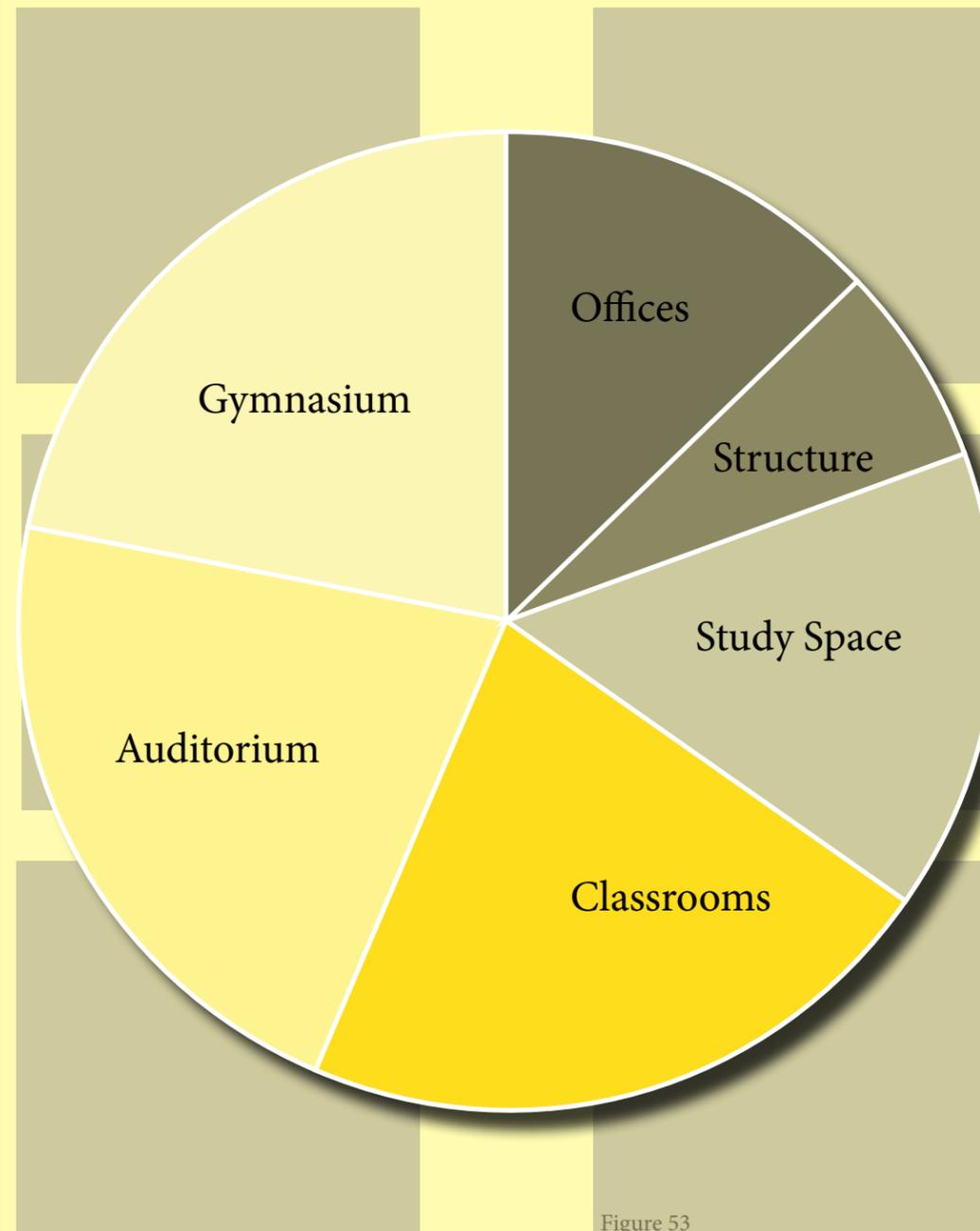


Figure 53

work with distractions is good thing to do, because once you leave school quiet spaces rarely exist. When the students learn in quiet rooms they are not actually learning how to work in life. These spaces will come together to create a space for the students to learn in the way that they would choose to learn. Giving them they option puts them in power of their own lives, which they should be at the high school level.

Economy

The high school is supposed to be supporting the students learning, so materials that are used must compliment this idea. Local materials should be used to help with the costs and help provide something that is recognized by the students. The school systems are always changing and the high school must be designed

in a way that will think about how the school could be changed in the future due to the new technologies in the school systems.

Time

The high school is placed at the heart of Boston, Massachusetts which is a city that is continuously growing. Therefore, the school must be able to adapt to the growth without overtaking the initial needs of the school. If the students lose their spaces that provide variety, the school will lose its complete purpose. The site is currently containing three separate buildings that will be a part of the high school, so if there is need for expansions it does not need to be to the current buildings. The additions could be more buildings on the adjacent sites.

Project Program

Auditorium
Gymnasium
Lunch Room

Group

Classrooms
Science Labs

Individual
within the
Group

Highest
Priority

Open Study
Space

Individual and
Group

Library

Individual

Space List

Function	People	Capacity	No. of Units	Area/Unit	Net Area	Net Area Subtotal
Administration						
Closed office space	1	4	10	100	1,000	
Conference Room		10	1	200	200	
Open office space	3	15	2	250	500	
waiting area		10	2	175	350	
Subtotal						2,050
Students/Teachers						
Classroom	28	30	30	600	18,000	
Lab	28	20	3	750	2,250	
Open Offices		30	3	750	2,250	
Lounge		50	3	600	1,800	
Subtotal						243,000
Large Gathering						
Auditorium		1,100	1	13,200	13,200	
Seating		1,000	1	12,000	12,000	
Stage		100	1	1,200	1,200	
Gymnasium		1,100	2	9,000	18,000	
Floor		100	2	6,000	12,000	
Seating		1,000	1	3,000	3,000	
Library		300	1	2,500	2,500	
Subtotal						33,700
Dining						
Preperation	5	10	1	1,000	1,000	
Serving		7	1	300	300	
Seating		300	1	3,600	3,600	
Subtotal						4,900
Service						
Bathroom		10	7	300	2,100	
Storage		3	15	30	450	
Subtotal						2,550

Building Area Summary

Space Name	People	Capacity	Net Area	Net: Gross	Gross Building Area
Administration	15	39	2,050	0.62	2,829
Student Space	100	100	22,050	0.60	30,870
Teacher Space	30	30	2,250	0.62	3,105
Auditorium		1,100	13,200	0.63	18,084
Gymnasium		1,100	18,000	0.63	24,660
Dining	17	317	4,900	0.61	6,811
Service	5	13	2,550	0.88	2,856

Land Use Requirements

Building	People	Gross Building Area	Floors	Building Footprint	GAC	Land Area
High School	1200	89215	1	90000	45%	200000

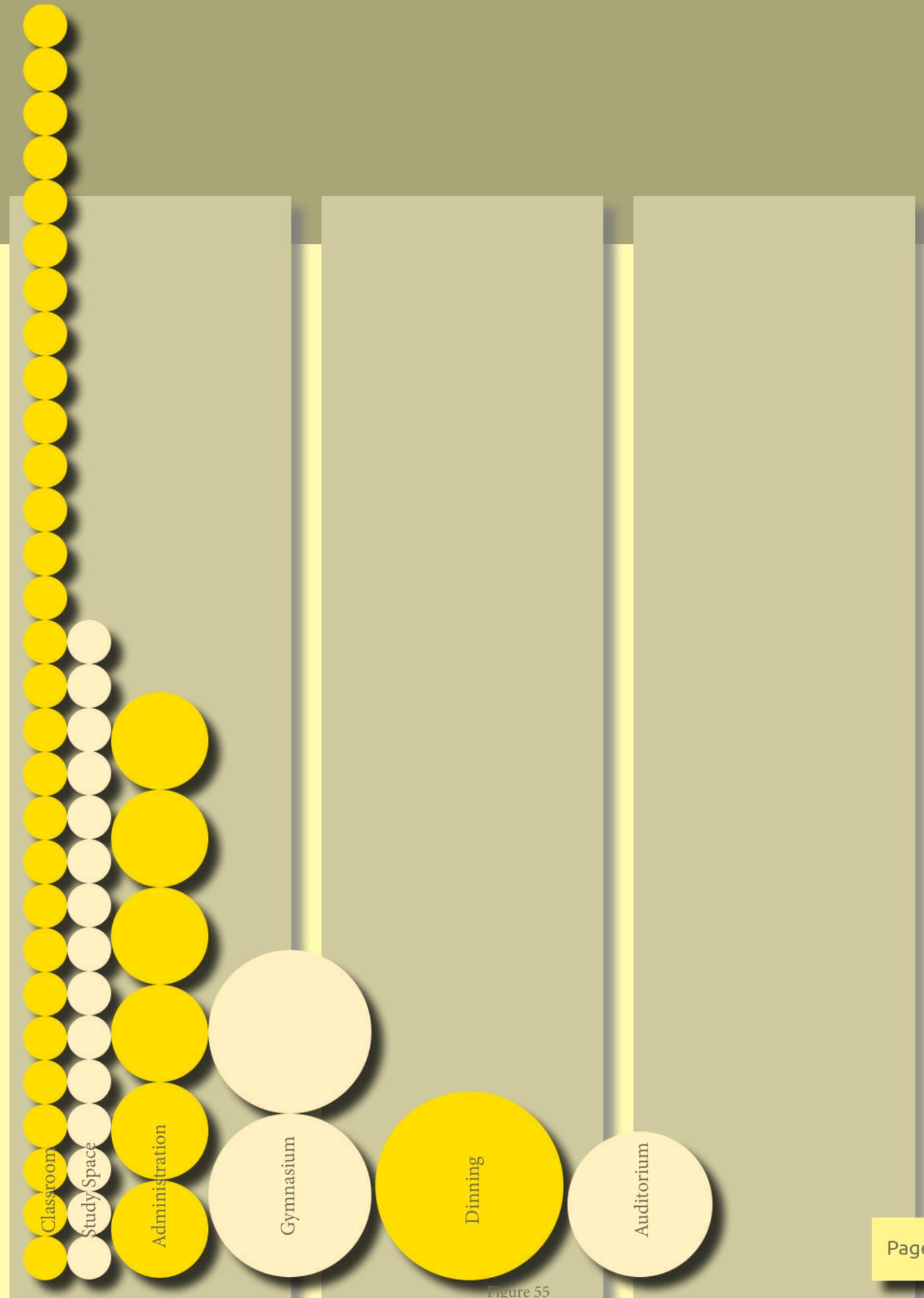


Figure 55

Figure 54

S I T

E

Site Analysis

The following pages are to help understand the impact the site has on the design of the building. There is a lot of analysis that needs to be done to gain full understanding of what the site has to offer to the design. The analysis should not only be of the immediate site, but further into the city and state the design inhabits. It is important to understand all of the analysis that the site has to offer, because it could have major impacts on the design.

Boston, Massachusetts

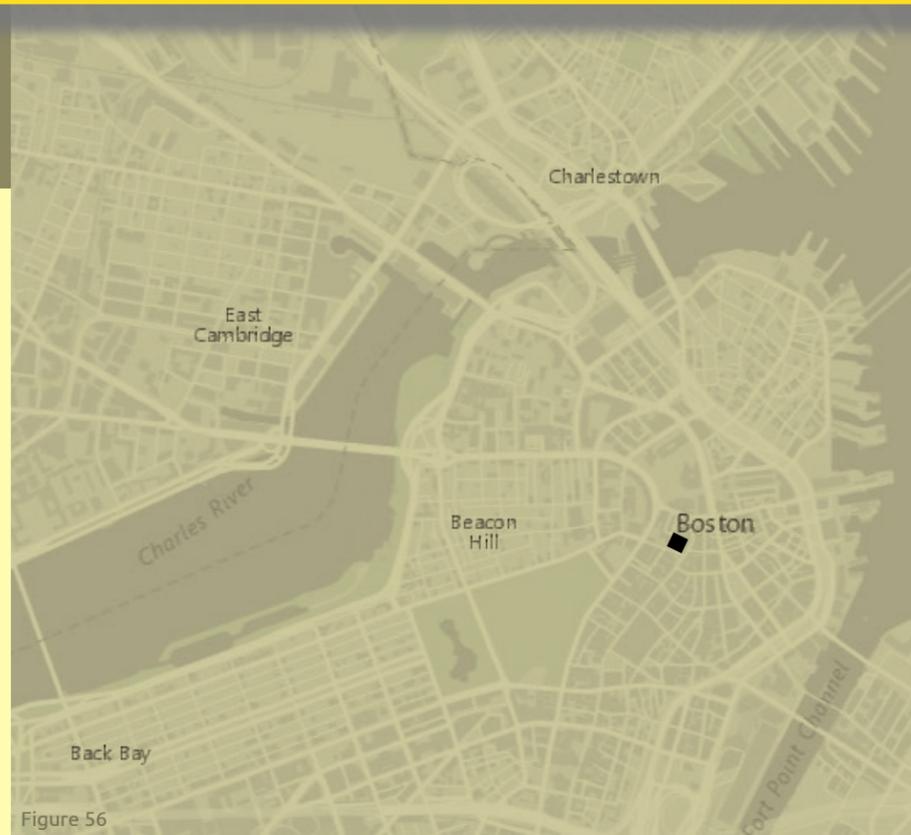


Figure 56

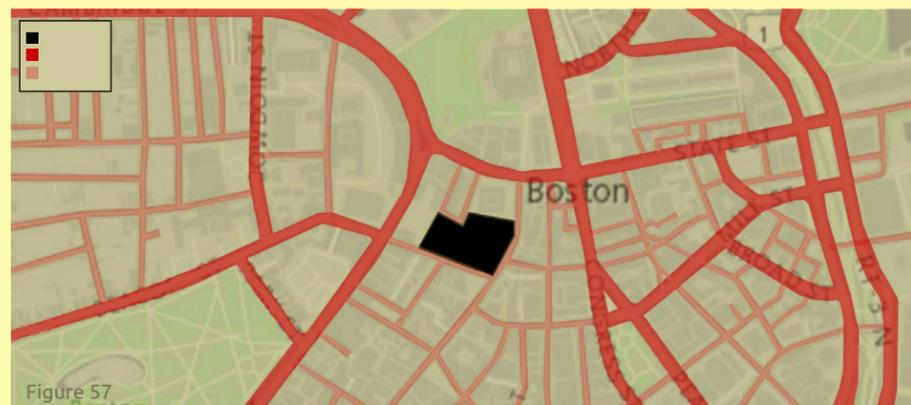


Figure 57



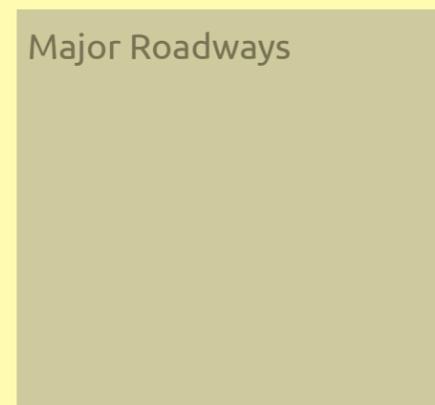
Figure 58



Freedom Trail



Figure 59



Major Roadways

- Old State House
- Old South Meeting House
- Old City Hall
- Boston Latin School
- Kings Chapel
- Current State House



Parks

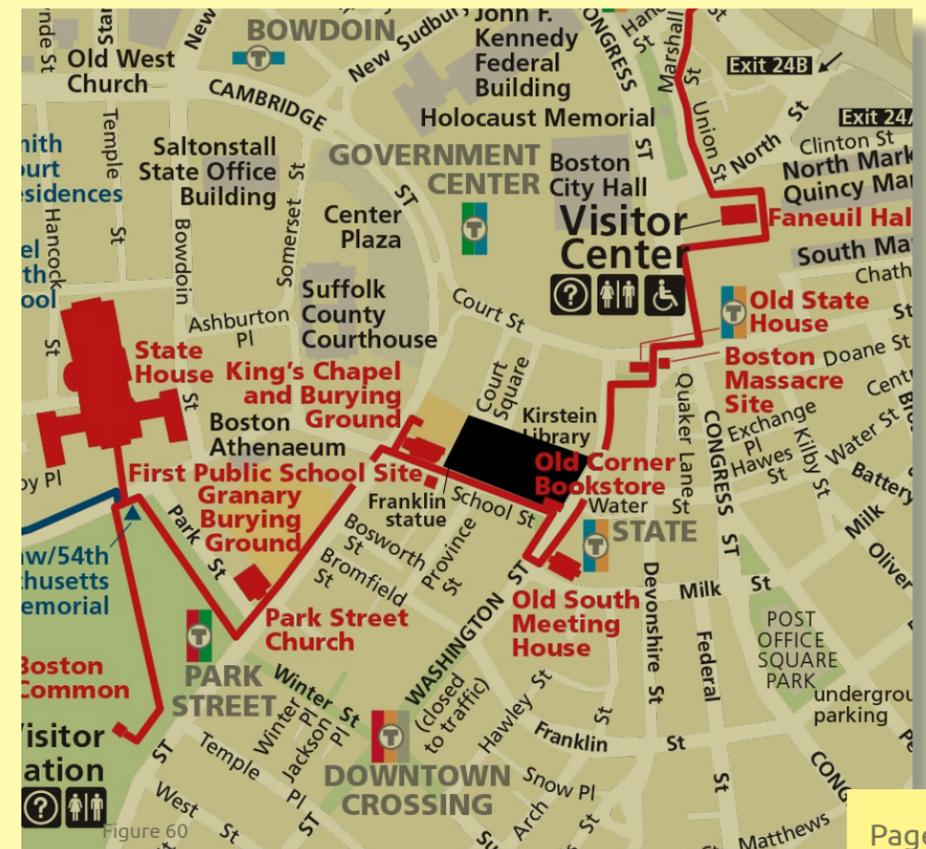


Figure 60

Boston, Massachusetts

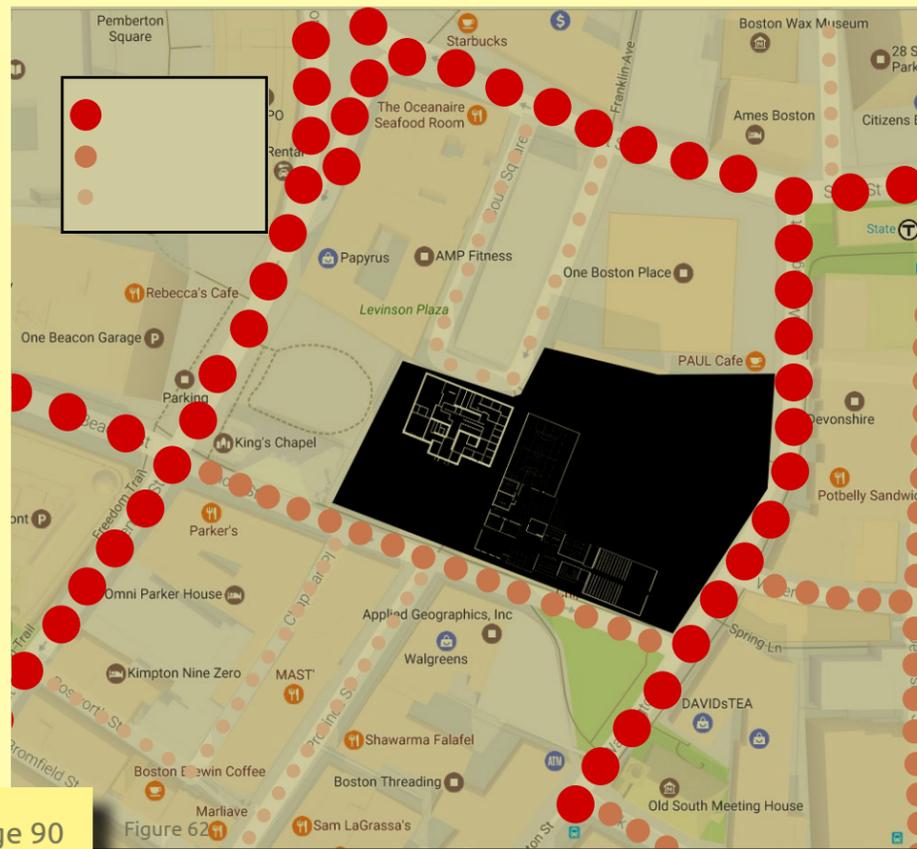


Open Space

Boston Transit System



Figure 63



Level of Traffic

Boston Transit System Near Site



Figure 64

Boston Latin School



Figure 65
THE FIRST LATIN SCHOOL, ON NORTH SIDE OF SCHOOL STREET, 1635.

Boston Latin School was the first public school in the United States which was founded on April 23, 1635. The school has moved locations a few times, the first three locations were along either the North or the South side of school street. The need for relocations was its growth. "From its beginning, Boston



Figure 66

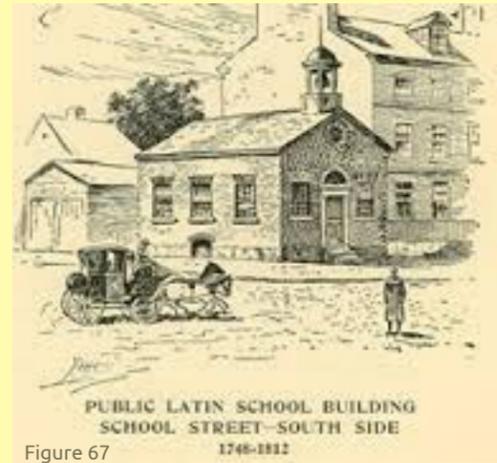


Figure 67

Latin School has taught its scholars dissent with responsibility and has persistently encouraged such dissent."



Figure 68

The school is still in use today goes by the following mission statement; "Boston Latin School seeks to ground its students in a contemporary classical education as preparation for successful college studies, responsible and engaged citizenship, and a rewarding life.



Figure 69

Boston Public School System existing schools.

Massachusetts is the number one state for education in the United States. This rating is based off standardized tests that WalletHub put together.

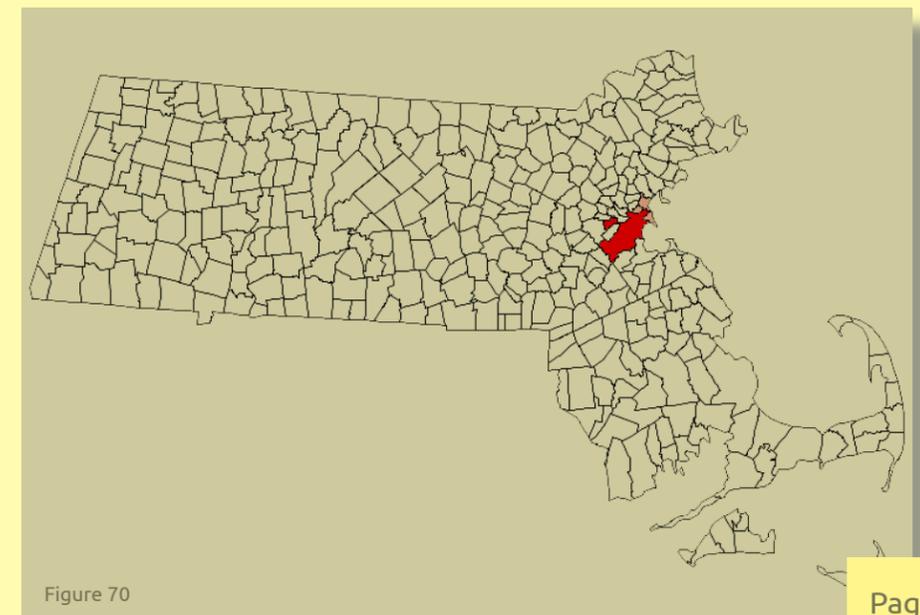


Figure 70

Climate

Climate Boston - Massachusetts

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average high in °F:	36	39	45	56	66	76	81	80	72	61	51	41
Average low in °F:	22	25	31	41	50	60	65	65	57	47	38	28
Av. precipitation in inch:	3.35	3.27	4.33	3.74	3.5	3.66	3.43	3.35	3.43	3.94	3.98	3.78
Days with precipitation:	13	11	13	12	13	12	11	10	10	10	11	11
Hours of sunshine:	148	168	212	222	263	283	300	280	232	207	152	148
Average snowfall in inch:	13	11	8	2	0	0	0	0	0	0	1	9

Figure 71

Boston weather averages

Annual high temperature:	58.7°F
Annual low temperature:	44.1°F
Average temperature:	51.4°F
Average annual precipitation - rainfall:	43.76 inch
Days per year with precipitation - rainfall:	137 days
Annual hours of sunshine:	2615 hours
Av. annual snowfall:	44 inch

Figure 72

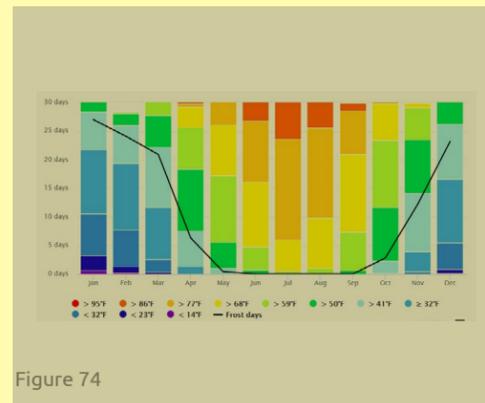


Figure 74

Boston Climate Graph - Massachusetts Climate Chart

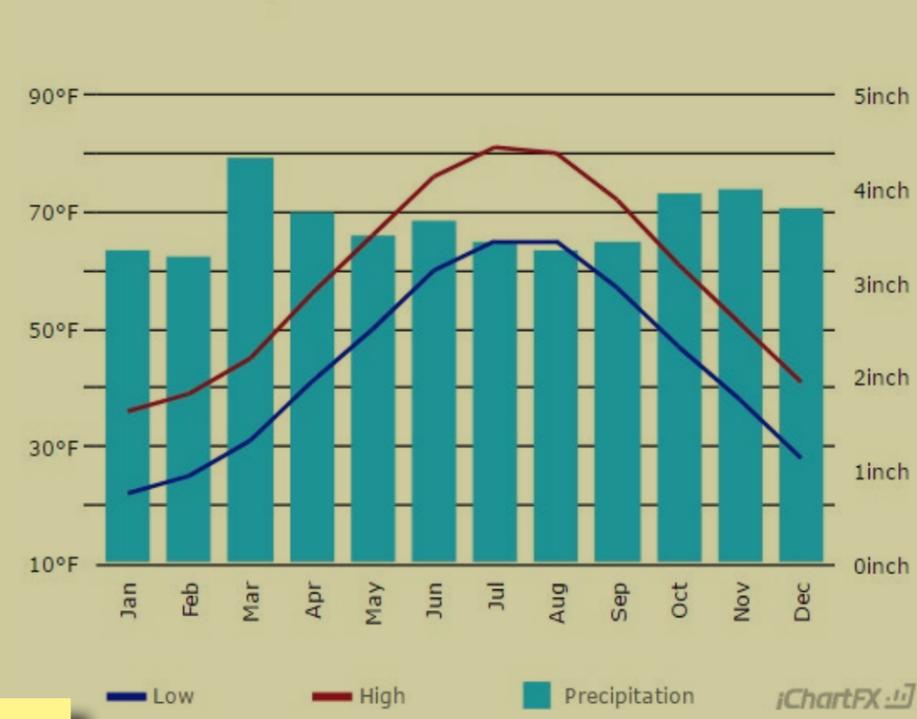


Figure 73

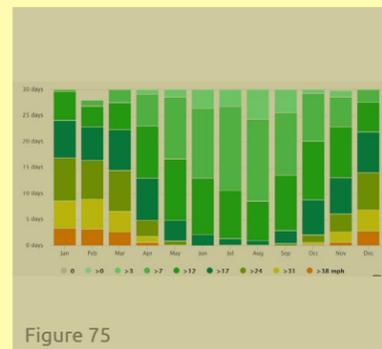


Figure 75

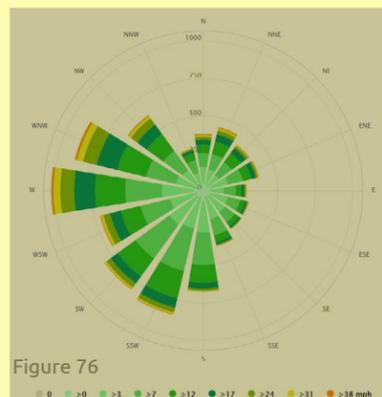
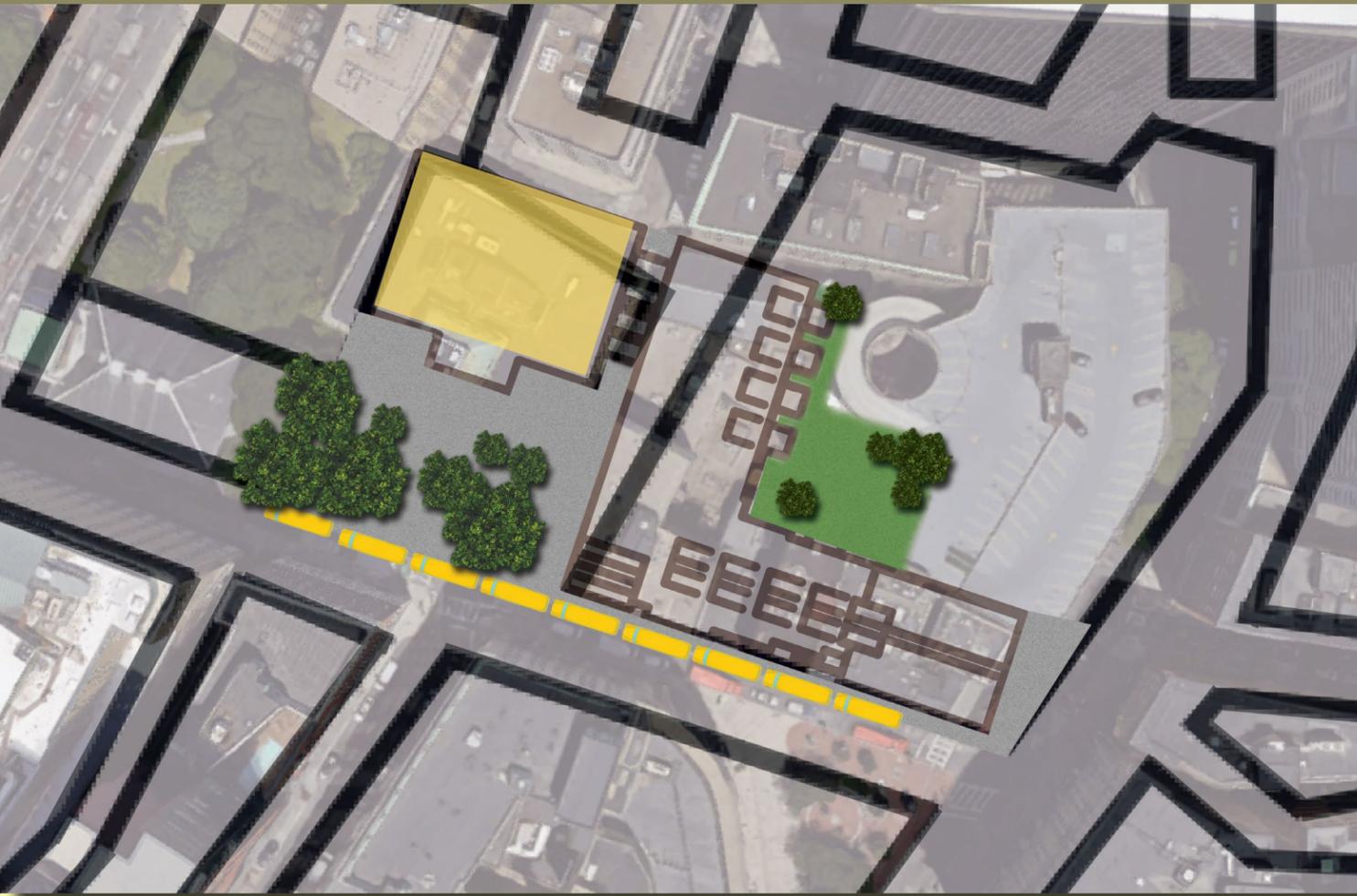


Figure 76

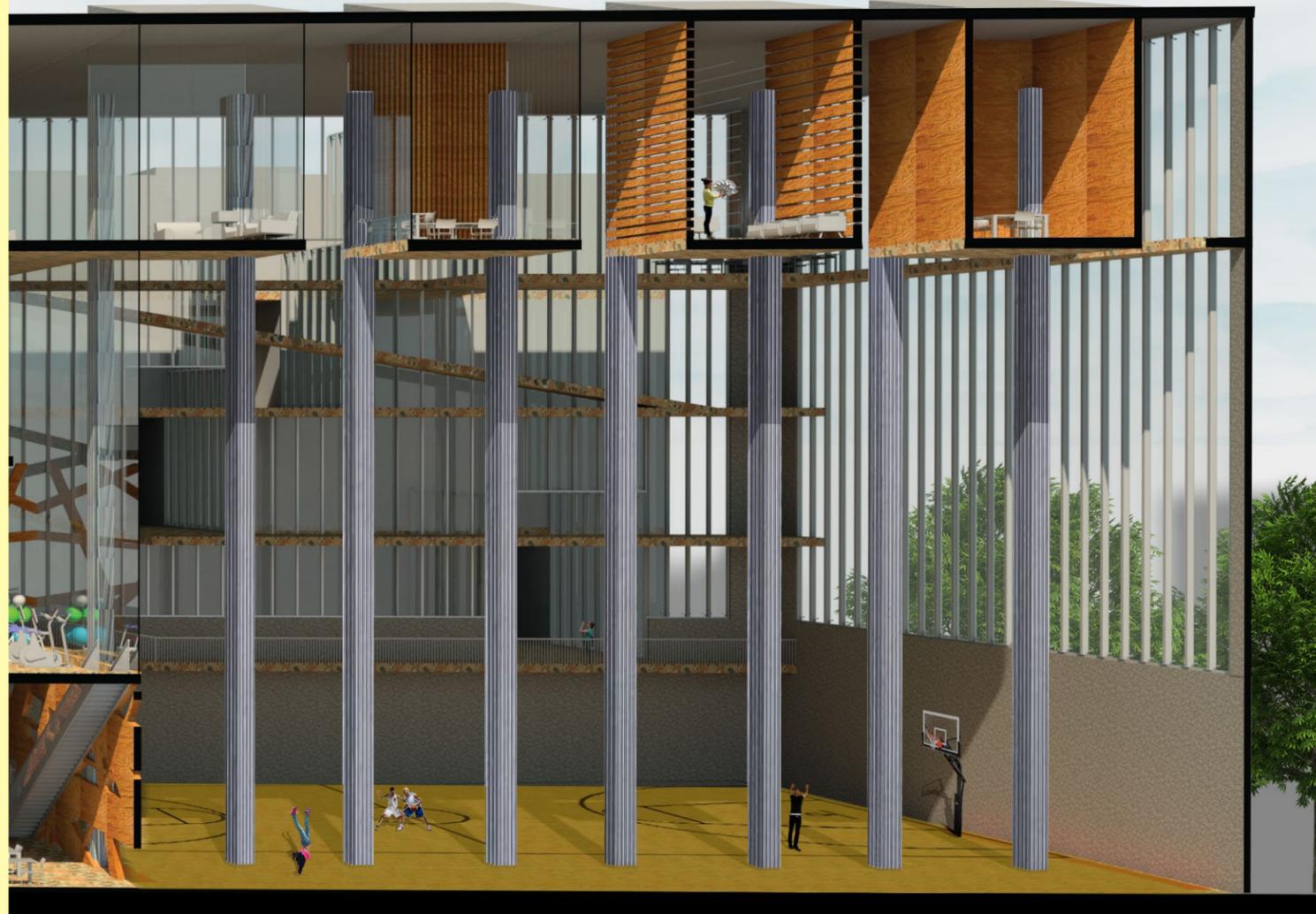
D E S

I G N

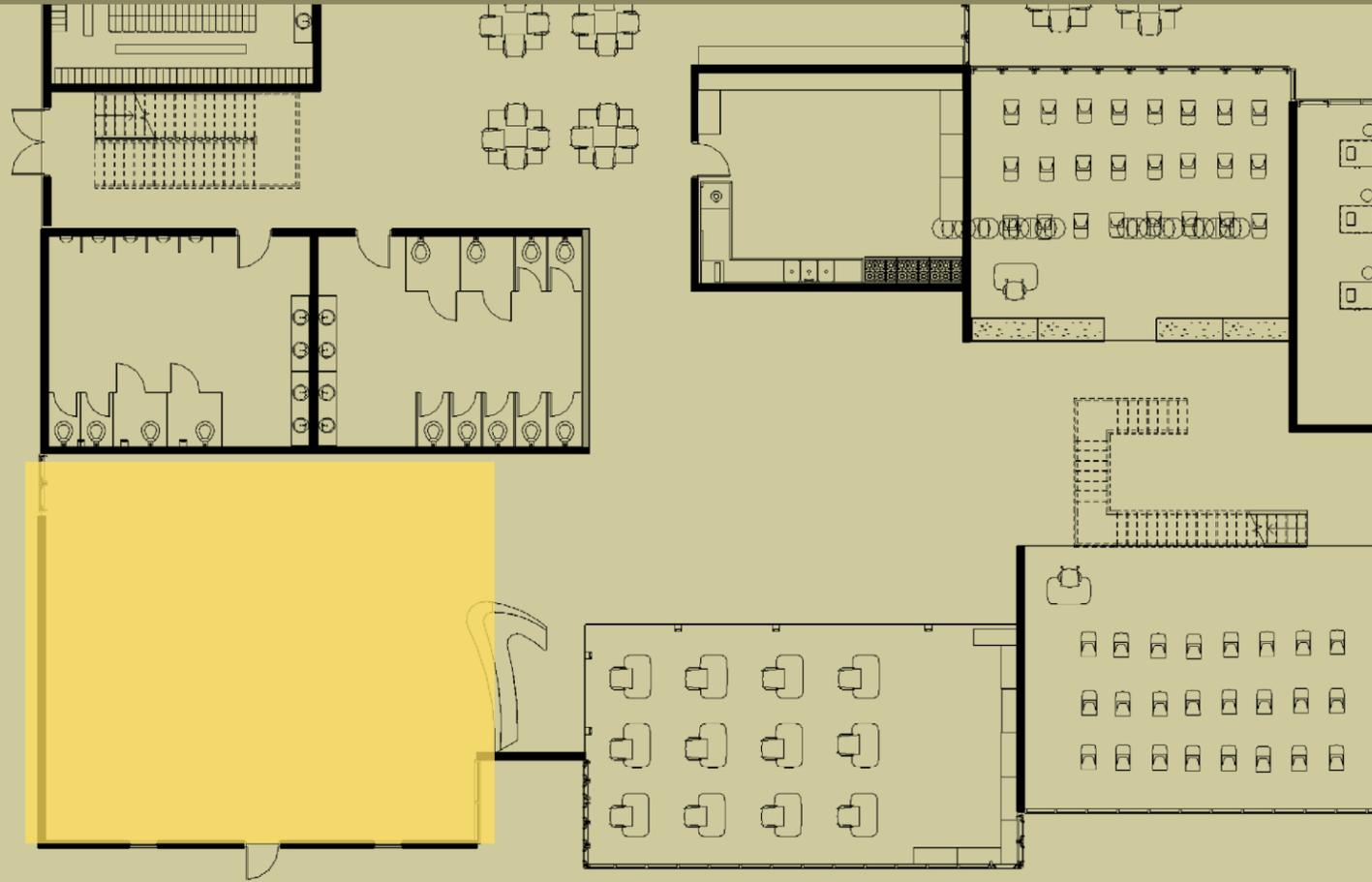
Old City Hall



Boston's Old City Hall still stands today and is used in this design. It houses the library and administration offices and connects to the gymnasium in a non-traditional way. The library is in the one building, but connects to the gym through a bridge. This bridge does not have walls shutting the library out from the gym. This allows the strict rules of being quiet in the library to fade, because the noise of the gym will diffuse in. By relating these two spaces we can see that learning is just as active as being physical in a gym.



Boston Latin School



The Boston Latin School was once standing where the new design is built. The entrance is the same proportions of the past school with an area that tells the story of the first schools in the United States. By placing this new design exactly where the 1635 school house is, it creates a strong connection helping us learn about and from the past.

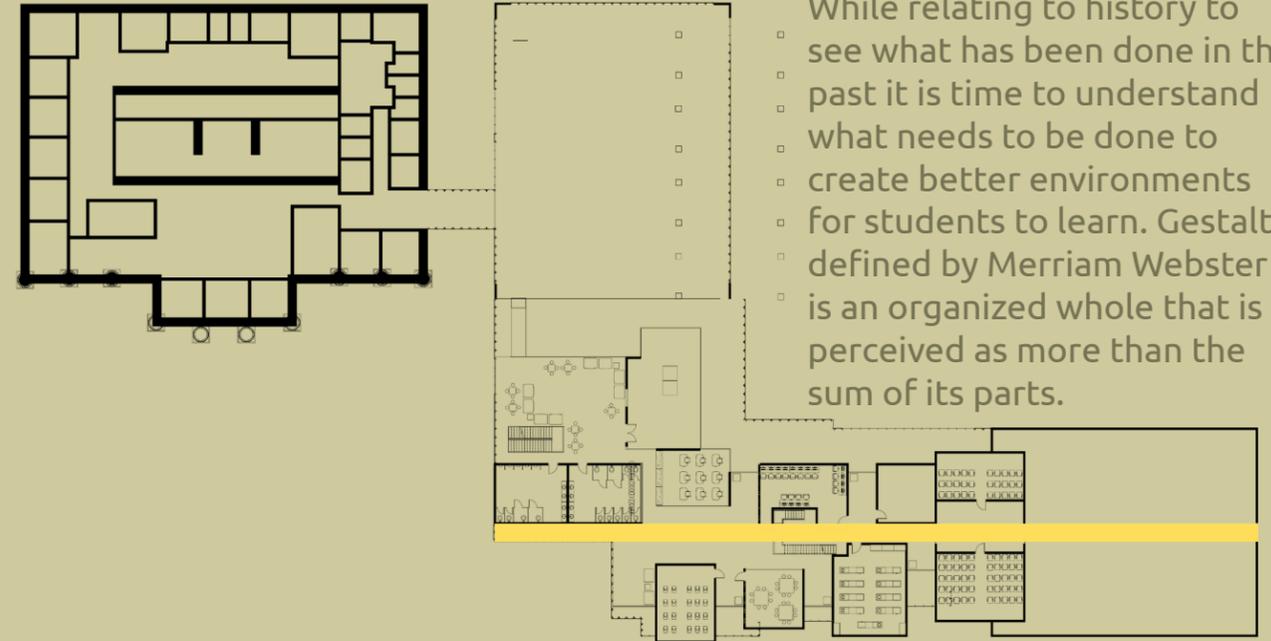


Gestalt

An organized whole that is perceived as more than the sum of its parts



Fourth Floor

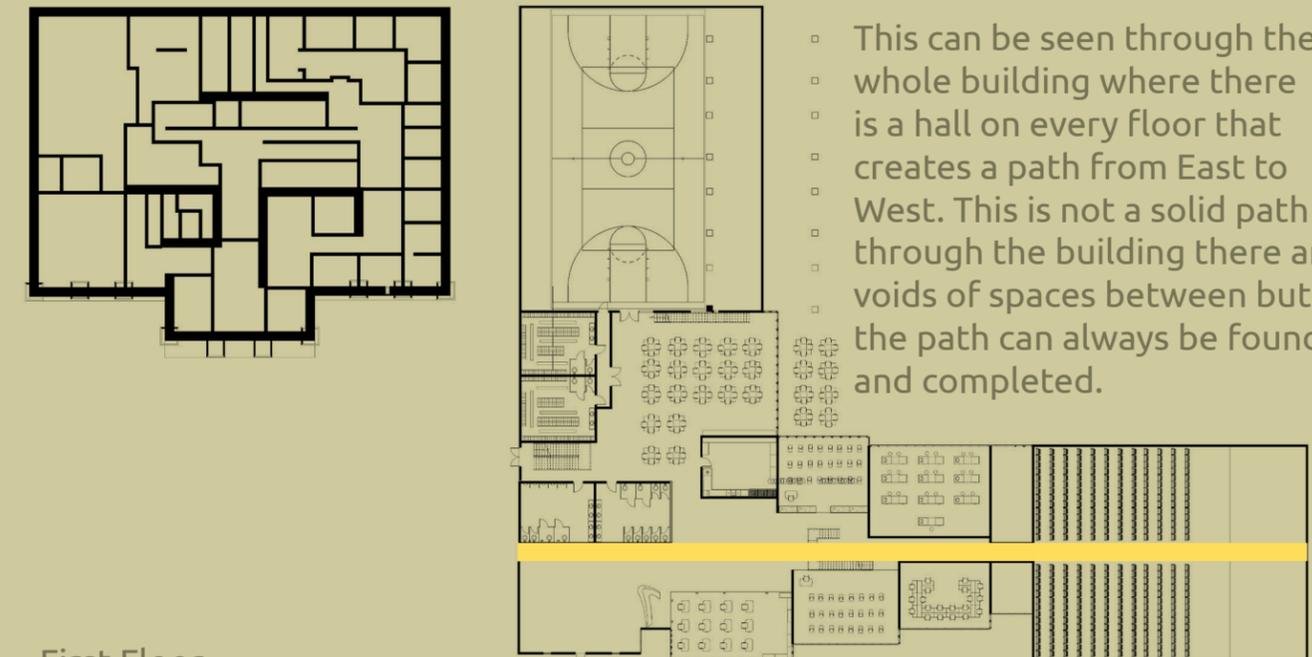


Third Floor

- While relating to history to see what has been done in the past it is time to understand what needs to be done to create better environments for students to learn. Gestalt defined by Merriam Webster is an organized whole that is perceived as more than the sum of its parts.



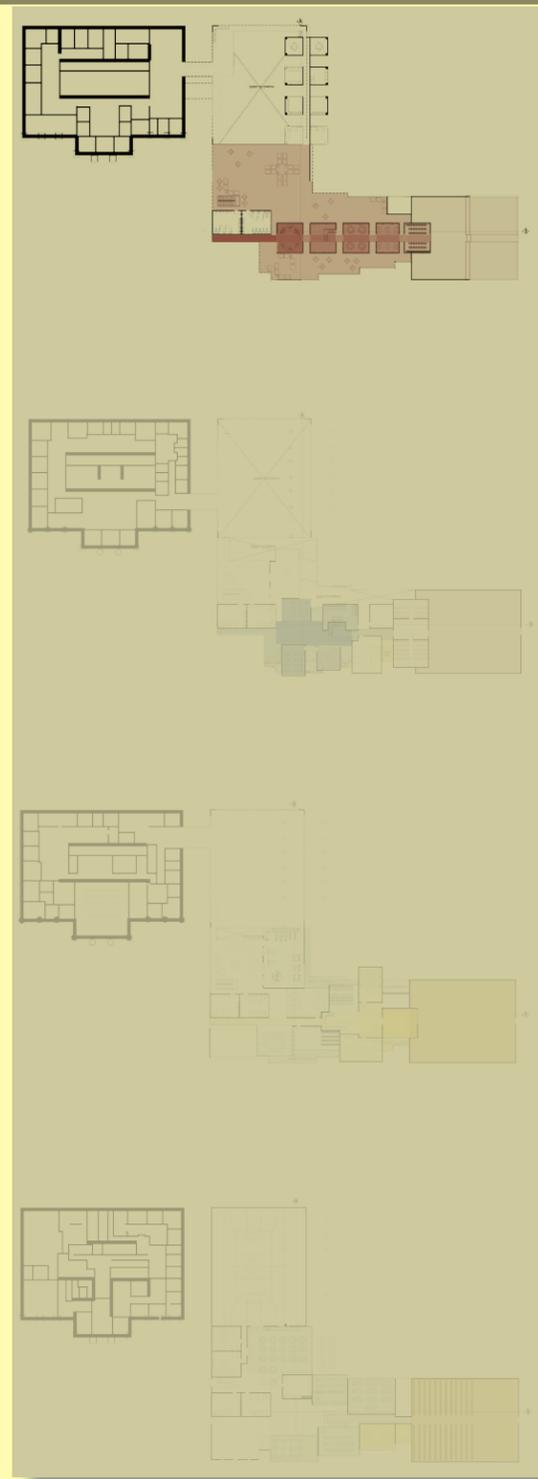
Second Floor



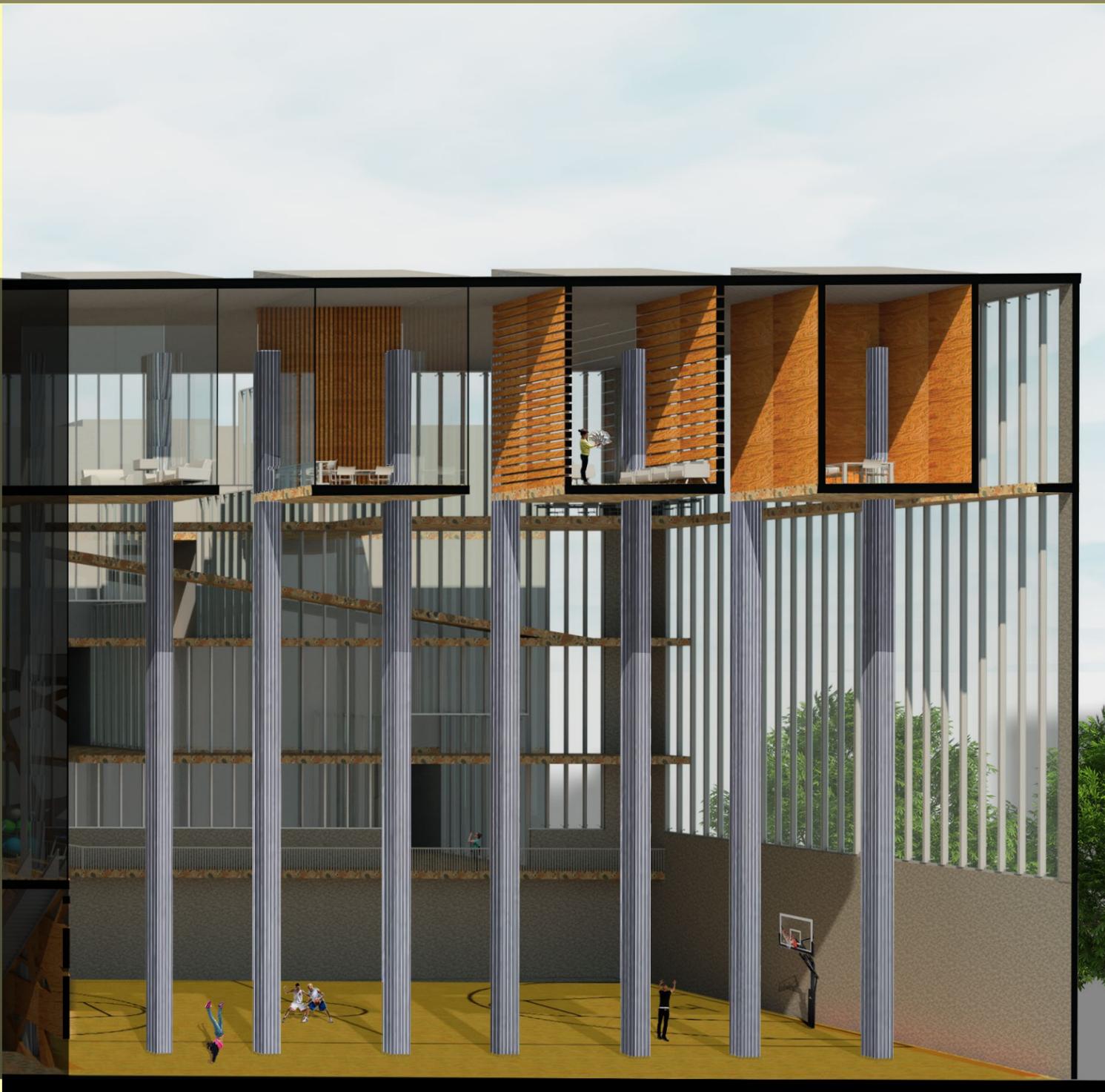
First Floor

- This can be seen through the whole building where there is a hall on every floor that creates a path from East to West. This is not a solid path through the building there are voids of spaces between but the path can always be found and completed.

Gestalt Theory

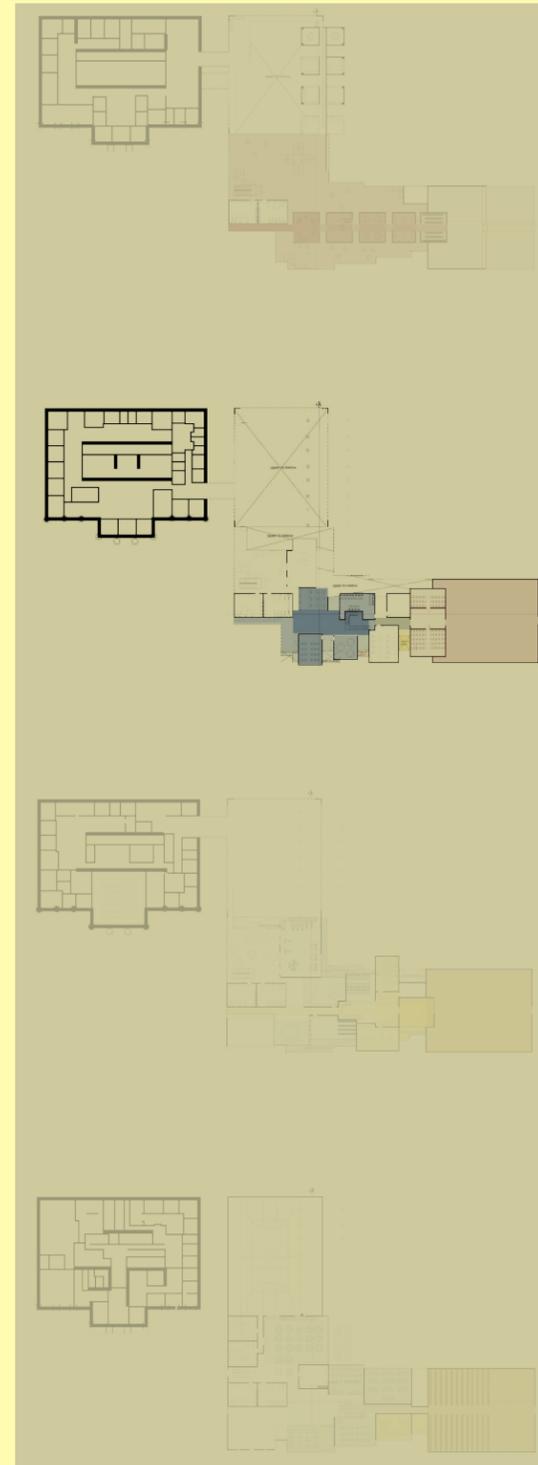


The idea of gestalt leads to Gestalt Psychology, which is the study of how people integrate and organize perceptual information (information they perceive - things they see, hear, and do) into meaningful wholes. This space does exactly that by having classrooms closely connected to the open study spaces. These classrooms become a piece of the larger whole. This is where students can learn from each other as well as the teacher.



The idea of gestalt shows through in multiple areas throughout the building. One very prominent piece being the small individual study spaces floating atop of the gymnasium. These pieces are proportionate to the larger piece where they can fit into the whole. Again relating learning as being active in the same way as being physically active.

Open Space

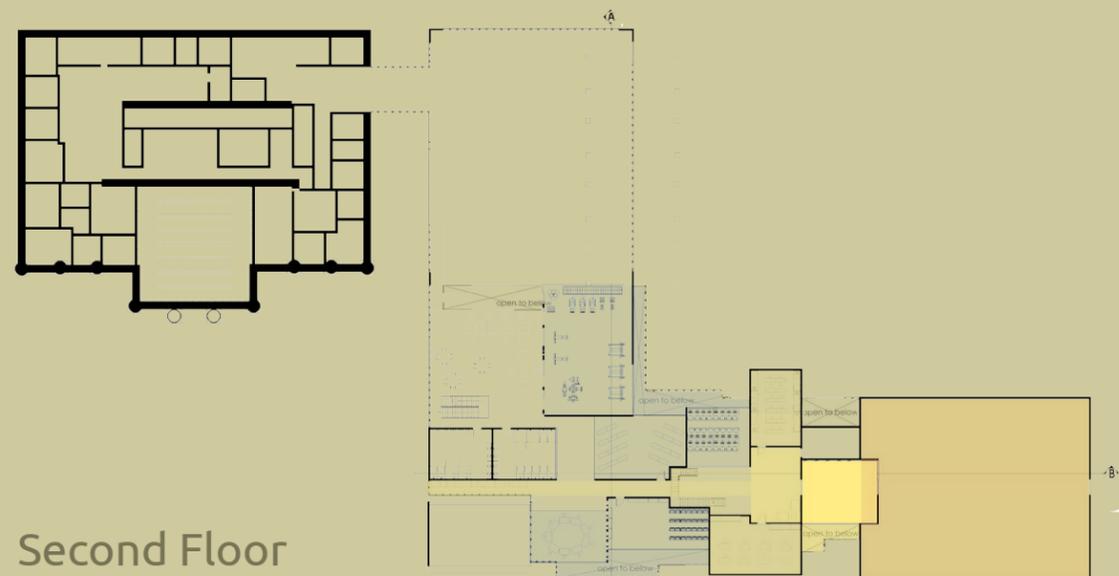


This design focuses on the importance of not only the classroom, but also the open circulation spaces. The classroom spaces can diffuse out into the open learning spaces allowing students to see what is going on, on and individual level as well as a group level. By having these spaces blending together it creates a new focus level as well as a higher level of responsibility. High school is a transition stage so students need to be given a good amount of responsibility before sent off to the larger world.

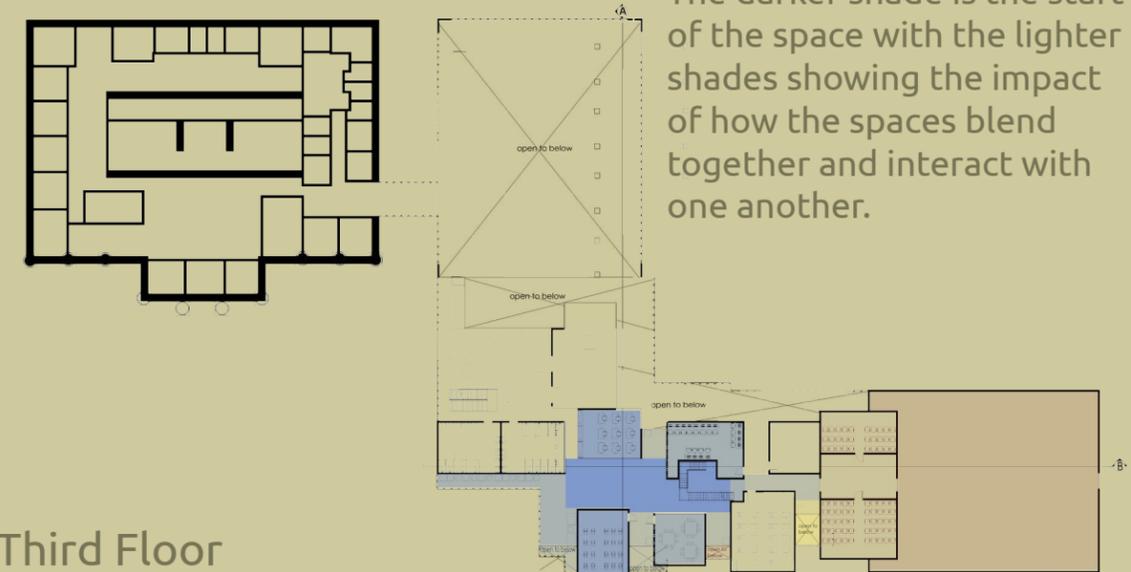
Diffusion



Fourth Floor



Second Floor



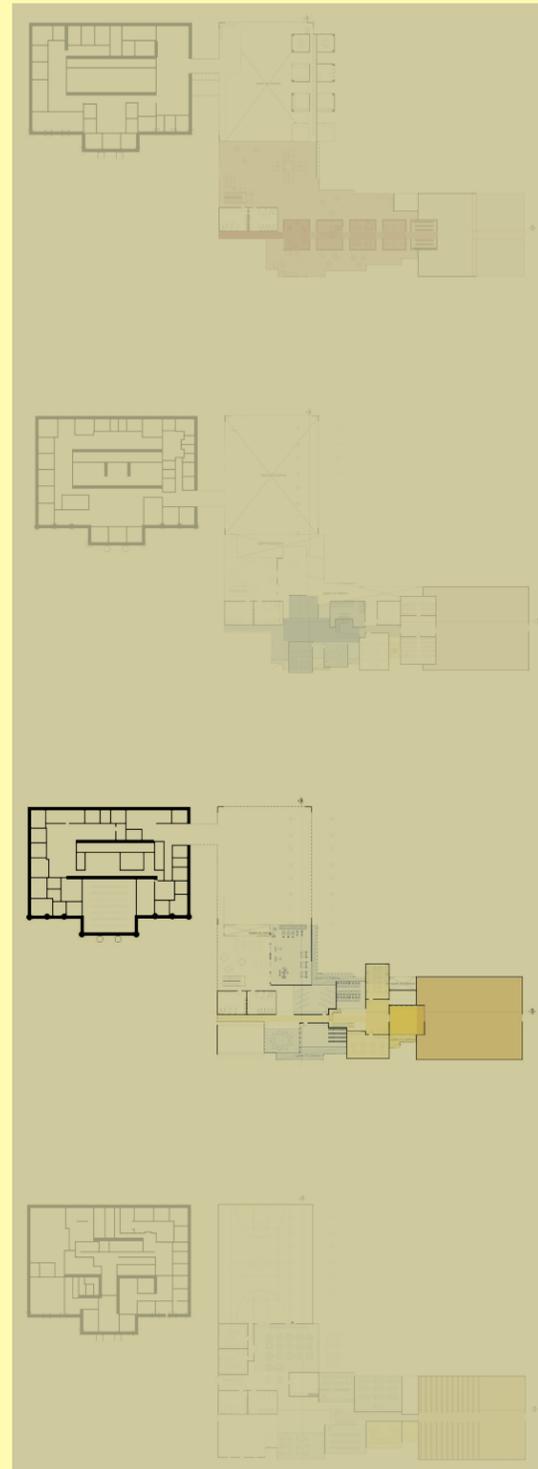
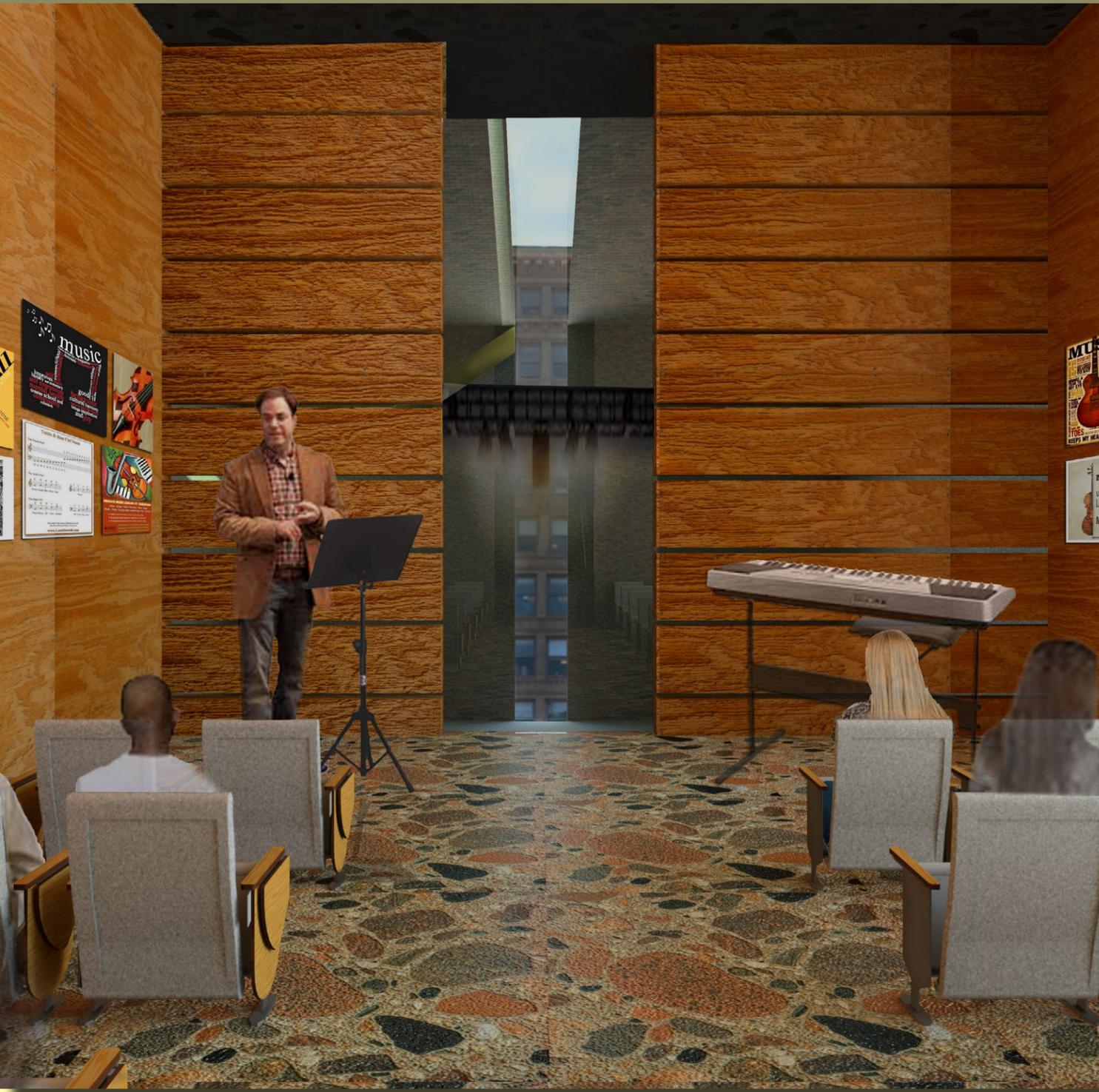
Third Floor



First Floor

These floor plans show 3 different colors that represent different spaces. The darker shade is the start of the space with the lighter shades showing the impact of how the spaces blend together and interact with one another.

Diffusion



Along with the diffusion of spaces there are layers of spaces that can relate to a similar context or a not so similar context such as this space here does. The music room sits above the auditorium, where they can view into the area and sounds will diffuse in either direction. Beyond the auditorium is a view of downtown Boston. This is where the outside world is blending itself back into the world of the students.

Layers



This idea of diffusion and layers blend together to create space similar to this where many senses are engaged. These classrooms and open study spaces are open to each other where sounds will diffuse into another as well as giving the students the ability to view into the classrooms. Each of the design pieces are brought together to create the entirety of the project. With spaces that layer atop of one another and allow for diffusion of sounds and views. As well as blending the theory of gestalt where the individual shines through completing the New high school for downtown Boston.

Boston High School



C O D

E S

Code Analysis

The following pages explain the codes that are necessary for the building type. Codes are very important to know, because they impact the design in every way. The regulations are there for safety reasons and they must be understood. If the codes are not followed there will be no building built. Within education there are even more codes that need to be followed, because there are children's lives at stake.

Building Codes

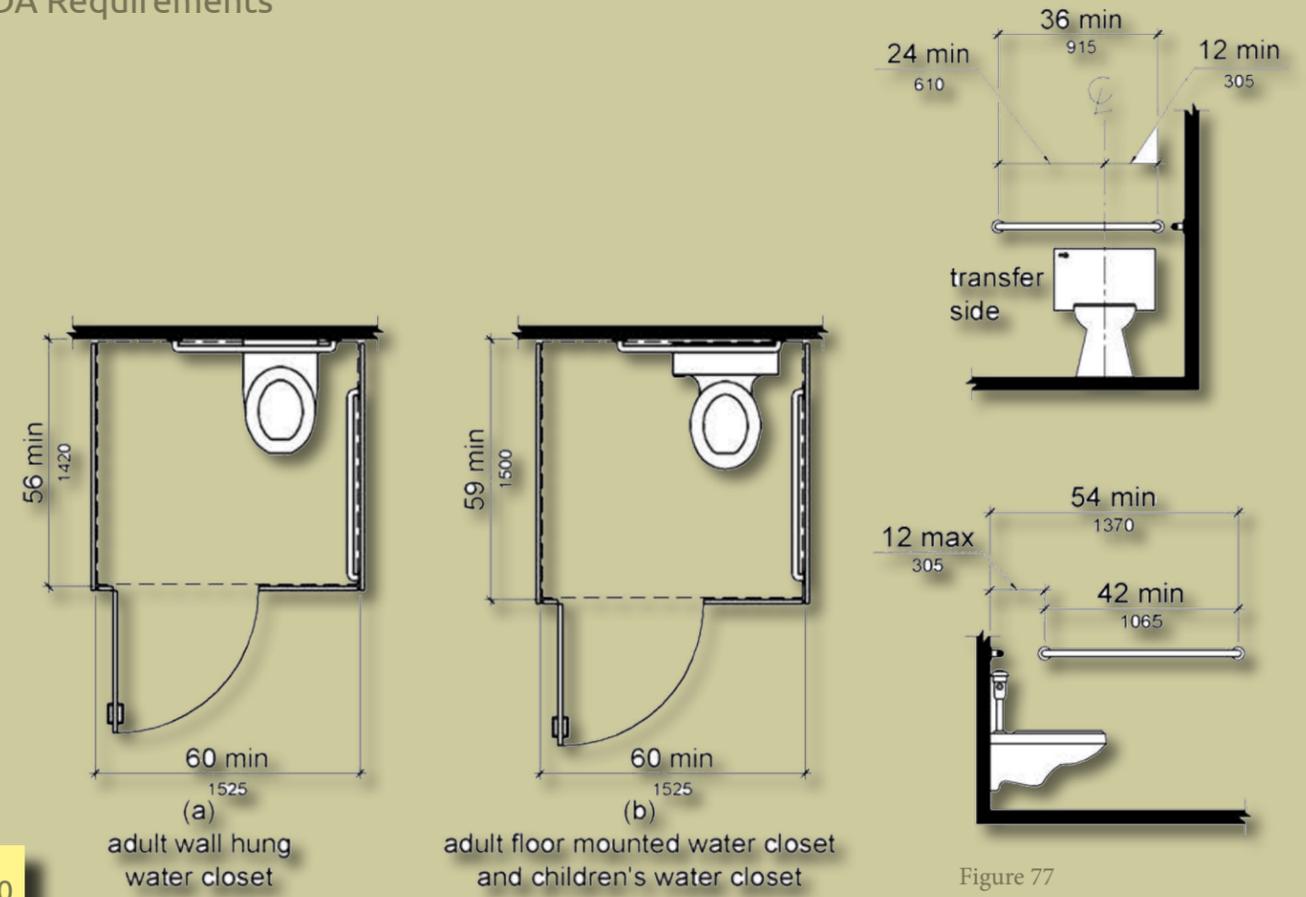
Assembly without fixed Seats	7 net
Standing Space	5 net
Classroom area	20 net
Exercise rooms	50 gross
Commercial kitchens	200 gross
Library	50 net
Library Stacks	100 gross
Locker rooms	50 gross
Storage	300 gross
Swimming Pool	50 gross
Stages and platforms	15 net

Group E Education
 Construction Type:
 Type IIIA
 Square Foot per Ground Floor:
 (S1)94,000 s.f.
 Maximum Height:
 (S)85 ft.
 Maximum Number of Stories:
 (S)3 Stories
 Minimum Exit Width:
 72 in.
 Maximum Exit Travel Distance:
 250 ft (with Sprinkler)

School Building Standards

Classrooms	
1. Small Group Seminar	300 - 500 square feet
2. Regular Interchangeable (20-30 pupils)	750 - 850 square feet
3. Large Group (80-125 pupils)	1500 - 2000 square feet
Computer Labs/Work Stations	30 square feet per work station
Art	
1. General Area (storage not included)	1200 - 1400 square feet
2. Specialized Areas (storage not included)	600 - 1200 square feet
3. Storage	100 - 200 sq. ft./art room
Music	
1. Rehearsal (band, chorus, etc.)	1400 - 1600 square feet
2. Theory & Choral	900 - 1200 square feet
3. Practice Rooms	75 - 130 square feet
4. Ensemble Rooms	up to 200 square feet each
Office Technology	1200 - 1400 square feet
Family & Consumer Science	1200 - 1400 square feet
Technology/Engineering	
1. Fabrication Area	Up to 100 sq.ft./pupil each lab. Minimum 2000 square feet.
2. Engineering Design Area	1200 - 1400 square feet
Science	
1. Lecture-Laboratory	1000 - 1200 square feet
2. Demonstration/General Science	900 - 1000 square feet
Cafeteria	15 square feet per pupil computed to accommodate not more than 1/2 nor less than 1/3 the planned enrollment
Physical Education	
1. Gymnasium (2 stations)	6200 - 7500 square feet
2. Additional Teaching Stations	1200 - 3500 square feet
Library (Instructional Materials Center)	Reading room - up to 15% of enrollment x 40 square feet - maximum. (Other areas may be added, if planned, i.e., office, confere
Auditorium	Seating for not more than the planned enrollment nor more than 1000 persons. If the planned enrollment exceeds 1000, allow 7 s
Administration	up to 1500 square feet
Guidance	800 to 1000 square feet
Health	500 - 1000 square feet

ADA Requirements



A

P

P

E

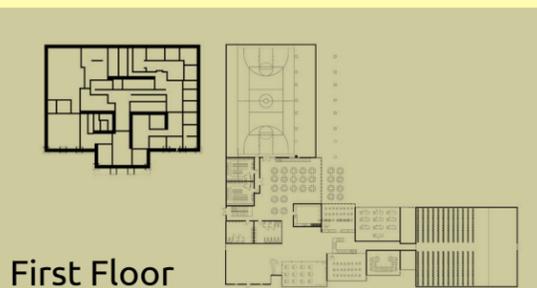
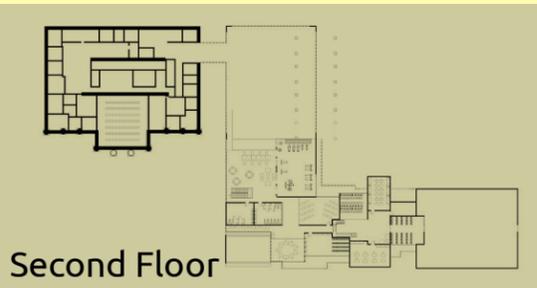
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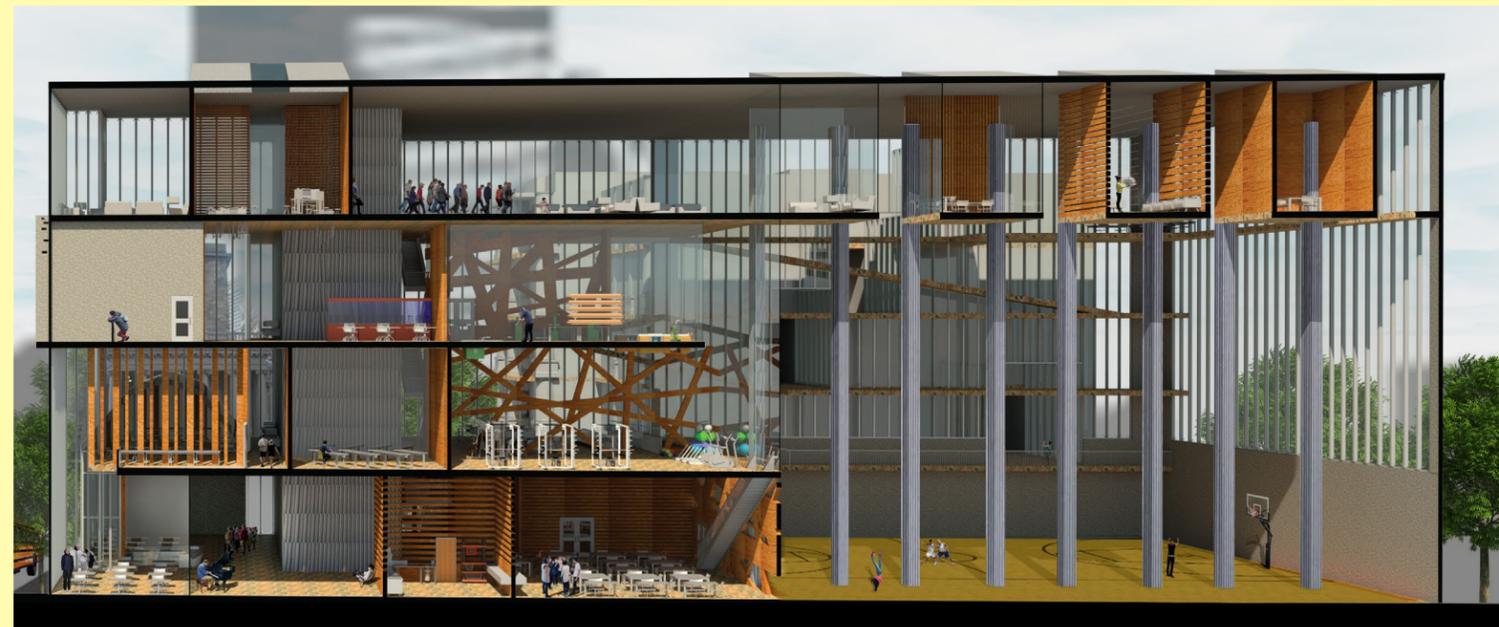
NAAB Criteria: A.1



How will this design of a high school be different than any other high school in America? Within this school, each student will not come out like a manufactured replica of a utopian society. Instead, students find their individuality within the larger whole. Transformable group settings and spaces allow a meeting place for different aptitudes, skills, and horizons. This atmosphere is important so students learn from more than the teacher - they also learn from each other. The architecture facilitates an exchange of people within a community of knowledge.

Following the artefact, the architecture explores layers and diffusion that provide a labyrinthine experience that weaves the individual to the larger world, and information with true knowledge. The layering and diffusion of the labyrinth creates a better learning environment than standardized methods.

These strategies could be well implemented in Boston, Massachusetts, because it hails as number one state for education in America. Working against the status quo of the standardized educational approach, this school will serve as a new precedent in education by prioritizing the individuals within the whole as opposed to focusing on pushing the students through the system.



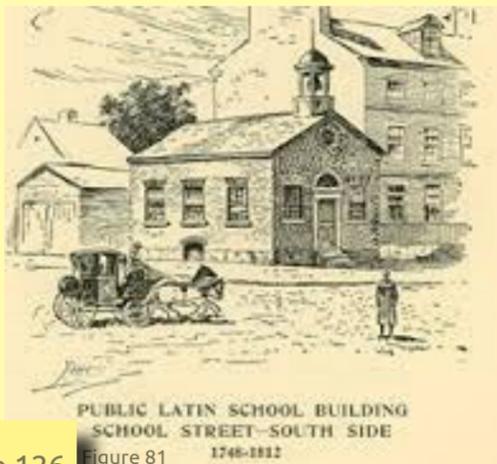
NAAB Criteria: A.6



Figure 79
THE FIRST LATIN SCHOOL, ON NORTH SIDE OF SCHOOL STREET, 1635.



Figure 80



PUBLIC LATIN SCHOOL BUILDING
SCHOOL STREET-SOUTH SIDE
1748-1812

Boston Latin School was the first public school in the United States which was founded on April 23, 1635. The school has moved locations a few times, the first three locations were along either the North or the South side of school street. The need for relocations was its growth. "From its beginning, Boston Latin School has taught its scholars dissent with responsibility and has persistently encouraged such dissent." The school is still in use today goes by the following mission statement; "Boston Latin School seeks to ground its students in a contemporary classical education as preparation for successful college studies, responsible and engaged citizenship, and a rewarding life.



The lessons that were learned from No Child Left Behind Act of 2001, Divergent movie, Kolumba Museum and, the Boston Latin School have influenced the design of the new high school for Boston.



Figure 83



Figure 84

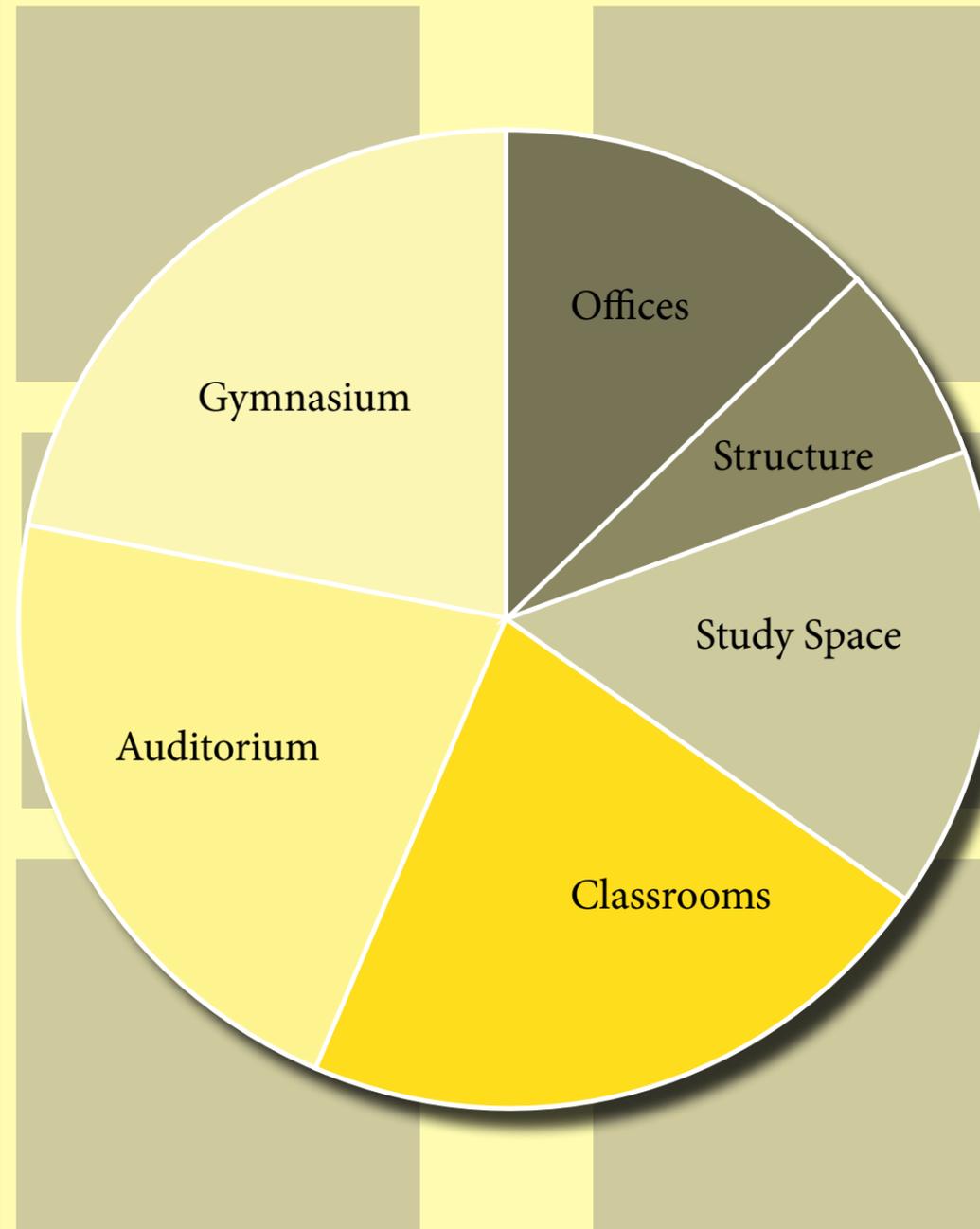
NAAB Criteria: B.1

Function

The building is meant to stimulate the students minds by creating an environment that can fit the individual needs of all the students. To achieve a stimulating environment that works for all students will require there to be changing elements. The classrooms will no longer be 20'x20', white wall, square rooms. The spaces will be larger to allow for varying classroom sizes. With the larger space the room can be used for a group lecture, group conversation, small group conversation, individual work, etc. Classrooms should be able to help the students learn in group setting, because the students often learn best from each other and not just the teacher.

Form

This high school will provide spaces for optimal learning. Not only in the classroom, but outside of the classroom as well. Not every student learns in the same way, so we must provide multiple ways for the students to learn and study. As already explained the classrooms will be designed to provide variation within the room to help the students learn in the best way that they can. There will also be open lounge spaces that are separated from the classroom where students can sit and talk or study the option is theirs. By providing spaces where they get to decide what they are doing will force them to become more responsible and choose to study over socializing with friends. There will always be students in the area socializing, so the area will force the students studying to work in distracting conditions. Being able to



work with distractions is good thing to do, because once you leave school quiet spaces rarely exist. When the students learn in quiet rooms they are not actually learning how to work in life. These spaces will come together to create a space for the students to learn in the way that they would choose to learn. Giving them they option puts them in power of their own lives, which they should be at the high school level.

Economy

The high school is supposed to be supporting the students learning, so materials that are used must compliment this idea. Local materials should be used to help with the costs and help provide something that is recognized by the students. The school systems are always changing and the high school must be designed

in a way that will think about how the school could be changed in the future due to the new technologies in the school systems.

Time

The high school is placed at the heart of Boston, Massachusetts which is a city that is continuously growing. Therefore, the school must be able to adapt to the growth without overtaking the initial needs of the school. If the students lose their spaces that provide variety, the school will lose its complete purpose. The site is currently containing three separate buildings that will be a part of the high school, so if there is need for expansions it does not need to be to the current buildings. The additions could be more buildings on the adjacent sites.

NAAB Criteria: C.2

Problem Identification

Our current education systems are much like a utopia, where there is no room for individualization. Each student must follow the strict ways that the school has told them to. This design allows for students to work together and have a better outcome in their education. This is done through spaces that are layered a top of one another allowing sounds and views to diffuse into the surrounding spaces. Having a connection to something that is not related to you directly helps you orient yourself within a space, this is seen in the design where a connection to the outside world if in the near distance. Also by bringing the idea of gestalt into the design, where all the pieces are brought together to be a part of the larger whole. There are spaces that

directly relate to others where the space can visibly be seen as a piece of the whole and that the other pieces need to come together to complete the whole.

Setting Evaluative Criteria

Peter Zumthor designed a modern art museum which is built on the ruins of the Gothic Church of St. Kolumba in Cologne, Germany. This church was bombed in 1943 leaving little of the building left. Zumthor took advantage of this opportunity to build a piece of architecture that embraces the foot prints of history and what is left of it. Jakob Hybel states, "It might appear to be hopeless to reconcile these many layers of history, but it seems Zumthor chose to see it as a challenge and he has intelligently managed to add to the architectural continuum, while keeping and embracing the per-existing fragments." This design strongly relates to the history of its place, especially

reaching to what happened during WWII. Building on top of what is left creates a friction between the old and new. "As you stand amidst the room with all layers of history exposed, protected by the outer walls that gently wraps everything together, there is a serene calmness and odd timelessness." This friction is calming, because you are completing the past and building a new piece based off the old, without the old the new would be meaningless. On the historical site, there are small cut openings in the exterior brick wall that allow light and air into the building. The light in this area is diffused from the small openings leaving a soothing atmosphere to take in the history of what was once there. This is no ordinary museum, there are religious statues among the contemporary art mixing the old and the new once again. This is part of how the building

is layered, by putting a piece that relates to what was once there next to a contemporary piece that relates to where we are now. The architecture is very simple which allows form the metaphorical elements to shine through. All the pieces come together to create a museum of the old and new.

Analyzing Solutions

A like Peter Zumthor the design of my high school will relate back to history by being on the site of the first public school in the United States, The Boston Latin School. Building upon this history starts the layers of the project with a high contrast of the poor education system and what is to come. The focus of the architecture is to help influence the ways that students learn instead of creating a temporary place that has no effect on the outcome of the student. There are three main styles of learning; visual, auditorily, and

kinesthetic. Spaces can be made to accommodate these styles, but it does not end after the three styles. Each combination of style can be blended together to create a more unique and diverse way of learning. Some spaces have half walls that are open to the two classrooms below while others have glass walls that relate to the classroom that is across the hallway. Another style is one that is completely visually blocked off, but can still hear the surrounding noises such as other classrooms and even to the outside world. It is important for these spaces to come together so it can provide an opportunity for the students to come together and learn as one.

Once all the students come together and realize that they can not only learn in their own ways, but they can also learn from each other. There are many individual study spaces

in the building that still connect to others around creating the perfect blend. Some spaces are larger allowing from group interaction or study space within the group. There is one hallway that is related to the hallways above and below it by creating a line that cuts through the building. From the East side, all the way to the West side you can view the buildings that are on either side. Within this hallway there are other spaces that are created to help complete the gestalt effect.

Predicting the Effect of Implementation

Once there is a newly designed high school for students we will see the success rates rise in every possible way. By designing a space specifically for them, they will have the chance to learn and enter the world once they are ready.

About the Author

Bailey Nelson



Previous Work

2nd Year Design Studio

Fall 2013

Tea House

Spring 2014

Dance Studio

Bird House

Dwelling

3rd Year Design Studio

Fall 2014

Fire Station

Cultural Center

Spring 2015

Library for NDSU Campus

SC Johnson Research Facility

4th Year Design Studio

Fall 2015

High Rise

Spring 2016

Study Abroad

Internships

Summer 2015

Cole Group Architects

Intern Architect

Summer 2016

The Ackerberg Group

Construction Management

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