

DAYCARE DESIGN FOR CHILDREN WITH AUTISM

Lily



DAYCARE

Pad

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Project Overview

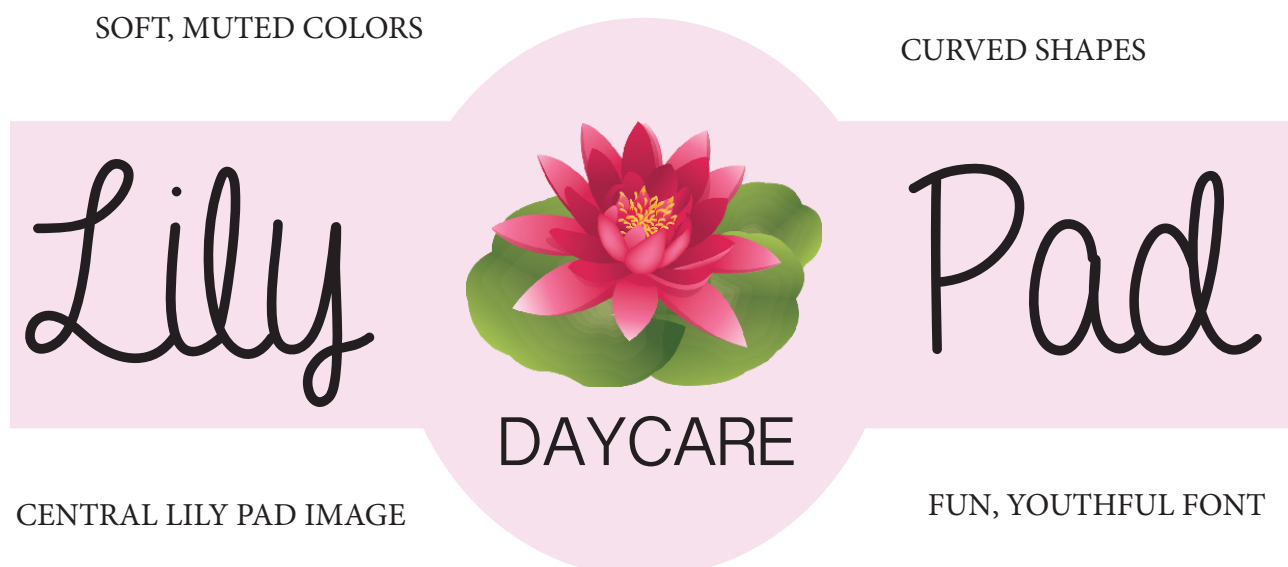
Problem Statement:

To design a daycare center that is dedicated to children with autism. The building, originally a small church, must stay as it is. The daycare facility is to be located in a cold climate, and as such, requires an interior space that allows for muscle activity. The center will accommodate 20 children between the ages of 3 to 5 years. ADA Guidelines will be incorporated into every space throughout the center. The concept of a lily pad will also work as inspiration for the design of the daycare and will be deconstructed to its essential elements and principles in order to be integrated into the design of the daycare. Sustainable features will also be present in the daycare through the use of green materials.

Design Statement:

The plan for the daycare center is to create a fully functional daycare that accommodates both children and adults. The center will be inspired by the lily pad and embody a free, organic nature vibe in order to bring about serenity and peaceful learning for the children with autism. The majority of the daycare will be a light blue wall color for calmness with pops of a light green color. The layout of the building will be very predictable and the quieter areas such as the classrooms will be separated from the louder play spaces. The rooms will be large enough to occupy twenty students and will have lots of open space for play and adventure. The center will promote learning, growth, and community communication. The overall feel of the daycare will be more residential than commercial to make the kids feel more at home and comfortable.

Company Logo Design:



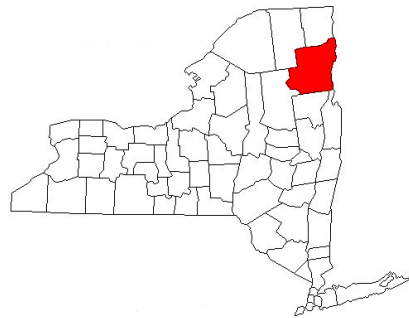
Programming Phase

Client Profile:

The client is the administrator of the daycare facility who is looking for a family- friendly daycare center that is both welcoming and engaging. Along with the administrator there are two full time instructors, two part time instructors/aides, and a secretary/receptionist. The daycare is being constructed to occupy 20 children between the ages of 3 and 5 years olds. This space must be designed to

Site Analysis:

The site will be situated in a colder climate in Westport, Essex County, New York. This site overlooks Lake Champlain. The building used to be an old church and so the existing structure now needs to accommodate the needs for a daycare center. One of the requirements for the construction of this space is to keep the existing exterior of the building and only add windows and doors in pairs to continue the symmetrical balance of the exterior of the building. The building will blend in with its surroundings which consist of a rather wealthy residential community.



Project Parameters:

- Entry with reception station: chair and computer, parent check-in, communication center, waiting area, and seating for four people (~280 sq. ft.)
- Administration office: desk, computer, chair, 2 guest chairs, and file cabinet (~99 sq. ft.)
- Space for sick children to wait for parents: secluded from other children with a small cot that is observable by the administrator or receptionist (~8 sq. ft.)
- Indoor play space with activity equipment: This space should be adjacent to the doors that would access the outside play space- indicate on floor plan (~252 sq. ft.)
- Two classrooms: half carpeted floors for story time, etc. and half resistant flooring for crafts and activities sink with draining board, toys, books and craft storage. There should also be storage for the sleep mats as well (~287 sq. ft. each)
- Bathrooms: two for children- must have windows in doors or low walls for adult supervision, adjacent or in the classrooms. One for adults (parents and staff). All bathrooms must be ADA compliant. (~56 sq. ft. each)
- Multi- purpose activity/eating area: seating for ten children adjacent to kitchen (~263.25 sq. ft.)
- Kitchen: large refrigerator, three sinks (wash, sterilize, rinse), range top and oven, work surfaces and storage (~154 sq. ft.)
- Employee break space: does not need to be a separate room, but must allow employees the chance to take a break from children (~27.5 sq. ft.)
- Lots of storage

Autism Design Features:

Those with autism require specially designed spaces. For instance, classrooms need to be free of distractions so that they can direct their focus on their learning, walls need to be painted in subdued colors to ease their emotional behaviors, visuals need to be displayed throughout the daycare to assist children, and rooms need to be laid out in such a way that everything is very stable and routine for them. That is why the classrooms will be simple and very clean lined as to not encourage any distractions or sense of over stimulation. Instead, the quiet areas meant for work and study will be smaller more cozier areas for one on one connections with the students and teachers.

- Aviary blue and Shagreen colored walls (muted colors)
- Same setup in both classrooms= no surprises
- Fun textures and colors in the sensory room for stimulation
- Lower ceilings in reading area for quieter more intimate time
- Higher windows for less distraction
- Cozy chairs in sensory room to feel secure
- Designated quiet and loud spaces
- Labeled rooms on doors
- Non-institutional feel, more residential and comfortable
- Calm lighting to promote calm behavior and direct attention
- Small grouped tables to promote socialization
- Individual spots on the carpet to help with personal space
- Personal cubbies and hooks that they have responsibility for
- Sound proof walls to keep out loud distracting sounds from play areas

Sustainable Design:

Sustainability is important for the environment, the quality of the building, and its occupants health. Using lots of environmentally friendly products for the building materials help reuse and recycle products. Installing lots of windows also help bring in natural light while cutting down on energy consumption for heating. Choosing windows with a second layer of glass to allow for insulation helps to also reduce the reliance on heating systems. All of these key features would help make a healthy living environment for young children and help teach them about the importance of environmental protection. Below is a list of the sustainable materials that will be used in the design of the daycare center:

- Repurposed tires for flooring of indoor play space
- Double layered windows to better insulate the daycare
- Pre-set lighting levels for energy efficiency
- Energy efficient LED lighting to reduce lighting power density
- Intelligent, programmed thermostat that controls the room temperature
- A low-flow faucet that uses 1.0 gpm
- An automatic sensor on the faucet that is self-charging
- The quiet toilet uses pressure-lite technology and 1.0 gallons per flush
- Recycling bins in each classroom to promote recycling
- Zero VOC paints are used to reduce contaminants
- Forest stewardship-certified (FSC) wood floors stained with natural dyes.

Universal Design:

The daycare center will be designed to accommodate people of all heights and abilities. Since both small children and adults will be using the center it will have to cater to both of these demographics needs. Below are examples of universal design that will be used in the space.

- Cubbies on the ground level for child access and bench seating on top for both child and adult to sit, above that will be additional upper cabinet storage for adult access
- The reception desk is universally designed because of the split level counter heights, one is lower than the other two so that a small child may see over it
- The children's bathroom is designed at child height with lower toilets and sinks for them to reach
- The indoor play space is both sustainable and a safety feature with the padded repurposed tire flooring.
- The layout of the building is easy for people to use with the classrooms located on one side of the building and the louder play areas on the opposite side
- The half walls in both the sensory room and multi purpose space allow for easy communication between child and adult
- The four colander sink in the kitchen saves space and is energy efficient
- All of the sinks are automatic faucets for easy understanding of use
- The preset thermostat and control system are easy for use

Inspiration Images:

A live fish tank will be located in the reception desk to create interest and add life to the space. It's also the first thing parents and children see when they enter the daycare center.



The sensory room's purpose is to engage the children in active thinking and creativity. Autistic children need a form of stimulation which can be aroused with the help of bright colors, fun textures, and mood lighting.

The daycare needs lots of storage for the children's belongings, art and craft supplies, books, and toys. Located at the main entrance will be cubbies on the ground for children to easily access and store their shoes and bags. Those cubbies will also double as bench seating. Above that will be hooks on the wall for jackets and then upper cabinets for additional storage which the teachers and parents will have access to.

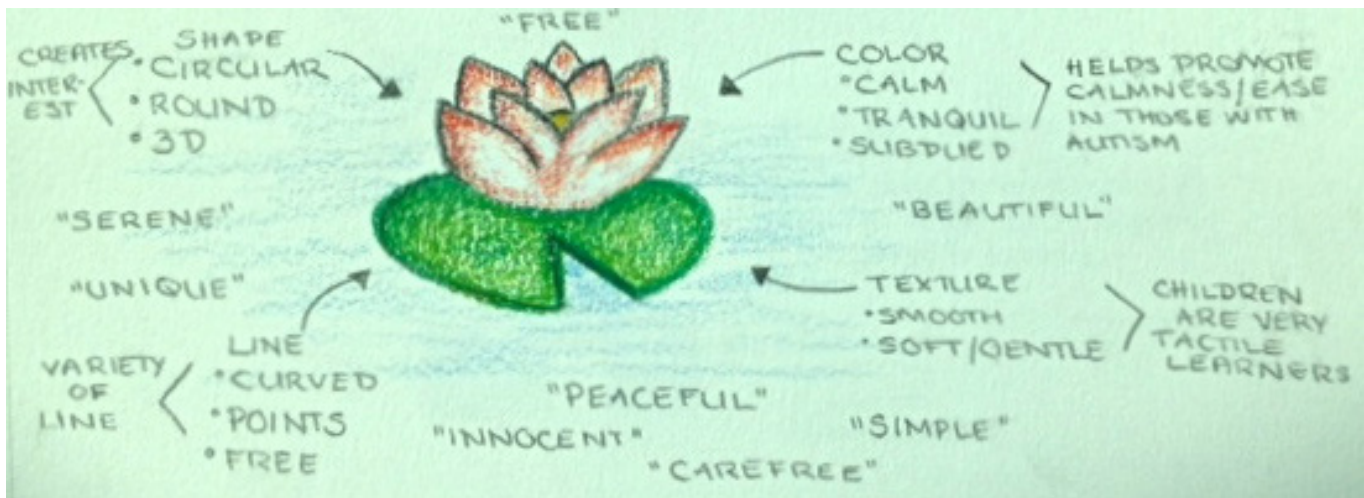


Concept Development Phase

Concept Statement:

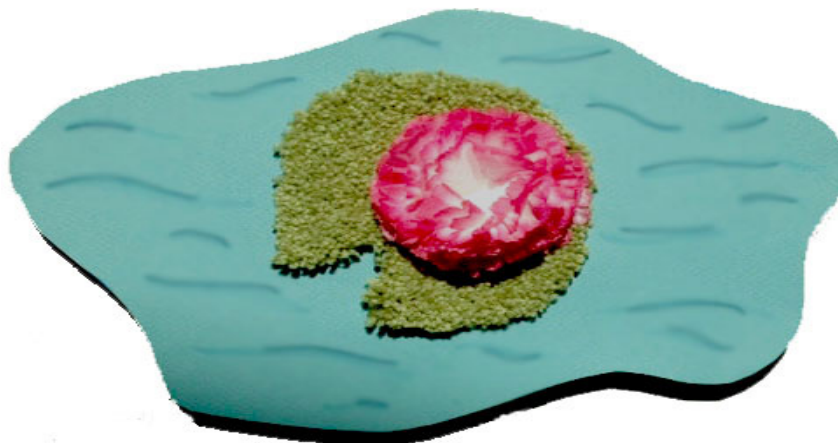
The lily pad inspires a sense of tranquility and serenity which also promotes a sense of ease. Lily pads are beautiful plants which float effortlessly in ponds and emulate calm behavior. The pad itself is the foundation and strength which supports the delicate lily.

Concept Deconstruction:



Concept Model:

The concept model incorporates the essence of the lily pad and is a literal representation of the subject. The lily pad is created from a sample piece of green carpet to allow for the texture element which children with are commonly drawn towards because they tend to be tactile learners where they need to physically feel an object and its surface to understand. The lily is made from fabric cut lei flowers and is supposed to also provide a texture with the ruffled edges. The colors used in the whole composition are subdued because its more simplistic and helps a child focus rather than using vibrant, attention seeking colors. The lily pad model sits on a small puddle of water which I cut into an organic shape to mimick the organic, curved shapes that will be used in the design.



Concept Reinterpretation:

- Light colors from the lily pad incorporated into the wall color of the daycare
- Curved shapes in the furniture and carpet area and on the ceiling in the classroom
- Light pink, like that of the lily flower, will act as an accent color
- The open space of the multi purpose room/ reception shows the free nature of the floating lily pad
- The sensory room mimics the textures of the lily pad and the colors associated with it
- Three dimensionality in the reading area with the lowered ceiling height to create a specific space
- Easy movement between classrooms for the floating effect
- Floating reception desk in the middle of the room like the floating lily pad
- Serenity of the layout promotes ease and calmness



Concept in the Design:

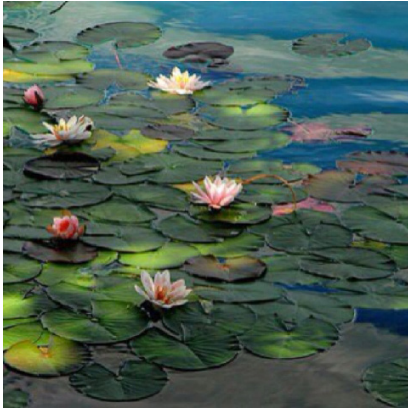
I plan to incorporate the lily pad concept into the design of the daycare by bringing in lots of soft hues and textures. The majority of the daycare will be painted in either a light blue or green color to promote calm feelings and tranquility. This will allow for the autistic children to feel more relaxed and at ease while learning. Since learning can prove as a difficulty for these children, the light colors and simplicity of the space will help aid their learning through their environment.

Especially in the classroom, where quiet learning is the key to success, the room will be predictable and not ornate in order to direct the children's attention to their studies. The play space and sensory room will be able to incorporate more bright colors and fun elements because active play is encouraged in these spaces.

The lily pad has free, organic shapes to its form and I want to incorporate that into the design by the shape of the furniture. I will use circular tables in the classrooms and multi purpose space to mimic the circular shape of the lily pad. The colors from the lily pad will also be present in the daycare. The main wall color will be a light blue that is almost white and the accent color will be a light green. The blue represents the serenity of the water that the lily pad floats on and the green will represent the lily pad itself.



Concept Inspiration



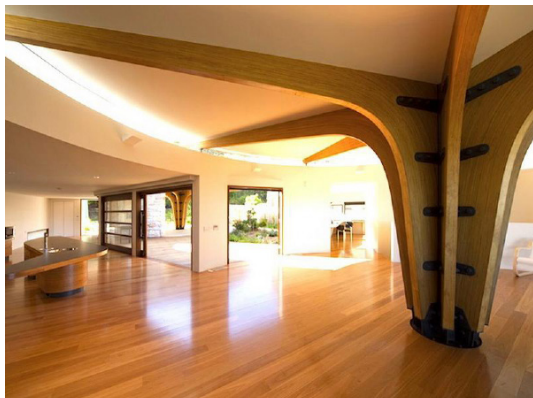
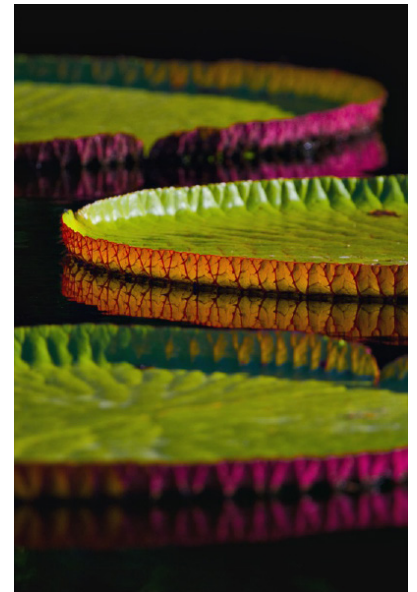
The colors of the lily pads in this image represent the general color scheme I will use in the daycare. The colors will be more muted to fit with the design for autism and create less of a distraction.

This building, designed by Frank Lloyd Wright, was inspired by a lily pad. The concept is apparent in the tall lily pad- looking structures that raise to the ceiling and create a covering.



The decoration in this room is modeled after the lily pad theme. The designer clearly used lots of neutrals and green tones to emphasis the lily pad's features. The daycare will be similar in the sense that the color palette will be mostly neutral with small pops of color. The furniture and finishes will also reflect this simple, clean line feel.

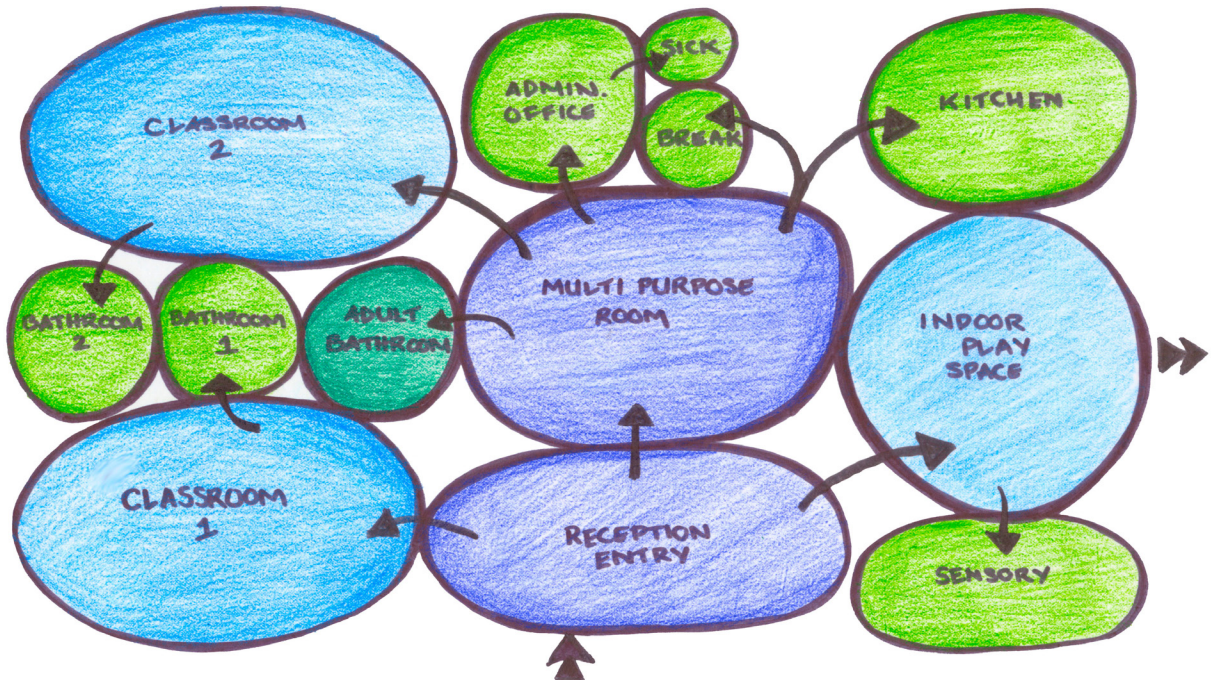
These unique lily pads boosts a vibrant, attention grabbing color which creates a sense of energy and excitement. I want use this color idea in the sensory room to promote energy and brain stimulation. The colors are fun and youthful to reflect the personalities of the children in the daycare.



This house has a giant center column which is modeled after the lily pad. The roots are symbolic in the column itself and the circular piece on the ceiling is the pad. I like this idea of incorporating height while still using the theme.

Schematic Diagram Phase

Bubble Diagram:

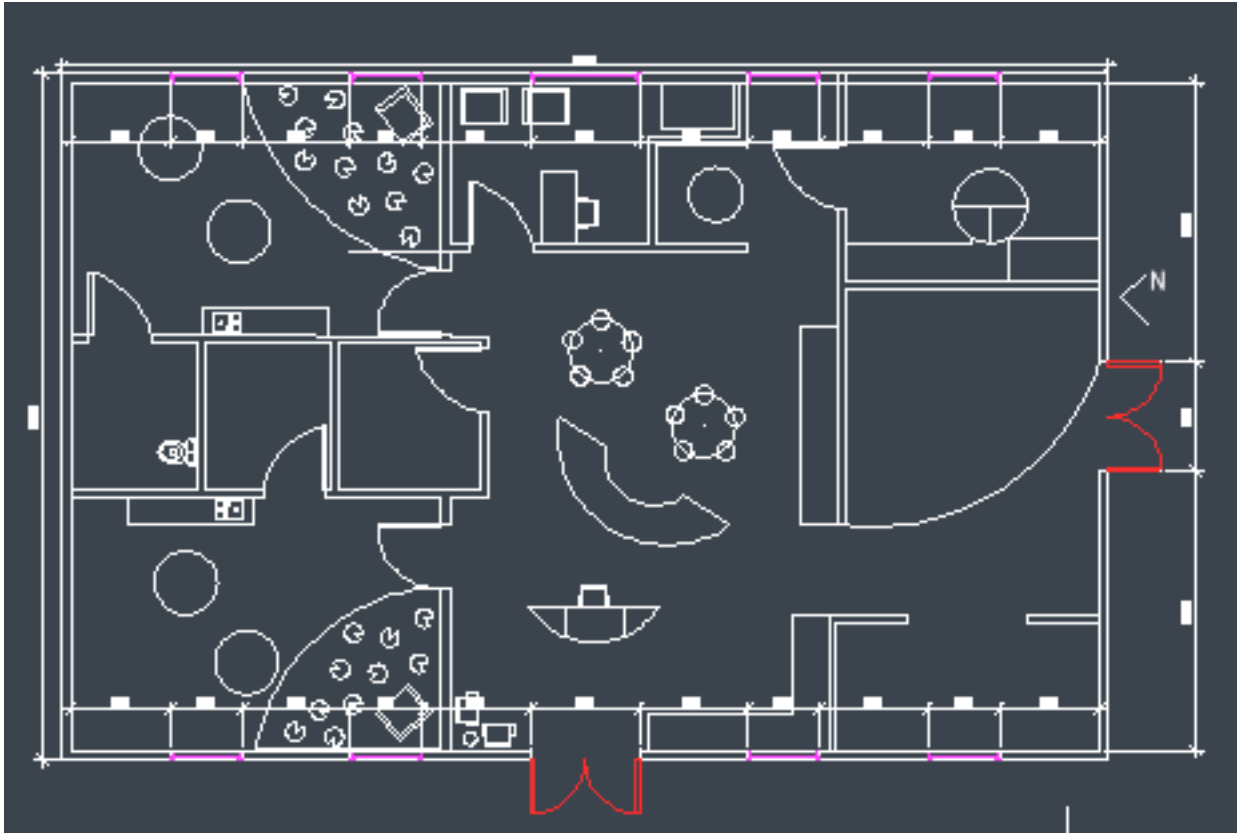


Block Diagram:

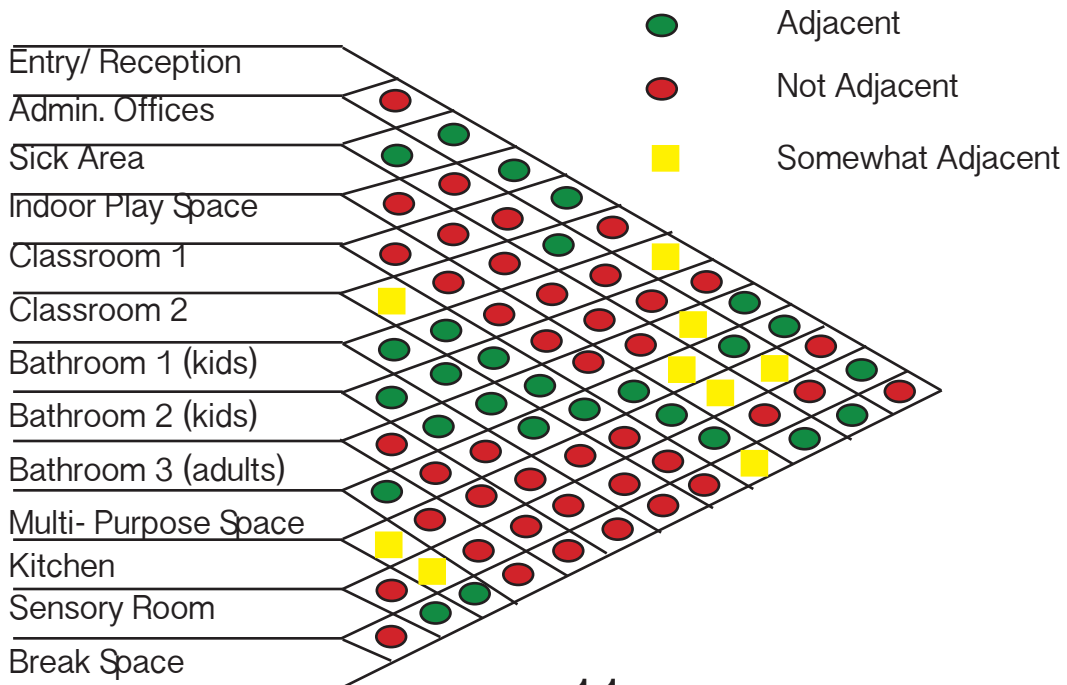
- Community Space
- Public Space
- Private Space
- Adult Space



Loose Floorplan:



Adjacency Matrix:

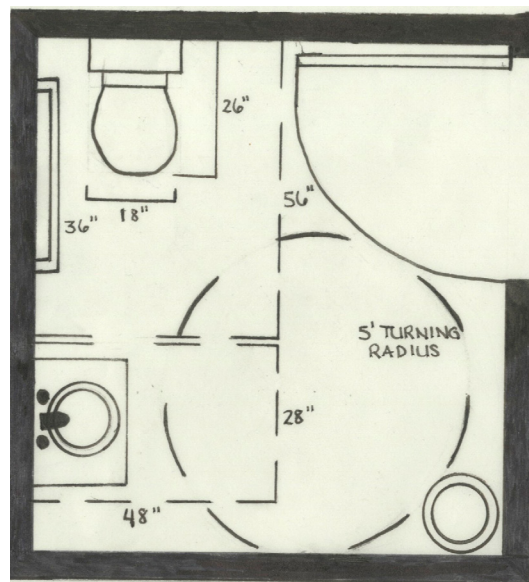


Design Development Phase

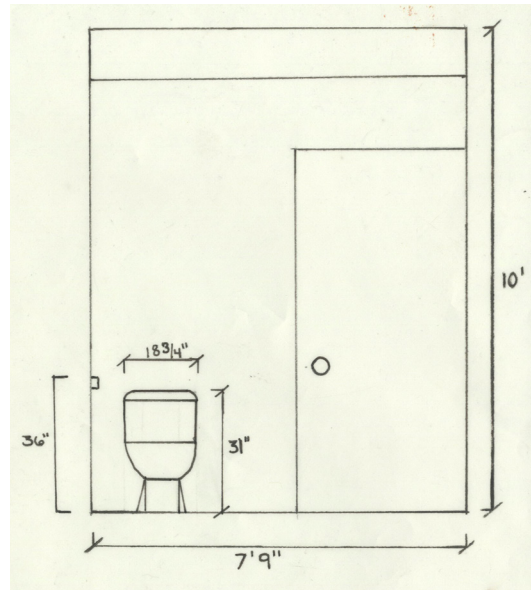
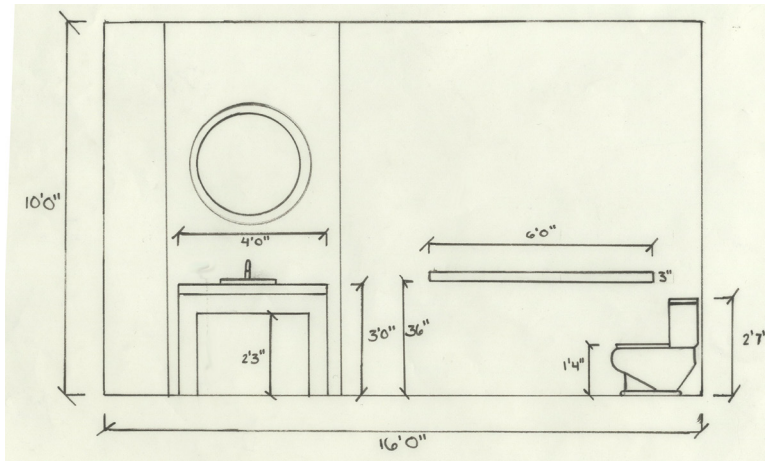
Rendered Floorplan:



Enlarged Adult Bathroom Floorplan:



Enlarged Adult Bathroom Elevations:



Rendered Cross Section Cut:



Sketched Perspectives/ Vignettes:



Reception Area



Reading Area in Classroom

Rendered Perspectives:

Perspective of Classroom 1



Perspective of Multi- Purpose Space/ Reception



Furniture, Fixtures, and Equipment for the Classrooms:



20" Hokki Stool
Item Number: 24498-BL
VS America Inc

35-210
RIVERSIDE
Wood Framed Chair - Biscuit
Tufted Seat and Back - Single
Welt Frame Trim



48" Round Ash Table
Item Number: 70303-20

Ash Chars
Item Number: 70293



Kaplan Early Learning Company



Mobile Adjustable
Bookcase without
Lip - Super-Sized
Item # 769

Home Legend
Brushed
Strand Woven Cane
3/8 in. Thick x 3-7/8
in. wide x 36-1/4 in.
Length So...
Model # HL212



Commercial Electric
4 in.
White Recessed Baffle Trim
Model # HBR201LWH Store
SKU # 264305



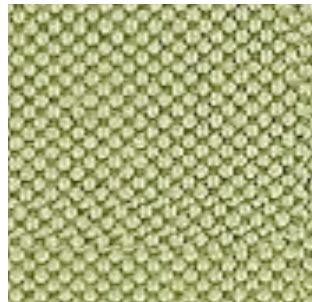
SW 6422 Shagreen
Interior / Exterior
Color Collections CR 8,
Crackle, Precious Baby,
Fisher-Price® 61 RGB
ValueR-201 | G-205 |
B-156 Hexadecimal Val-
ue #C9CD9C LRV58



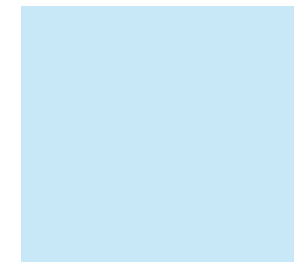
Putty/White
Pirput Parput Printed
Cotton
Marimekko
Benz Fabrics



Light Olive Green
Belgian Linen Blend
Benz



SW 6778 Aviary Blue
Interior / Exterior
Color Family Blues Color
Strip 112 RGB Valu-
eR-201 | G-227 | B-234
Hexadecimal Value
#C9E3EA LRV73



Home Decorators
Collection Andover -
Color Hay Stack 15 ft.
Carpet
Model # HDA1800LP6



Appendix

Research Paper:

A daycare facility needs to act as a child's home away from home. A young child seeks guidance and support from their parents and when the child is placed in a daycare setting those needs need to be met by the environment around them. The design incorporated into a daycare setting, especially one to accommodate autistic children, would have to take into consideration the child's individual medical needs, a child's ergonomics, and the sustainability in the design and its effect on its occupants.

When designing a facility for young children, it is important to keep in mind the demographic you are designing for and how the space will be used. In this case, the space is being designed for autistic children between the ages of three and five. Children require structure and routine so the classroom would need to be designed in such a manner that each space would be designated to a certain activity in order for the children to know when they can play and when they need to learn. The layout of the interior would group these common rooms together. For example, a room meant for art and messy activities should be relatively close to the play area and the classrooms should be adjacent to the reading area. Children need predictability in their day-to-day routines and so a daycare should be designed in such a way that the child knows where they can quietly read a book as opposed to where they can be loud and play. A childcare center also requires clear paths to and from activities for easy access. Other design necessities for a successful daycare include well-defined boundaries, movement and freedom for exploration, privacy, variety, flexibility, stimulation, and lots of empty space. These design elements along with trying to make the space feel more residential than commercial help the children to feel more comfortable and at home.

Autism is a mental disorder which covers a wide spectrum of symptoms and levels of severity. Early brain development is the known responsibility for the disorder however it can also develop from a genetic vulnerability. The disorder's symptoms affect many individuals differently and ranges in complexity. This disorder can be detected and diagnosed as early as the age of three and with proper treatment it can be managed and controlled. Doctors in the field of study have categorized the symptoms into three common categories; communication challenges, social deficits, and repetitive behaviors. These symptoms hinder an individual's ability to complete everyday tasks such as holding a conversation, expressing their needs and emotions, and learning basic skills.

Many people with autism find it particularly hard to concentrate and therefore their readiness to learn may be absent. In turn, they have difficulty keeping up with groups of kids in school and therefore have a reduced independence and rely more on the help of others. Classroom aids need to assist autistic children so that they do not become overwhelmed which is common among people with autism in such situations. Children with autism tend to learn better with visual aid and can communicate more with the use of a visual representation.

Teaching an autistic child can prove to be a challenge since it is shown that their transfer of learning across settings and context is inadequate. Instead, the focus of their learning should be on setting singular goals for specific experiences which need attention. This could be to simply work with a children on improving their interaction with other students. In order for this to be accomplished, the daycare needs to provide the individual with appropriate curricular and environmental adaptations.

The environment that the child is learning in needs to be beneficial towards their health and personal growth. For a child with autism, that environment needs to work in such a way that they can concentrate on their studies without becoming distracted by their surroundings. This could simply mean providing sound proof walls to keep out excess noise, installing more windows for natural light instead of harsh florescent lighting fixtures, and incorporating less vibrant colors in the interior to reduce the emotional excitement it causes in children with autism to help calm them.

The American with Disabilities Act, or ADA, is a set of policies which state certain clearances and regulations for building exteriors and interiors. In numerous sections within the document the safety of children is addressed along with specific rules to follow including minimum and maximum height requirements. Among the long list of child related regulations, materials for play spaces, specified age group areas, and height requirements for equipment are some of the few. For example, section 240.1 states that separate play areas are to be provided on site for children in different age groups to meet their physical ability. It also says that ground level play components should be accessible to children with disabilities and must be integrated into the same playground as those of the other children to avoid isolation. Section 308.1 discusses the need for reach ranges of specified measures. For a forward or side reach for a child between the ages of 3 and 4 the minimum height must be more than 20 inches but can not exceed 36 inches. Railing heights are another adjustment needed to provide the correct safety for a child. In section 505.4 the maximum height measured from the top of the railing to the surface of the floor or ramp must not surpass 28 inches. Drinking fountain's spouts can not be taller than 30 inches from the floor and 3 1/2 inches from the front of the unit. If any storage units were to be used in the design of the daycare they would need to a minimum of 40 inches (maximum of 48 inches) above the floor for easy access at the child's height. Finally, when laying out the bathroom the heights of particular units need to be within reach for a child to use. These include the water closet centerline being around 12 inches, the toilet seat height at 11 to 12 inches tall, the grab bars be set at 18- 20 inch heights, and the dispenser at a height of 14 in. All of these requirements help improve the usability of the space and incorporate Universal Design principles to allow all people to use the space effectively.

Sustainability is important for the environment, the quality of the building, and its occupants health. Using lots of environmentally friendly products for the building materials help reuse and recycle products. Installing lots of windows also help bring in natural light while cutting down on energy consumption for heating. Choosing windows with a second layer of glass to allow for insulation helps to also reduce the reliance on heating systems. All of these key features would help make a healthy living environment for young children and help teach them about the importance of environmental protection.

Those with autism require specially designed spaces. For instance, classrooms need to be free of distractions so that they can direct their focus on their learning, walls need to be painted in subdued colors to ease their emotional behaviors, visuals need to be displayed throughout the daycare to assist children, and rooms need to be laid out in such a way that everything is very stable and routine for them. That is why the classrooms will be simple and very clean lined as to not encourage any distractions or sense of over stimulation. Instead, the quiet areas meant for work and study will be smaller more cozier areas for one on one connections with the students and teachers. The noisier, more active areas, will allow for more color options and more stimulation. I plan on placing the play area near the activities stations to make the transition between events easier and keep most of the noise involved in those activities further from the quiet areas. Throughout the entire space there will be storage to store personal belongings and supplies. The storage meant to be accessed by the children will be at the proper height for them to be able to reach. Same idea for the bathroom fixtures, the toilets and sinks will be at proper heights for them to be able to reach without much assistance. The overall feel of the daycare would be more residential to make both

parent and child feel at home and comfortable.

My plan for this daycare center is to combine all the previously stated elements into one center where an autistic child can grow and learn in an environment built directly for their needs. The combination of sustainable design elements, ADA regulations for children's environments, and design techniques for autistic needs all help to make a successful daycare that is a safe environment.

Supporting Research:

Research Paper:

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