



About this project...

GU

School of  
Continuing  
Studies

## Design Leadership Cecilia Rivera Fall 2020



### Wicked Design Problem:

Conventional classrooms have four walls and a roof; they rely on an in-person dynamic for effective learning. For the last 15 years, designers, educators, and businesses have looked at how to re-imagine the classroom environment so that it can exist in a fluid state so that students can move easily between various physical and virtual classrooms. But how can students be prepared for school" that could be anywhere?"

### Goal:

My goal is to seek answers for how a program should be designed for early childhood so that parents can learn how to make any environment "a classroom" and prepare children for a more fluid experience of education. I hope to portray the way a design leader should intercede in the process of the design regarding such a program.

Based on my research, I found that many of those searching for answers are currently experiencing a great deal of stress amidst the Covid-19 pandemic. The pandemic has been the reason for many educational facilities shutting down or encouraging online schooling as a preferred alternative for students. For this project, a learning environment consists of a physical space, a virtual space, and the ideal tools for a child to learn.

Parents and monitors have had to quickly adjust to the changes and seek help to create a learning environment that accommodates young children. We saw a spike in Google searches for the phrase "Learn from home" in mid-March which was the commence of schools shutting down across the United States to slow the spread of the virus. Something interesting about these searches is that users were getting different results. The reason why the search engine gives different results is because of an algorithm that is programmed to provide the user with what is sorted to be best for them based on data collected from the user and their surroundings.

In my experience as a commercial interior designer, I have learned that there are countless of psychological studies regarding what a physical space should resemble for it to encourage learning and creativity. In a traditional classroom, students have a teacher that adjusts to young student's learning styles. Through my ethnographic research, I was able to identify that a learning environment may be different for some students because just as Google's users are diverse and benefit from an algorithm crafted to the individual, students are also distinct and may have different requirements to respond effectively in a learning environment.

## 🔍 Stake in the ground...

In identifying the problem, I found a resource that gave advice to parents on setting up a physical learning environment for their child. I felt this resource to be adequate with what I would assume the majority of students may require in their physical space. This example also mentioned organizational methods and incentives. Like this resource, the goal of my project is to help stakeholders create and adjust to a flexible learning environment. My project is focusing on identifying what differentiates young students in their ability to learn in an environment and how to deliver the ideal information to a parent, monitor, or virtual instructor attempting to recreate or advise on a learning environment for a child.

The purpose I see in solving this wicked the design problem is to give my audiences a particular valuable new resource during these difficult times. Re-imagining the classroom seemed to have been a topic prior to covid-19 but is now a subject that is dire for answers. I want to be able to determine a variety of variables that when all considered could achieve the best solution for many scenarios and provide guidance for individual scenarios, for seeking a solution for a flexible learning environment has the benefit to be able to focus on the specific child rather than the majority. We are in a current crisis that is desperate for solutions to make the best of our situations regarding a dynamic classroom environment that can ensure every student and parent have what they need to make it through these trying times and adapt as quickly as possible. The end goal is that these solutions ensure students continue to learn outside of the physical classroom.



# Empathy Mapping

## GOALS

What do you think they feel?

## PAINS

- Fears could include feeling alone, confused, and distracted
- Frustrations could include not learning/being able to instruct

## GAINS

- To learn/Instruct/Monitor
- To not waste time
- To focus
- To be prepared and have the tools they need to advance
- To not be distracted

1. Who are we empathizing with?

- Students in their early ages
- Parents of the students
- Instructors

Situation: Learning environment

Roles: Learn/Instruct/Monitor

2. What do they need to do?

- They need to be able to learn in an ideal environment as well as a flexible environment
- Students need to be able to focus and learn/Instructors and parents should be able to instruct and monitor
- We can expect to know if they are successful if the child's advancement is equal or greater than that of the physical learning environment in the typical classroom setting

3. What do they see?

- In the physical classroom the audiences typically see a space that has seating, a main learning focal point such as a blackboard or white board, an essential workspace such as a table and this space can be virtual too such as a word document etc.
- In a physical classroom children only need to see other students when working collaboratively. Otherwise, the only other individual they need to see or have communication with is their instructor/monitor

4. What do they say?

- What we have heard them say could include issues focusing due to distractions, request new and more effective platforms to deliver and receive instruction that captivate the student and intrigues them to learn

6. What do they hear?

- They hear others instruct/request/collaborate
- They hear themselves reflect
- They are hearing that they have everything they need to succeed

5. What do they do?

- They learn/instruct/monitor
- They learn in environments that tailor to their needs
- We can imagine them learning in a variety of environments both physical and virtual based on a program designed to ensure the essential tools and methods for their success are present in the environments



Ethnographic Research

## Teacher Perspective



Name: Verenisse

Age: 19

Occupation: Teacher for young children at a daycare

Education: Currently pursuing a bachelor's degree with a focus in Education



Edinburg, Texas

## Goals

- Use her current teaching role to make connections with her studies
- Learn to be flexible and understanding with her students

## Needs

- Desk, Computer, Office Supplies, Laptop with the Internet, Teaching Software, Phone

## Frustrations

- Switching from different age children and adjusting to their needs immediately

"Virtually, I get very frustrated when I can't help students find the correct page or unmute their microphones so they can answer a question. Physically, I get very frustrated when students can't follow simple directions like raising their hand or sitting in their chairs."

## Questionnaire

Do you currently teach virtually, in a physical classroom, or both?

I am currently teaching both. I am a in-person tutor and virtually tutoring children as well.

As a teacher for young students, what do you think are the top three essential requirements a physical space needs to have to be a learning environment?

A well organized room to help concentration, a desk for themselves because students need personal space to achieve their maximum potential, and physical textbooks are definitely a must it helps them follow a long much better than e-books or being read to.

Considering that those physical needs are met, what do you think are the top three essential requirements a virtual space needs have to be a learning environment?

I feel like fast Internet is a must, up to date electronics, and Google access to search for educational things based on the topic they're learning.

Do you think that some physical needs can be replaced virtually if the environment has a virtual aspect as well?

No not really. They might be able to get replaced but the effectiveness won't be the same. Children who are younger need physical things that are hands on.

How do you deal with a child not understanding what is expected of them?

I try to adjust my teaching to their needs. There are many learning styles like mathematical, logical, and visual. I always try to figure out how they learn best and accommodating myself to them because all students are different and that's completely okay.

What is your perspective of what a child thinks of the current learning environment they are provided with? Have you noticed any frustration trends on their parts?

I think younger children don't like the virtual learning environment. They look forward to recess and sitting next to their friends and right now there really isn't much to look forward to. They seem very frustrated when switching textbooks, or if they're at a daycare they get frustrated with other students because it's not quiet and they don't have the personal space they need.

## Teacher Perspective



Name: Christina

Age: 39

Occupation: Dyslexia Teacher

Education: Master's Degree in Special Education



Rio Grande City, Texas

## Goals

- Communicate effectively with parents at the end of every week
- Identify when a child needs individual instruction because they are not understanding the material

## Needs

- Desk, Computer, Office Supplies, Laptop with the Internet, Teaching Software, Phone

## Frustrations

- Getting distracted by tasks related to the physical environment

"The limited control that I have when there is a need of changing a child's home furniture or working space to create a better learning environment. "

## Questionnaire

Do you currently teach virtually, in a physical classroom, or both?

I'm teaching virtually.

Do you think that some physical needs can be replaced virtually if the environment has a virtual aspect as well?

When there is a connection between teacher and student learning takes place. Not all physical needs can be replaced virtually even if the environment has a virtual aspect as well.

What are some ways you keep children focused on a learning task?

Classes have to be creative, interactive and fun.

Do you think that children at a young age require more collaborative assignments than individual assignments to learn?

Definitely. Children need interaction and socialization to learn.

What is your perspective of what a child thinks of the current learning environment they are provided with?

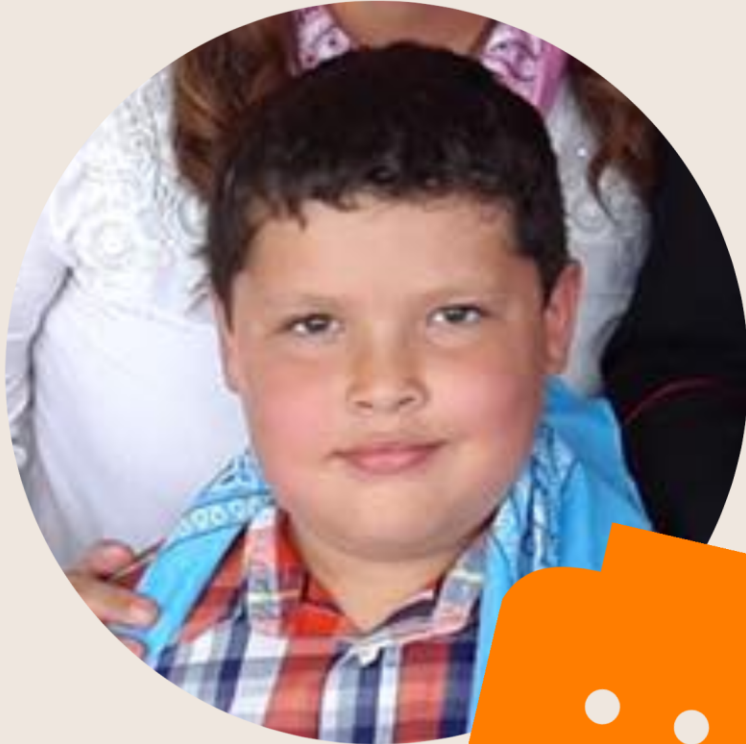
Have you noticed any frustration trends on their parts?

It is not ideal for a child to be learning at home or for a teacher to be teaching at home. Unfortunately, right now it's a life threat situation. I have noticed that most of the students can't control their home environment either and that creates frustration on all sides.

How do you deal with a child not understanding what is expected of them?

All students learn at a different pace. Individual instruction is recommended when dealing with a child that is not understanding what is expected of them

## Student Perspective



Name: Daniel Rodriguez

Age: 10

Grade Level: 4th

Virtual and physical environment: Virtual



Rio Grande City, Texas

## Goals

- Learn in flexible environments
- Be able to socialize regardless of the learning environment

## Needs

- Desk, Computer, Office Supplies, Laptop with the Internet, Learning Software, Monitor

## Frustrations

What distracts you in your classroom at school?

"Kids playing and making jokes while teacher is giving the instruction. "

## Questionnaire

What do you think you need to be able to learn from anywhere?

A good teacher and materials

Is the program you use to work on the computer easy to use? Is there anything you do not like from it?

Yes it is. Not really

When you are learning from another place that is not your classroom at school what do you wish that place had that it does not? Do you miss anything from school? My friends.

When you are learning from home on your computer what do you need to have around you in to be able to focus and learn? My computer

## Student Perspective



Name: Jade

Age: 8

Grade Level: 2nd

Virtual and physical learning environment: Virtual and Physical



Dallas, Texas

## Goals

- To learn as much as she can so she can be a doctor someday
- Be just as good at sports as she is in academics

## Needs

- Desk, Computer, Office Supplies, Laptop with the Internet, Learning Software, Area to move around/take breaks, Monitor

## Frustrations

"I don't like it when I don't get to have recess or see my friends."

"My mom sometimes can't help me do my homework, and I get stuck on the computer because I press something I shouldn't of pressed."

## Questionnaire

What do you think you need to be able to learn from anywhere?

A room that is clean because messy is fuzzy

When you are learning from home on your computer what do you need to have around you in to be able to focus and learn?

Headphones because my dog barks a lot

When you are learning from another place that is not your classroom at school what do you wish that place had that it does not? Do you miss anything from school?

The teacher gives us stars and we try to see who has more stars to get a prize, but when i go to school at home I don't know who is winning so I don't care as much

Is the program you use to work on the computer easy to use? Is there anything you do not like from it? Sometimes I don't get the directions, so my mom has to read them to me. The computer doesn't read them to me.

When you are learning from another place that is not your classroom at school what do you wish that place had that it does not? Do you miss anything from school?

My teacher has charts on the walls that make it easy to not have to find my notes



Parameter in Prioritized Order	Emotional Parameter?	Functional Parameter?	Level of difficulty	Impact on building a solution	Ability to break down a parameter so that it becomes a benefit to building a solution
<p>Audience (Tangible)</p> <p>Priority: It is most important to solve this parameter because there are multiple audiences that are stakeholders in this project.</p>	It would cause discomfort to an audience if another audience were not considered.	In general, it does impact time, budget, and feasibility in deploying the solution.	It could become difficult to account for multiple audiences. However, if focusing on the end-user it will have all audiences' best interest in mind.	I do not believe that my approach would necessitate solving for this as an extraordinary difficult parameters because it is something that is highly sought for and would be innovative to temporary, current, or non-existent solutions.	This parameter could be broken down into bite-sized pieces. Those pieces would be breaking the audience down to students, parents, teachers, monitors, and program designers. They would be leveraged to prioritize the end-user which is the child/student.
<p>Physical Materials (Tangible)</p> <p>Priority: The physical space is a requirement and needs to be solved for a flexible learning environment to be accomplished.</p>	It would be uncomfortable for the end-user if this parameter is not considered as a minimum requirement.	It impacts time, budget, and feasibility in deploying the solution, but the cost is typically covered by the parent or achieved using the tools and surrounds they may have readily available to them to create the physical environment.	It shouldn't be so difficult, for regardless if the learning environment is also virtual the student requires a physical environment. However, based on my research teachers expressed frustration in not being able to provide appropriate furniture etc. for children who did not have it.	I do not believe that this parameter would be difficult because it is a minimum requirement for the solution. However, not all parents or monitors can provide agreeable surroundings, furnishings, and other aspects the physical environment may entail.	This parameter could be broken down into smaller pieces such as workspace, room, etc.
<p>Virtual Materials (Tangible)</p> <p>Priority: If the learning environment consists of having a virtual aspect it is highly important to solve for this. This could mean that the teacher is teaching the material virtually or the student is being provided certain materials virtually. Either way, what those tools are to deliver these materials and instruction are crucial.</p>	From my findings, it can be frustrating for teachers to instruct virtually. Virtual school has not been able to provide the social aspect my two student perspective interviewees seemed to be emotional about.	It impacts time, budget, and feasibility in deploying the solution because it is a program that is better suited for the young children's needs and wants to create the optimate learning environment with innovational additions to what they already have known from their recent experience.	The difficulty of this parameter may be larger than others because it obstructs the ability to move forward with the general wicked design problem based on the evidence provided in the ethnographic interviews.	Solving for this parameter may be of great impact to building a solution because the solution is based on the current experience with flexible learning environments. These learning environments have both a physical and virtual aspect. The virtual aspect is also known to fail and to provide everything the child needs and desires.	This parameter needs to be broken up into smaller pieces. In my research, I found that the UX Design of the virtual program is a complexity that must be looked at in detail.
<p>Learning Styles (Tangible)</p> <p>Priority: Once the physical and virtual environments have been established a further new aspect of the environment becomes apparent. In my research, I found that students differ in learning styles. This is something teachers adjust to in the traditional classroom, as they accommodate for children's needs individually. In a flexible learning environment, we assume the parent or monitor is present and must share part of that role with the teacher virtually in order to benefit the child.</p>	It seems to be that a teacher understands that children are different. It may be discomforting if a parent or monitor does not understand how their role may be significant in the scenario where the young child is learning in a flexible learning environment.	This impact time, for a parent or monitor may not be accustomed to taking the role a teacher typically takes as caregiver and analytically to their learning style and pace. The teacher can reorganize their time to have time for communicating and educating the parent or monitor on how to identify the child's learning style and accommodate to their needs and desires together as a team.	The difficulty of this parameter is high. It does hinder finding a solution. The reason it is highly difficult is because many barriers could present themselves including communication barriers such as language. Scheduling and time commitment may also be a barrier, for not all children are given the same from their parents or monitors when in a flexible learning environment.	My approach to my proposed design solution necessitates solving for this parameter considering its difficulty because it was identified to be a cause to distress to those experiencing a flexible learning environment.	This parameter should be broken up to identify what the different learning styles young children can vary from and how to communicate the course of action from the teacher to the parent or monitor or make a recourse available to a parent or monitor otherwise.
<p>Emotional Impact of Solution (Intangible)</p> <p>Priority: Intangible parameters are typically not considered in projects, but this project finds it's social and environmental responsibility to be more than worthy.</p>	The emotional impact of the solution can cause discomfort if not considered. It can result in the inability for the program to function effectively.	This parameter does not impact the solution the way the others do, but it could negate the child's growth and motivation.	It may be difficult to solve for this parameter because children are different and could respond negatively just to change in routine.	The approach to the proposed design solution necessitates solving for this parameter because it affects social responsibility at a grand scale, for children world-wide are adjusting to the flexible learning environment.	This parameter may be more difficult to break down, but it could be beneficial for organizing and identifying new problems to solve for in the future.

## 🔍 Solution...

My proposed solution would be to lead a creative team to compose a program that functions through an algorithm mirroring the way Google Search's algorithm does in providing individual search results. This algorithm would be designed to take data manually inserted by the parent or monitor into the program and be accessible to the teacher as well. The teacher would be able to advise the parent or monitor further if needed. The program would have instant tools to solve for communication barriers such as language and have suggestions for time commitment and how to adapt the physical space to be accommodating to the child. It would also provide teachers with ways to encourage moments or incentives creating new possibilities to socialize with the child and allow them to collaborate with other students in different forms that do not require physical presence. The program would identify the young child's learning style with a trial survey or exercise. This information will be beneficial for the teacher to adjust the curriculum to the child or instruct the parent or monitor on how to work through the classwork with the child to achieve learning. The program would also require frequent feedback of the child to gather information regarding the program's emotional impact on them. This data would be used to identify new problems and innovate the program to continue improving the child's learning environments and how to deliver the information to all audiences.

