

Learning Environments of Our Stories

A Thesis

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Dedicated to

My Grandmother Malsun, an exemplar teacher

My Mother & Father

Aunt Hye Jin & Uncle Johnny

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Abstract

This thesis reframes the traditional classroom as a “learning environment” in order to broaden the perspective of the causes and effects of learning in the context of today’s culture and technology. Learning environments are examined through the lens of three key learning theories: Lev Vygotsky’s Zone of Proximal Development, the Montessori Method of Education , and the Reggio Emilia Approach. The learning environments are further dissected into the three dimensions of: (1) the physical space, (2) the psychological space, and (3) the virtual space, and these dimensions are examined through the various interactions, which happen within each space. Through qualitative analysis and observations, this thesis speculates that the psychological space and its particular interactions provide significant opportunities to evolve as dynamic conditions for future generations’ learning. The author heavily references Lee S. Shulman’s concept of Signature Pedagogies, in parallel to the assessments of the learning environments, as Shulman’s particularly resonate with the author’s personal educational experiences and the observation of classrooms made during this thesis research investigation. The inferences made in this work contribute to a reassessment of art & design education’s potential in the transformation of traditional pedagogies in the context of the evolving landscape of learning environments.

I remember

I remember the conversations I've had in certain moments, like audiovisual memories. Some of these conversations replay in my mind or appear in different moments in time, influencing the decisions I make and the actions I take.

I remember

Childhood

I remember watching my mom making flash animations for her graduate show.

I remember Harold and the Purple Crayon.

“...He made a long, straight path so he wouldn’t get lost. And he set off on his walk, taking his big purple crayon with him. (Crockett, p.9,10)

I remember I wanted Harold’s purple crayon,
And I bought a box of crayons each time I was brought along to stores.

I remember climbing on top of furniture to draw gardens around the living room walls.

I remember

I remember looking through my mom's portfolio.

I remember

I remember thinking that Shel Silverstein had forgotten to color in his Giving Tree book, and coloring it in for him.

I remember

I remember my Montessori school gave me all the time I wanted to fold a pink cloth, perfectly, and step by step.

I remember a girl who knew how to draw flowers in my pre-school.

I remember copying the way she drew her flowers and people.

I remember telling my teachers stories from home as they tried to pat me to sleep during naptime.

I don't remember the time I would arrive at school, but I remember the smells of the school.

I remember my teacher's faces, and all the students' faces.

I remember observing and drawing a tree.

I remember

Primary School

I remember not knowing how to speak to students and teachers.
I remember being confused.

I remember

“A journal is to write things in”

Why?

“Just because. You can write reminders, your schedule, secrets, draw or write about your day”

What do I write or draw about?

“Anything. Anything you want or feel like writing or drawing.”

I remember

I remember drawing what I saw in cartoons.
Then I drew what I saw around me.
I remember learning to speak English.
I remember that my drawings and things I made started
conversation.
I remember the difference in culture, at home and at school.
I remember negotiating and translating different behaviors
according to my environment.

I remember

Early Formal Art Education

“I’m going to try and play tennis professionally, but I really appreciate drawing and people who are artistic.”

“I like oil paint. I might apply to an artschool or I might not. I like painting though. I might want to go into fashion design at Otis or I’ll just stick to doing Chem...I don’t know”

“I’m a saxophone player, and I love music. A lot of people say I’m good and that I should go for music school, but I really want to make comics and illustrations. I know even if I go into music, I’ll still be drawing and practicing. I know I’m not the best, but I want to get there. Maybe I’ll even just forget about music school, and play for fun instead.”

-AP Art Studio students

I remember

I remember my mom started to run a small art studio where I met my first art instructor.

“...And from the trapezius to the deltoid, wrapping around the gluteus maximus...”

“Think of something you want to draw about, maybe you can tell a story”

“Since when did you decide you wanted to go to art school? When did you even apply? I thought you were just taking classes for fun.”

I remember

Undergraduate Rhode Island School of Design
I remember the messy studio spaces.
I remember being trapped in one studio room with 12 other
students,
Naturally holding conversations with them.

I remember

“What is a chair?”

“Well...what do you like to do on your free time?”

Write and I'm also trying to perfect baking bread.

“Write?...Sounds to me like you'd fit into illustration, but baking bread could be more ID...Well, what you choose your major to be really depends on what you want to make out of your time at RISD. A question you should ask yourself is, what do you want to learn? What do you want to take with you from RISD?”

“You know guys...If you don't remember anything from my class, at least remember this. I want you to remember to—whatever you do in the future—to always make time out of each day to do what you love. I'm out at work all day, and I get home around 8. I greet my wife and daughter, and then I go downstairs to my shop and studio. I spend the rest of my night there—just building and making things. I made my kitchen table out of cardboard the other month. We use it. It doesn't matter how long...let's say 15 minutes. Give at least 15 minutes of your day to something you love. Even if you forget everything else I that I've taught you, remember this.”

I remember

“I’m not going to look at that. Who’s next? It’s just bad...bad craft, and what is this? Tracing paper? Do it over or something.”

I remember

FIRST YEARS OF INDUSTRIAL DESIGN

“I’m not understanding you...I have to say that sometimes you scare me, because I’m not sure where you’re headed, but I’m surprised at the end—in a good way. It’s always nothing like what I imagined, and you surprise me—I’m not sure if that’s a good thing or not.”

“You need to think more like a designer and less like an artist.”

“You should run a business—what are you doing after RISD? A job? Oh man...haha, that’s gonna be something. You should take a break—take a gap year.”

“No, it’s not that you suck at presenting, you just know what is a better presentation. So technically, you’re getting better at presenting.”

“Guys, your value as RISD ID students is your ability to think high-level. If RISD is good at teaching you anything, it’s that. Leave all that rendering for Art Center students. Focus on telling a compelling story. That’s what I’m going to look for in your final presentation pitches next week.”

I remember

I remember my education at RISD was an enriching experience of understanding and discovery, where I was able to collaborate and work amongst peers of different studies. Through my education in the Industrial Design department at RISD, I not only developed the skills of making, I discovered the practice of collaboration. Not just collaboration amongst peers, but collaboration with my surrounding community. The pedagogy of industrial design, taught to me by my professors, pushed me to address and engage directly with the audience for whom I was designing. In my Nature, Culture, and Sustainability Studies (NCSS) concentration, my professors often stressed the ecosystem around which a product was build or the systemic effects of our actions. This broadened my view on the interconnectedness within the nature of our living and our ways of production. The exposure to this concept inspired my education and ways of making to work more fluidly in an environment which I increasingly believed to be interconnected.

However, my education before college was often about categorization and associations to the specific categories. This was a common subject brought up in my Nature, Culture, and Sustainability concentration, that categorization was the means and evolutionary traits for human survival. By categorizing what we observe from our senses, we are able to develop general associations to those observations. By accumulating these observations and continuously verifying our associations, we begin to make faster and “more accurate” decisions for our survival. I strongly feel that categorization is the innate human pedagogy which has driven our need for organization, institutions, and community. In the school environment, I remember witnessing the categorizations and its associations of students, classroom spaces, behaviors, aesthetic tastes, schools, and more. These instinctual categorizations, whether for the better or for the worst, seemed to be connected to rhythmic decision making and keeping a system, such as a school, circulating.

I remember this innate human tendency to categorize was seen in the ways some of my high school peers associated their identities to whether or not they saw themselves pursuing a post-secondary education. I remember there were categorizations to who would “succeed” or “fail”.

I remember students needed to make decisions according to the best of their assumptions as to which school or major would fit them next. I believe that when the habit of categorization becomes the foundations of education, it becomes difficult to sustain the fluid nature of learning. The difference in the thinking and pedagogy between my senior year of high school to my first year in Industrial design were rather disparate. Subjects and topics I would have never ventured into such as healthcare and education seemed accessible and relevant topics to my education through the possibilities opened by art and design. Art and design became a way of practice and thinking. I see many RISD alumni as they discover areas of interest through their own practice, discovering areas for art and design to manifest. I wondered about the freedom and curiosity for learning that I found through RISD's pedagogy.

My ventures into the Art + Design Education MA degree program was led by this curiosity to understand how I was influenced to make the decisions to my educational journey. My time in the TLAD program has been instrumental in deciphering my learning experiences and discovering how contrasted each of my learning environments were to one another. I believe the context of my projects, my interests, and learning are heavily influenced by the construction of my past learning environments. This understanding contributes greatly to the scope and pursuit of my thesis.

In the midst of an economy that seeks and monetizes "innovation" and a collaborative society of individualistic behaviors, our adaptive skills in categorizing based on assumed associations are revealing their limitations. Innovation is often associated to making new connections for different outcomes. Perhaps then, we must learn how to rethink our tendencies to categorize. Indeed, in order to transform our pedagogies, communities have turned to collaborative practices as a strategy to hold back from giving into assumed associations and established categorizations. Over civilizations, humans have built and taken control of their own environment, adapting its build to the needs of their survival. Our constantly evolving technology and transforming culture requires a continuous adaptation of our spaces. Nevertheless, it seems that society's affection to the idea of

“innovation” suggests a different perspective: that we are not led by occurring transformations but that we are building towards the transformation we envision. Part of societal building is through education, and to address our vision, our pedagogy should develop to serve as a map to our foresight.

Chapter I: Introduction

I think, sometimes it is easy to be quick to condemn and criticize things we observe than to talk about what the positive aspects of our observations are. When we are asking for feedback or critiquing a design, we know immediately what we don't like when we see something. We know what would not fit us even when sometimes we cannot exactly articulate what that is; we just know that there can be room for improvement. It seems this behavior stems from beauty, which is the human ability to imagine and envision, crafting new stories from past experiences and aspiring for them. When we spot inspiration or something that we resonate with, that something becomes better or worse relative to what we envision it could become.

However, by being too excited over the new visions we craft for ourselves, we may forget to credit what is already being done and ignore the budding potential of substantial effort. I have found from personal experiences that effective feedback, which advanced my learning experiences, was feedback that not only accounted for the work I had done and simultaneously broadened my perspective on how I could do better. This isn't to say that all my past ideas had so much substance and potential that it shouldn't have been let down. Instead, I think in the way one perceives things, it is important to acknowledge another's effort for the main motive of their creation instead focusing so much on the lacking of actual creation itself. By collaboratively focusing on the main idea and motive of a work, I think we can move further and develop solutions and ideas that combine multiple skills and perspectives under one mission.

Inspired by the educators that have influenced my own education, I have in this thesis attempted to assess the current educational climate that strives for a “new and improved” education through the same, generous lens of a “good feedback.” In the beginning of my research, I was inspired by the gusto of the influential education philosophers such as John Dewey and Maxine Greene. I found, through further research, many learning spaces, whose practices were grounded in these theories. However, it appeared to me, at least, that current learning spaces seem to often struggle to exemplify the richness of these philosophical and conceptual theories and become superficial when actualized into practice. I wondered, for instance, how often Scandinavian-inspired aesthetic and designs of furniture sparked the curiosity and fueled learning for students. I wondered if physical learning environments, which aimed to be collaborative, flexible, and open really addressed the needs of students who may need personal space and time to form their own ideas, thoughts, and identity. I was curious about the strengths and weaknesses of a student centered approach or a project-based teaching strategies, and I wondered whether we are actually forming the “modern learning environments” to fit the needs of the learners and learning facilitators or is the transformation one of culture and technology.

One time, I was on video call with my younger sister, who is currently a sophomore in high school. It was her passing period, and she had called me to check-in and see how I was doing. What I noticed were the strange green stools behind her, randomly spotted around the classroom. I don’t remember having those back when I was attending her school. So I asked her what she thought of them. “What do you mean what do I think? They’re just chairs. They’re everywhere.” To which I brushed off, and quickly hurried her to put her phone away for class. “Why are you Facetimeing me during school?” Apparently it doesn’t matter. Phones aren’t a new thing, and we use it to look up things on Google all the time anyway. I realized in the midst of diving into classic learning theorists while referencing back to my own education experiences, my own high school had changed so much in just a few years. Green stools and using phones during class were not as novel as I would have thought them to be back when I couldn’t even leave my class to use the restroom. Lee S. Shulman (2005) states, “There is a similar principle for the understanding of professions: if you wish to understand why professions develop as they do, study their nurseries, in this case, their forms of professional preparation” (p. 52). There are no longer Algebra and Calculus classes at my school; it’s all Math I, II, and so on. My sister is expected to understand Mathematics as a whole concept and not just by practices. Students are learning the same context differently, and in different environments. However, the school’s district ranking and overall scores remain as I remembered them. All this made me wonder about how classic learning theories have been translated and manifest themselves in today’s culture of learning. Is a student-centered classroom defined by the conditions of allowing students to use their phones and by placing Scandinavian design-inspired green stools into the classroom?

In my research, I came across literature which discussed the goal of establishing innovative learning spaces. This material brings light to an educational community, which seems to desire for change, and for something new. This is perhaps due to a number of factors including but not limited to a way to adapt to a changing culture and a globalized society or a response to the introduction and infiltration of more advanced technology. I would argue that we equally influence the outcome of our creations and tools as our creations influence our society. Thus, I would argue that innovation cannot be evaluated objectively. It is important to consider its perspective and ask whom is this space or pedagogy innovative for? And even before then, ask,

what is education for? In any problem-solving practice, I've found that a "problem" is relative and its essential questions make up the compass to direct practices to the main mission.

In order to better understand the gap between the classic learning theories and their manifestations in today's society, I began by remembering, then unpacking and understanding my own education experiences under the guidance of Dr. Paul Sproll and my fellow colleagues in the MA 2018 cohort. From the beginning of my thesis exploration, I co-taught at the Highlander Charter School in Providence, RI within Justine Mainville's Fifth Grade Social Studies Class. I taught once a week with my colleague and partner, Bo Kyung Kim, who is a graduating with a Master of Arts in Teaching from TLAD. We integrated art and design curriculum with the existing Social Studies curriculum, and collaborated with Justine Mainville on designing a suitable curriculum and project-based learning experiences for the year's class. In addition to the weekly teaching visits to Highlander Charter School, I also was able to visit Community Prep School, located in South Providence and sit in on a few visual arts classes taught by Janine A. Lee who works collaboratively with all of her students' teachers in order to integrate relevant context and methodologies into her arts classes. TLAD Professor John Chamberlin introduced me to multiple learning theories, teaching strategies, and policies and logistics, which influenced teachers and learning experiences. Through his class, Lab School: Learning Through Art & Design I was able to collect documentation and better understand teaching and classroom experiences. I also interviewed three teachers teaching art and design at the elementary school level, one teacher and friend who teaches 8th Grade Math, and design professionals who teach at RISD today. Such discussions and interviews helped me shape the ideas within my thesis and to gain multiple perspectives into the learning and teaching landscape. I attended meetings in Providence where teachers gathered for workshops and discussions in order to glimpse into the teaching communities that are outside of the classroom and beyond an alumni network.

During my time in the Department of Teaching + Learning in Art + Design (TLAD), I worked at RISD's Edna Lawrence Nature Lab, a beautiful resource that gives students at RISD and in Providence access to observe, learn, and inspire from life sciences through hands-on experiences. I was part of the Nature Lab's NSF Grant efforts in creating a bio-maker space on campus. Through it, I contributed through the development of STEAM curriculum lessons and the ongoing process of understanding how the Next Generation Science Standards (NGSS) and the Visual Arts Standards could be aligned to form the basis of a STEAM curriculum. This practice contributed to my understanding of designing multidisciplinary curriculums and in forming a critical lens to what art education means today. My winter term was dedicated to a part time internship at GoInvo, a healthcare design firm in Arlington, Massachusetts. I took this experience to apply a cross-disciplinary approach to better understanding the context of education systematically. Being part of a design group who advocated for a patient-centered approach eventually lead me to reassess how students were being approached in their learning spaces and to better understand what it means to take a student-centered approach to education. My spring courses were curated to supplement my conceptual understanding and practical knowledge of computing and digital materials in classrooms and the power of narratives and stories as a way of communicating information. The resources, which inform my thesis are journal articles and literature sourced from the RISD Fleet Library, Fleet Search, JSTOR, EBSCO, Google Scholar, and Josiah.

In my thesis, I have chosen to frame the assessment of learning environments through the selections specifically of: Maria Montessori's theory, Lev Vygotsky's Zone of Proximal Development, Lee S. Shulman's Signature Pedagogies, and the Reggio Emilia Approach. The final selection of these theories were inspired from both my own education and my primary and secondary research in understanding the general tone and the make-up of the current and emerging modern learning environments. These theories as well as my experiences from my design practice will serve as the foundational concepts and understandings from which I will address the modern learning environments. Because learning occurs through a variety of interactions, I have dissected my observations into the three categories: (1) physical space, (2) psychological space, and (3) the virtual space. These are the spatial dimensions of learning that I explore in order to map a landscape of what is happening in today's learning environment. I present a case study of School One, located in Providence, as foundational example to discuss the evolution of learning environments as it fits to today's culture. Then, I will take these summarized findings and construct a framework for a design of a "modern learning environment" that addresses the physical, psychological, and virtual dimensions as discussed in the chapters. I am reexamining the dynamics and conditions of K-12 learning environments through the lens of classic learning theories in order to understand or reaffirm the critical components of a learning environment that influence the outcomes of learning. By extracting these major aspects, my thesis aims to specify the major conditions for learning, which should be incorporated in today's modern learning environments. Thus, in recognizing these conditions and what these dimensions represent in general classrooms, my research suggests a need to shift the construction of art and design classrooms in order to communicate the essence of art and design education within today's culture.

Defining Terms

MODERN LEARNING ENVIRONMENT (MLE): the trending aesthetic of what a classroom should look like today, often incorporating the framework of openness, flexibility, collaborative, and technology

LEARNING ENVIRONMENT : an educational environment that is focused on the actual learning rather than dissemination of information. It includes the three spatial dimensions of (1.) psychological, (2.) physical (3.) virtual, all intended for teaching and learning. Particularly, in the scope of this thesis, learning environments are a way to redefine the traditional classroom.

SIGNATURE PEDAGOGIES: “the types of teaching that organize the fundamental ways in which future practitioners are educated for their new professions”; Signature pedagogies are made up of a three-part structure:

(1.) Surface structure, which consists of concrete, operational acts of teaching and learning, of showing and demonstrating, of questioning and answering, of interacting and withholding, of approaching and withdrawing.

(2.) Deep Structure, a set of assumptions about how best to impart a certain body of knowledge and know-how.

(3.) Implicit Structure, a moral dimension that comprises a set of beliefs about professional attitudes, values, and dispositions. (p. 55)

Chapter II: Becoming the Stories We Tell

Introduction

To assess the current, key modern learning environments and teaching pedagogies, I examine here theories which lead to the current landscape today—Maria Montessori’s method of education, Lev Vygotsky’s Zone of Proximal Development theory, and the Reggio Emilia approach. Although each of these theories have their own unique nuances in thought and practice, my interpretation of their essence is a call for a hands-off approach to the education of young minds, the portrayal of the teacher as the facilitator for learning, and the acknowledgment that students already possess the knowledge and creative conditions from which they can grow and learn. Indeed, when I examine my past education journey, I see a repetition of events which exemplify the constructivist theories and conversations of Lev Vygotsky, Dewey, Piaget, and others.

Today, there are many revisions and additions to the modern learning practices which allude to these aged theories. There is an excitement in the ever-changing landscape of education over the increasing infiltration of technology. The introduction of new materials serves as contemporary filters over these classic theories, and I find it both exciting to observe and study how these theories manifest in today’s culture. However, I wonder if, in this excitement of re-designing pedagogies and learning environments, the essential questions of education are lost or reformed.

SIGNATURE PEDAGOGIES

Shulman describes “signature pedagogies” as the “fundamental ways in which future practitioners are educated for their new professions” (p. 52). These pedagogies are meant to instruct learning ways “to think, to perform, and to act with integrity” (p. 52). He argues that these signature pedagogies determine the effectiveness of the learning within the profession and that it is used not only to address the standards of its field but also to uphold the meaning of its own profession (p.53). However, Shulman (2005) makes a distinction between the purpose of professions and academic disciplines: professions are cultured to not only educate but also prepare the students to responsibly accommodate to the service of others (p. 53). In this way, Shulman touches upon Hetland’s (2015) ideas of an import paradigm, learning context through immediate applications instead of retaining information and saving it for later use. In framing the “pedagogy” as the ultimate determinant of a profession’s outcome, Shulman’s article, Signature Pedagogies, emphasizes the implications of a pedagogy and its influences on the space, interactions, and methods of the learning environment.

However, in any discussion of pedagogy, it is also important to recognize that classroom teachers face multiple challenges, for instance, accommodating a diversity of students’ learning styles, meeting district, state, and national standards, and meeting the expectation of their administration. Such considerations may drive compromise and force learning facilitators and specifically classroom teachers to adapt their own translation of art and design education pedagogies that take into account the limitations of actual context. Shulman (2005) discusses the concept of a “compromised pedagogy” in response to Howard Gardner’s concept of ‘compromised work’ that discusses the importance of seeking a balance in addressing the three components of learning equally (p. 58). Understanding the tension between the practical and theoretical aspects of a profession should advance educators into actively seeking the defined strategies to use in their educational practice.

MONTESSORI ENVIRONMENT

You walk into an open spaced room with children independently moving around to different areas of the classroom that seem to be designated with toys of some sort. Where is the teacher? The teacher may be hidden at first glance because a Montessori classroom is not what most would imagine being a traditional classroom. There is no “front of the classroom” where a teacher would normally be spotted. Instead, the teacher is amongst the students, facilitating curious learning, and speaking to students at their level. The students are free to learn as they please. This space and its pedagogy recognize students to have an inherent curiosity and passion to learn. Therefore, The Montessori environment is curated to support young students in taking ownership of their learning and furthering their knowledge through self-initiated activities and exploration. The “toys” or learning tools are designated around the classroom and are specifically designed for self-learning and discovery. These learning tools are not just at random. They are also designed to teach students core subjects and life-lessons through their senses.

The Montessori theory, developed by Maria Montessori, an Italian physicist, and educator, was developed through Montessori’s understanding of children’s developmental

phases. Through her research, she framed her theory under a few main premises.

- 1.) Children have the ability to discover and should be taught to become independent learners with the help of a supporting environment, teacher, and parent. Through their hands-on approach to learning, they interpret more than they would if the information was forced upon them.
- 2.) Children are inherently curious and constantly absorbing information around them. Therefore, what is in their environment and how they explore to learn are key in determining the quality of their learning experiences.
- 3.) Children are ready to learn different skills at certain points in their life, and each child's timeline may be different. Due to such conditions, the role of the environment is crucial in the development and learning of the students.

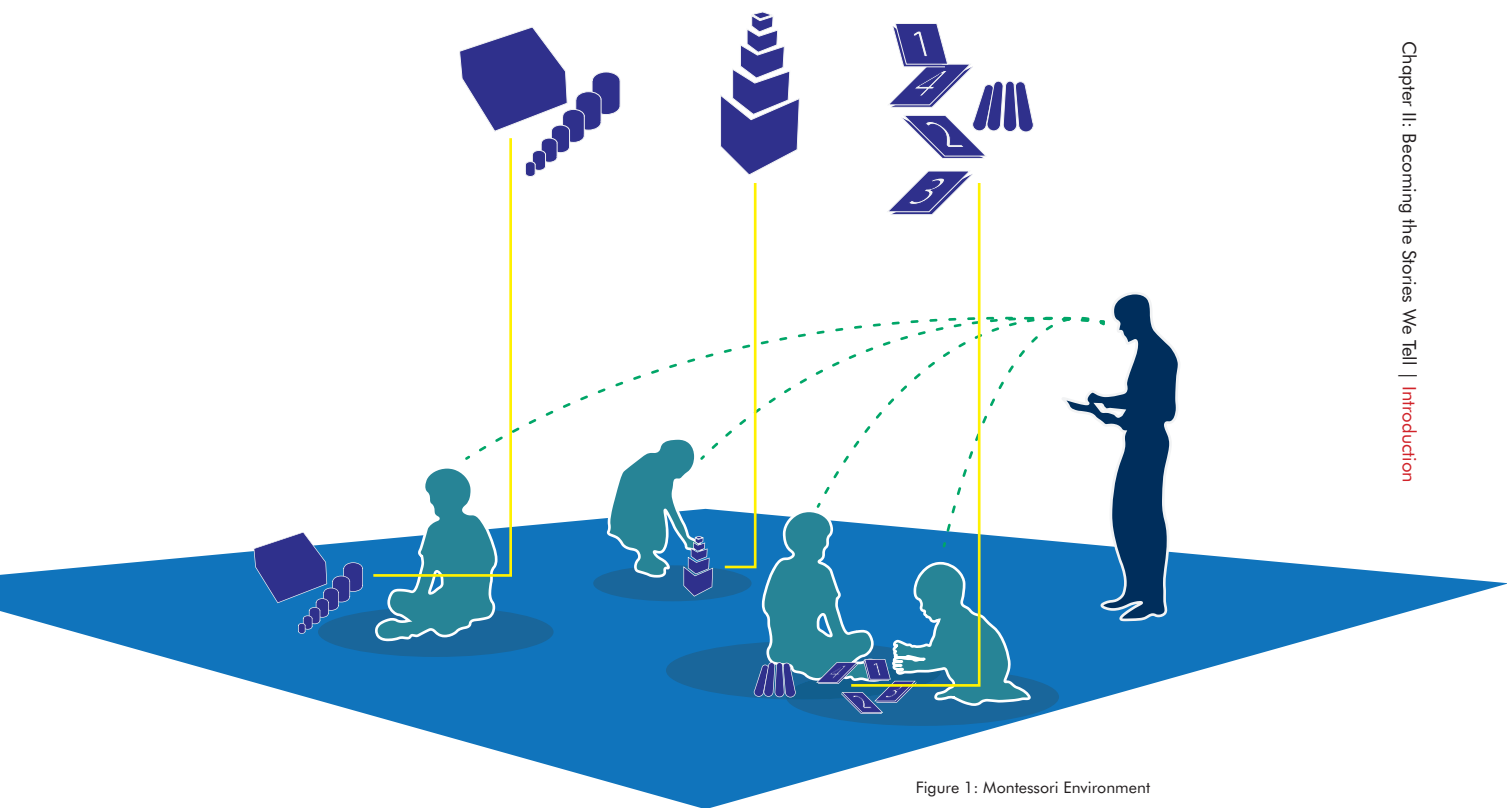


Figure 1: Montessori Environment

The curation of tools, activities, and makeup of the environment is determined by the teacher's decisions on what to teach the children. Montessori's "Planes of Development" theory was derived through these conditions and categorizes the children's learning and development into four planes with its own physical and psychological developments: Infancy, Childhood, Adolescence, and Transition to Adulthood.

REGGIO EMILIA APPROACH

Similar to the Montessori Theory, the Reggio Emilia Approach understands children to be capable of constructing their own learning and developing meaning from their experiences and interactions in their environment. Children are perceived to already have foundational knowledge and capabilities from which more learning and potential can be unlocked if they are placed in an environment that allows them the freedom to do so. Both take student-centered approaches and emphasize the environment as the source for learning and the teacher as the facilitator and guide of learning. In the Reggio Emilia Approach, there is no planned curriculum framework. Instead, communication between the teacher and student is crucial for determining the next steps to forward the students' education. Through regular communication and collaboration between teacher and student, the teacher is to better understand the students and their interests, using documentation as the main tool. Proper, quality documentation is crucial in the Reggio Emilia Approach because it is a tool for memory, assessment, and planning. A continued dialogue between the teachers and the students is established to maintain communication, and direct the curation of the students' studies. The teachers support the students through curating long-term projects which are directed by their observations of the student's interests and questions. Although both the Montessori Theory and Reggio Emilia Approach believe students to be capable of self-directed learning, their methods are different in that the Reggio Emilia Approach places the teacher in a more active role than the Montessori Theory. Many classrooms inspired by the Montessori Theory have teachers whose primary function is to maintain the learning space and direct proper and ordered behavior amongst students. On the other hand, the Reggio Emilia teachers would be in an ongoing face-to-face interaction with their students to co-create the plans for the students' learning. Both ideologies emphasize the environment as a crucial component of how and what the students learn and are evident in its execution. You can see the open space of the classroom, and you can see the replacement of regimented activities into one of autonomic learning. These approaches point to many of the trending topics of education today such as personalized learning, inquiry-based learning, project-based learning, and education technology.



Figure 2

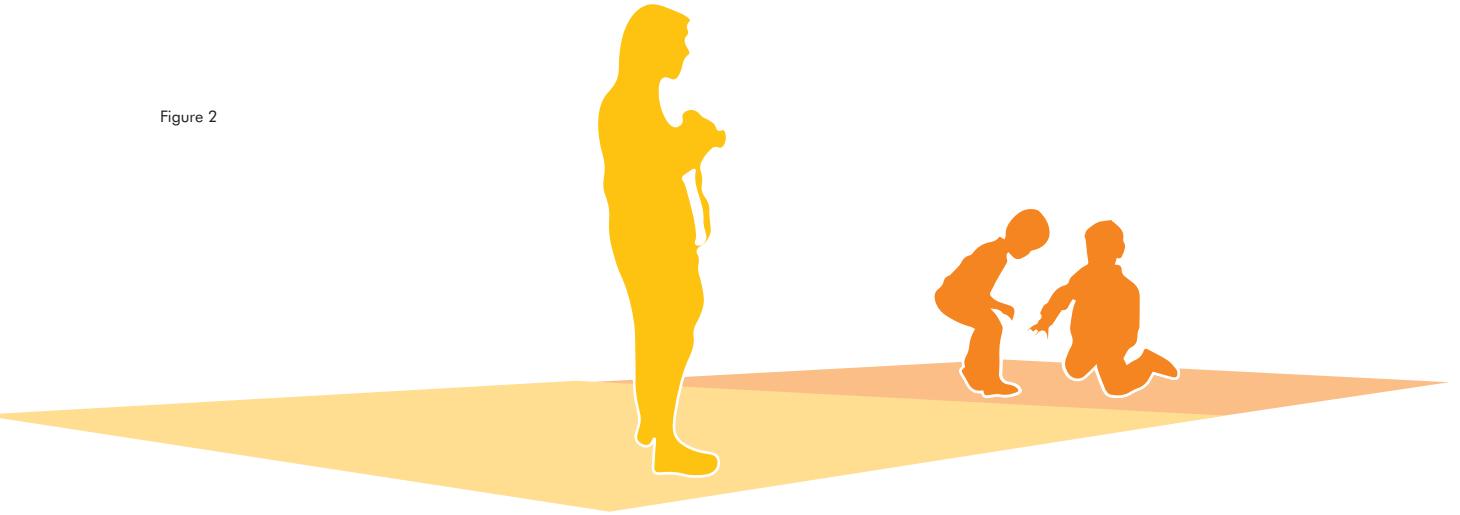


Figure 3

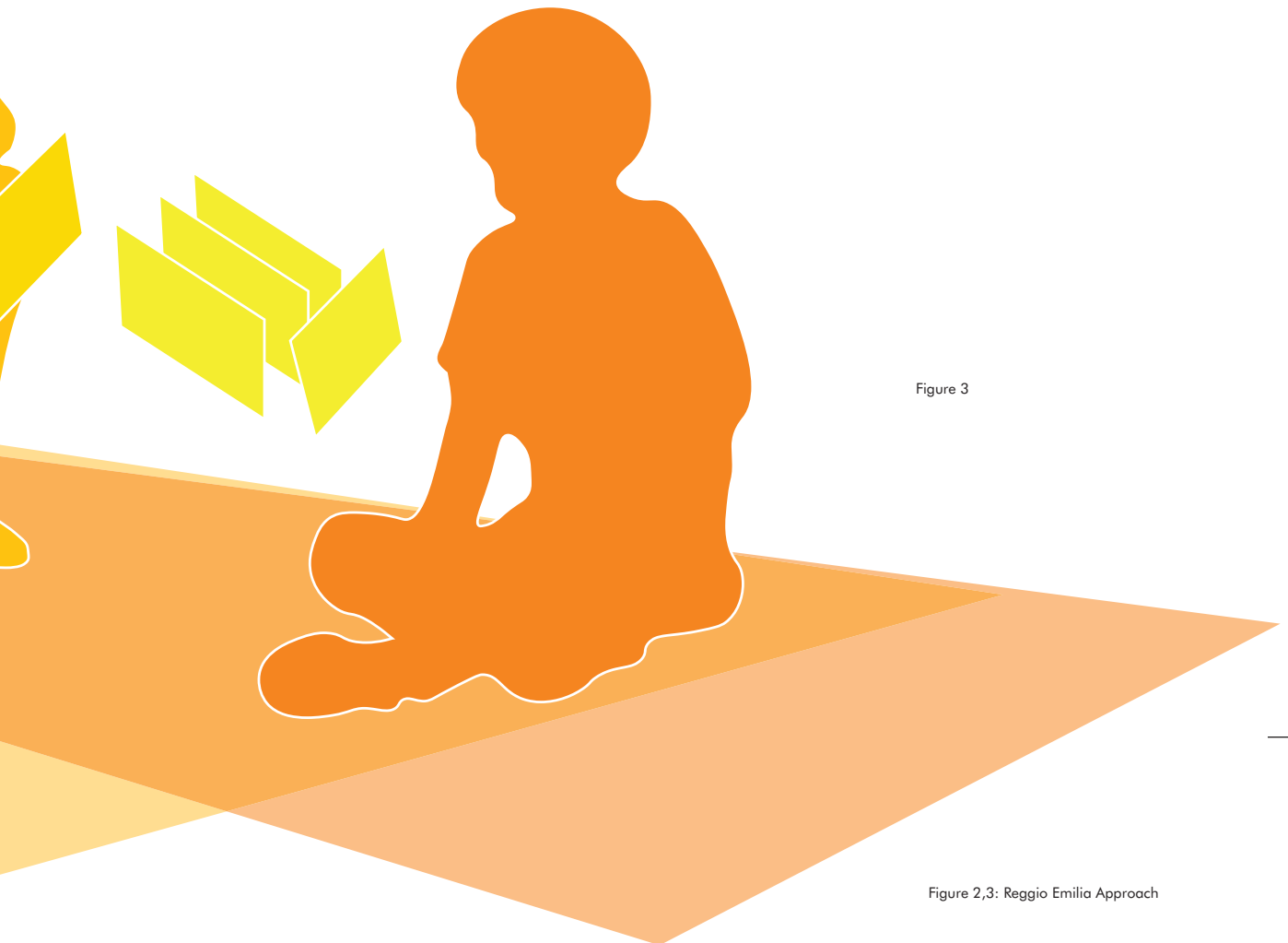


Figure 2,3: Reggio Emilia Approach

THE ZONE OF PROXIMAL DEVELOPMENT

Veer (2012), in the book, *Cultural-Historical Psychology: Contributions of Lev Vygotsky*, provides a rich analysis of Vygotsky's learning theory of the zone of proximal development, in which he theorized that identity is formed through the interaction with the environment and understanding through others by exchanging and comparing different perspectives. Vygotsky emphasized the importance of words and defined language as the main channel in which this exchange of understandings occurs (p.64). Veer (2012) states that Vygotsky was greatly influenced by the ideas of Jean Piaget who hypothesized that a young child's speech is not intelligible for other children and that they do not recognize that their peers may have different point of views. Hence, in their communication, different meanings would be applied to the same words they speak to one another (p.61). Piaget's ideas were inspirations to inform Vygotsky's theory. Vygotsky emphasized the significance of the learning environment, and the social components that are found through that space. He recognized children to be independent keepers of knowledge. However, he believed that in order for them to develop and reach a higher level of understanding of their knowledge, they needed adult assistance to reach beyond their current capabilities (p.61). This assistance and support would help children develop beyond their current abilities (Veer 2012, p.61).

Although Vygotsky passed before his theories reached the level of development as some of his predecessors, Veer addresses the criticism of Vygotsky's theories with the words and paraphrases of his collaborators. Critics were skeptical of Vygotsky's generalizations and degree of emphasis that he placed upon certain development methods and strategies. Aleksey Leontiev and Pyotr Gal'perin criticized Vygotsky's theories to be too "idealistic" as they credit mainly speech and education in determining a child's development. Gal'perin also argued the need for more studies on a child's protolanguage: the cries children make before they begin speaking in a language of words. He believed that there were more to be discovered about the cultural influences on a child's beginning language. (p. 66). Despite the criticisms of this early theory, the broadness of Vygotsky's development theory is seen through the breadth of learning approaches and strategies today, which take in similar philosophies with a modern touch. Vygotsky's Zone of Proximal development ties the learning potentials of a student to their social development. This emphasis on social development as a means to cultivate quality learning resonates through today's approaches and student-centered learning ideologies. Some also say that Vygotsky's theories were greatly influenced by Montessori's approach and research at the time. I find that the core idea, which ties together Vygotsky's Zone of Proximal Development theory, Montessori's theory, and the Reggio Emilia Approach is the constructivist ideology which argues that young minds develop through the components and resources within their environment, whether it be through direct or indirect interaction. Vygotsky focuses in on the social interactions, defined then by dialogue-communication, whereas the Montessori theory focuses on the physical interactions, taking care into the design and use of the different physical objects and environmental learning setting so that students can learn on their own. It appears to me that the Reggio Emilia approach seems to lie somewhere between the theories of Vygotsky Montessori in terms of the degree of interaction between teacher and student as well as in the purpose of the learning environment. However, the Reggio Emilia approach emphasizes direct interaction and an ongoing communication between teacher and student. Through the embedded practice of creating a visual archive through documenting students, their work, and the classroom, Reggio

Emilia teachers are able to develop a visual reference and a guide that helps them understand their students and keep track of a classroom through a captured visual memory.

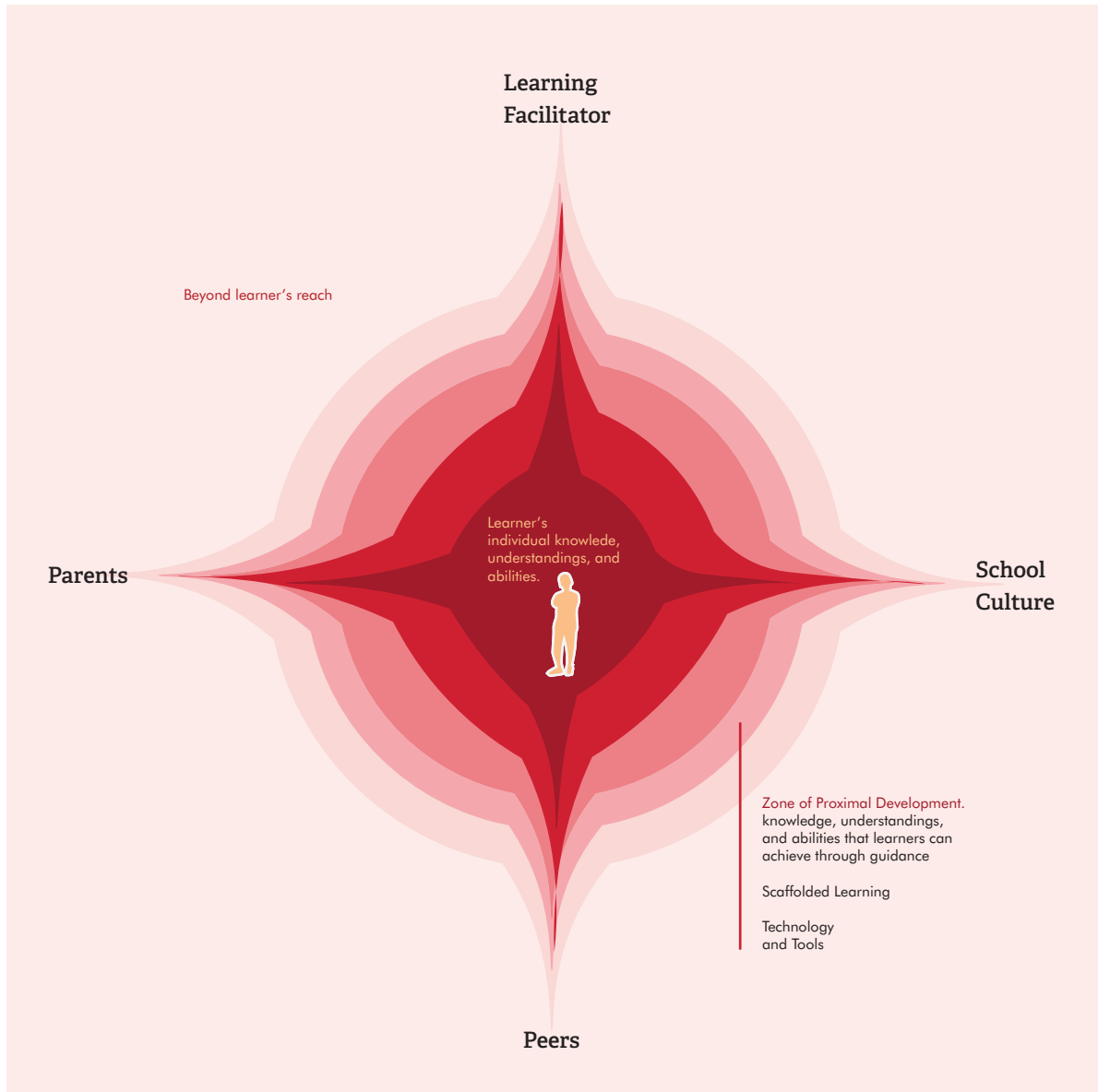
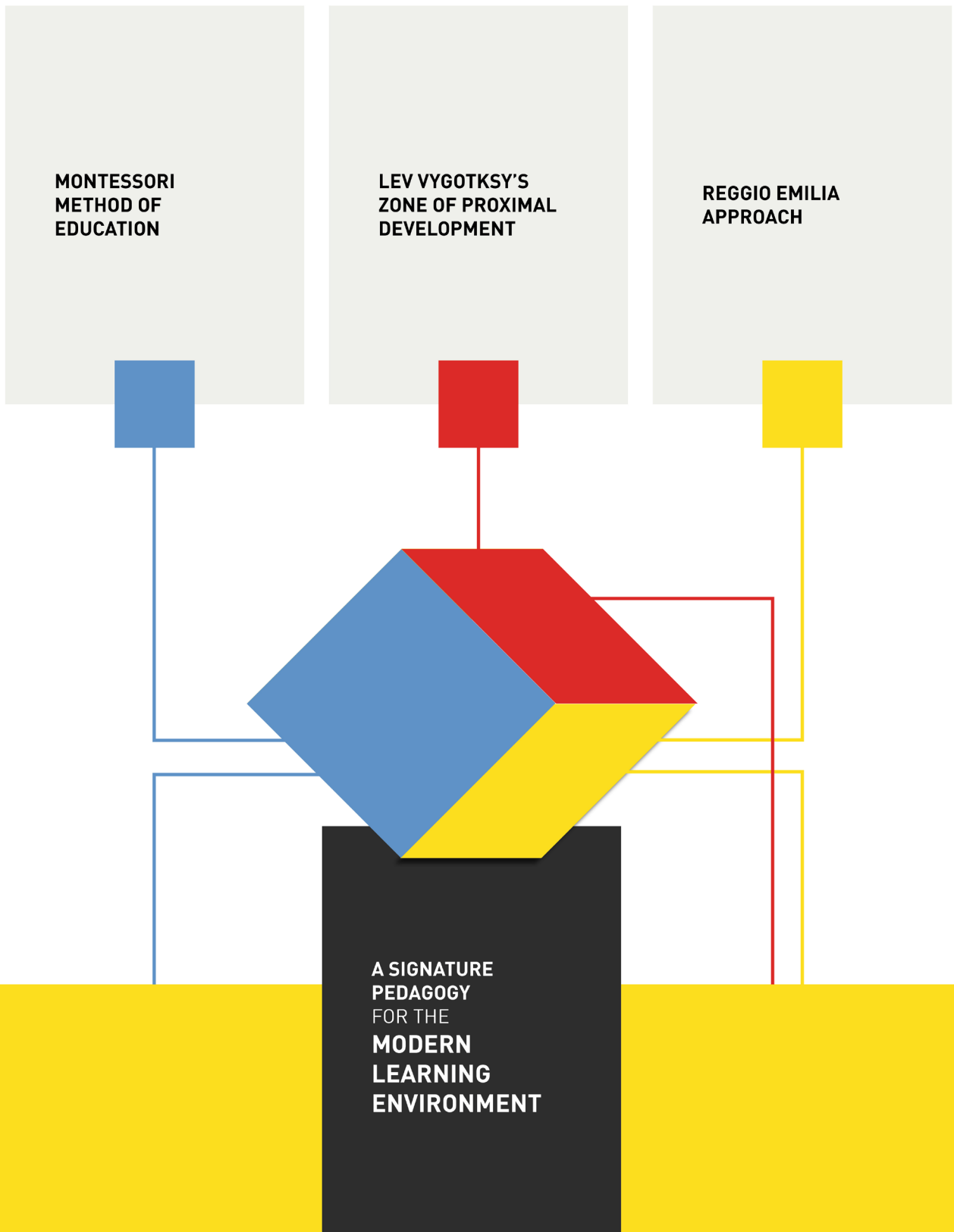


Figure 4: Interpretation of Lev Vygotsky's Zone of Proximal Development

Through my time in RISD's Department of Teaching + Learning in Art + Design, my definition of "education" has broadened and continues to evolve and connect to areas that I previously had not recognized to be part. The implications of "education" as a term seems to narrow the scope of "learning". When we think about when, where, how, and through what learning happens, we stop imagining "education" as tied to a school or a classroom. Depending on its context, the event of learning can occur through any interactions, and learning can also occur through no interactions. As learning is increasingly occurring on digital platforms, there is a shift in the general definition of a "classroom". Hence, a learning environment.

When addressing Vygotsky's Zone of Proximal Development theory as it relates to the 21st century, it is important to note the difference in understanding how "access" and "interactions" are defined. A person's environment is not restricted to just what is around them physically, despite the facade, as a small screen in our palms separates the world to us. Educational resources and services today are readily available and accessible, leaving adults and children with increased autonomy. The increasingly advanced communication technologies, open source culture, capitalized experiences, and the always remaining "need for speed" define and shape the channels through which the next generation of students will learn. As methods of communication become increasingly more visual, "literacy" cannot just be inherently portrayed as written or spoken language. Students should be able to dissect and understand the meaning of their surrounding visual culture. The three aforementioned learning theories arise from the cultural and historical contexts from which they were developed. Where are we now, and where should we go? Shulman describes pedagogy as an influence to space, and I would add, society's response to the pedagogy as in reaction from the space continues to evolve the pedagogy further, transforming and adding nuances to a collaborative mission to learn.

Figure 4: Theory to Practice



The Art of Interpretation

THEORY TO PRACTICE

The designs of modern learning environments are predominantly directed by the pedagogies that aim to inclusively service students and provide them with a meaningful education. These pedagogies are also partly influenced by the learning and developmental theories discussed in the previous chapters, such as the Zone of Proximal Development, Montessori theory, and the Reggio Emilia Approach. The conceptual combinations of a constructivist approach and a student-centered approach is seen through the increasingly equalizing of hierarchies within the relationship between student and teacher shifts. The classroom which traditionally has been historically a teacher-centered environment is being pushed to become student-centered as too our own cultural beliefs are shifting. In addition, the way in which these theories are interpreted within the modern context is influenced by changes in our practice with the ongoing advancement of communication and information technology. Shulman (2005) affirms that there are "...several conditions that can trigger substantial changes in the signature pedagogy of professions. The objective conditions of practice may change so much that those pedagogies that depend on practice will necessarily have to change" (p.59).

Our technology has never been "perfect", as meaning solely advantageous. The tools we create can be equally constructive and destructive. The dichotomy of technology pushes society to reexamine, rethink, and refine its current conditions in order to regain order and control over its tools and creations. Recently emerging technology has become increasingly advanced and autonomous. It functions not just through gears as the technology founded in the later years of the 19th century, but through the sharing of our personal knowledge and information. It has given us the power of connection and lives on the constant exchange and interaction we have with the world around us. It has enhanced our experiences, but also at our own cost and gamble. Technology is reaching a point of invisibility which advancements such as light and transportation took many years to reach. Its invisibility allows it pervade our lives and into our everyday experiences and interactions.

Modern learning pedagogies often apply strategies for personalized learning. However, personalized learning requires detailed assessment and curriculum curation that are tailored to individual students. This intricate process and detailed form of management is often found to be difficult since teachers are also faced with multiple challenges such as meeting district, state, and national standards while meeting the expectation of their administration. When it comes to the making of modern learning environments, current technology is beginning to streamline the complex processes of teaching assessment practices through the use of Artificial Intelligence (AI) machine learning, and advanced standardization. Education technology is beginning to offer

software and digital platforms which help teachers to personalize student learning and manage diversified assessment modules. Such advances have the potential to expand student experiences and channels for learning. Our interactions with technology are redefining the roles of key stakeholders in the learning environment as it is similarly influencing the physiological and cultural aesthetic of the learning environment itself. Despite our limited knowledge of ourselves and our surroundings, technology has the ability to gather and act upon mass amounts of information. In the face of its fast-paced evolution, the concept of today's technology is, in part, prompting our society to revisit philosophical questions of existence, redefine culture, and be inspired to continuously evolve in practice and ideas. Simultaneously, the interconnected nature of technology and designed-experiences for connection influence the globalization of societies and thus the learning environments.

Proposals for radically different learning environment are, I contend, one of the many reactions to the evolving technology and globalized communities. It appears to me that the plans and designs of modern learning environments (MLE) are aimed at fostering spaces that respond to these changes. It is a call to arms for us to ready our educational spaces to better prepare future generations to understand and better control our medium and tools which we uncover. The 21st-century skills or the 4 C's, that many MLE's address are: collaboration, critical thinking, creativity, and communication. These skills are seen to drive us to think critically and systematically about information and our findings, collaborate with our found tribes, and make decisions to reclaim upper control of our tools. Modern learning environments are often also described to be open, flexible, with current technology, and collaborative in its cultural and physical aesthetic. They are often viewed with a form of student-centered approach to pedagogy. It seems that this approach aims to address the multiple ways through which students learn, the diversity of students' cultural backgrounds, and their individual strengths in order to enhance their learning experience. I discovered that the descriptors for MLE's are also frequently used to describe the makings of an "innovative learning environment" or "spaces for innovation" (Nair&Henning,2017,p.9; Groves&Marlow,2017,p.6). In turn, it may seem that "innovation" has become a conceptual form of currency in today's economy and that the goal for "innovation" is aligned with the goals of a contemporary pedagogy and the development of MLE's.

In my view, a learning environment can be categorized in terms of three spatial dimensions: (1) the physical, (2) the psychological, and (3.) the virtual. These three can be further be defined by the interactions that occur within these spaces. This section of the thesis examines and makes observations of modern learning environments through the understandings of the previously discussed ideologies: (1) Vygotsky's Zone of Proximal Development Theory, (2) Shulman's Signature Pedagogies, (3) Montessorian Theory, and (3) the Reggio Emilia Approach.

Observations of classroom settings led me to initially be convinced that the physical environment informs the psychological as the psychological environment equally informs the physical. However, through a reassessment of my observations, combined with additional readings of literature, it appears to me that physical environment seems to follow the influences of the psychological environment. I found, both theoretically and through observations of interactions within that classroom, that the signature pedagogies are brought forth through the psychological

dimension. Instead, the physical environment, I believe, seems to be the framework that determines the degree to which these pedagogies and cultures can grow and the habits that emerge over time. Therefore, the qualitative observations and the varieties of interactions within the psychological dimension will be key in understanding the observations made in the accompanying anecdotes that describe each component of the learning environment.



Figure 5: "I Have the Right" Project from Highlander Charter School, 5th Grade Social Studies Class

Dimension 1: The Psychological Space

The learner and the learning facilitator enter the learning environment's psychological space with their own emotional and cultural backgrounds. In addition, the learning environment, also has its own established culture. When these three different stakeholders meet and interact, their interactions develop a new psychological space for learning in the place of their meeting. How these stakeholders begin to interact and react to one another is highly influential in determining the degree of learning effectiveness and quality of the social environment. As described in the Zone of Proximal Development, these social environments contribute in crafting the psychological development of the learner including, but not limited to, their vocabulary of how and what they learn, their understandings of their identity, and their world-view. Because the psychological space influences a learner's personal narrative and the meanings they add to their experiences, depending on the social environment, a learner may begin to build either effective or ineffective habits and mindsets which determine their learning outcomes. In recognizing the multiple layers within this dimension, this chapter aims to render the various sources which may affect the quality of learning within the interconnected system of the psychological space.

TEACHING FOR UNDERSTANDING

Project Zero a prominent and influential center for research on arts learning incubated Teaching for Understanding (TfU) a framework that guides learning facilitators to focus on teaching students to understand, and not just memorizing facts. It defines quality teaching as the aim to help students reach a level of understanding of their knowledge and facts. The framework is divided into four categories of (1) generative topics, (2) understanding goals, (3) performances of understanding, and (4.) ongoing assessment (Veenema, Hetland & Chalfen, 1997, p.31). Generative topics are the contexts with which these understandings and practices will develop. These topics are to be related to the discipline, connect to things that the students are familiar with, allow multiple ways of thinking, and be engaging for both students and teachers (Veenema, Hetland & Chalfen, 1997, p.32). "Understanding goals" describe what the students should understand as a result of the lesson, and the "performances of understanding" should be the evidence of student's understanding in their performances which should become increasingly complex with added understanding(Veenema, Hetland & Chalfen, 1997, p.34). "Ongoing assessment" describes the iterative method of assessment, where students are not graded by the outcome but through regular feedback and guided reflection (Veenema, Hetland & Chalfen, 1997, p.38). Veenema, Hetland & Chalfen (1997) describe the learner in the learning environment of a Project Zero classroom to be like a bat in a cave where they state:

They can engage themselves actively in exploring further the spaces they already know and make those graceful errors that enlarge the cave

for them. Or they may find unsuspected barriers because that's part of the cave as well.(p.15)

The Project Zero's "Children are Citizens" project was developed on the belief that children are not just young people who will become future citizens. Instead, it sees children as active citizens who have as much right and capacity to express their opinions in civic and cultural matters now, a perspective to enter the student-centered approach. Children are Citizens invites students to research places and landmarks that they find interesting with the support of their teacher. Then, they communicate their findings and ideas to their local neighborhoods and schools through performance, visuals, and three-dimensional model.

A SYMBIOTIC RELATIONSHIP: TEACHER AND STUDENT

Learning facilitators are not only in the service of students but are also juggling the needs and requirements of guardians, administrations, policies, and their own philosophy. These competing standards, priorities, and requirements are inherent tensions which, according to Shulman (2007) are never fully resolved. It is instead advised that these tensions be managed and balanced with every action. The author argues:

Teachers can maximize their perceived efficacy by teaching to the benefit of those students most likely to earn high test scores or can teach in ways that equalize educational opportunity and emphasize educational ends whether or not they are externally examined (p.58)

The decision to what is being offered in a learning environment is, of course, ultimately dependent on the learning facilitator. Many classroom teachers who I have spoken to agree that in today's student-centered culture, the role of the teacher in a school is diverse and is ever-changing and adapting to the varying needs of the school's diverse learners. Students are in schools and engaging with their teachers for a significant portion of their developmental stages. School hours take up a majority of a young person's life, and therefore, teachers assume the role of a psychologist, advisor, caregiver, friend, critique, and the list goes on. Aside from their assumed guardians, their teachers have the potential to play the second most influential role in a student's life. In this knowledge, Shulman (2007) states that "Responsible professional pedagogy must address these tensions and provide students with the capabilities to deal with them" (p.58).

Of course, the exchange, post initial investment, is also heavily determined by the ways students respond. I believe, as Shulman has suggested, a student-centered approach, where learning facilitators are equipping students with the toolbox to develop understanding and the opportunities to actively participate in the real, social context, sets the conditions for both learners and learning facilitators to collaboratively activate a quality learning environment. Learning experiences are in this way coated with uncertainty. A collaborative learning experience between a learning facilitator and a learner is an exchange of knowledge and understanding with "responses, elaborations, and inventions" (Shulman, 2007, p.56). He further believes that without the input of the students, the instruction cannot proceed. The tactic in fostering motivated learners who are accountable and active learners is found within a pedagogy that makes learners feel

highly visible (Shulman 2007), through given trust, responsibility, and emphasis on their active demonstration of understanding.

Quality learning is, I argue, the outcome of symbiotic relationships, and the identity of its stakeholders determine the characteristics of pedagogy. As a learning facilitator has a developed pedagogy in order to teach, a learner may very well develop pedagogies in order to effectively learn. Therefore, beyond the dimension in which learners and learning facilitators interact, both the learner and learning facilitator are within their own space, their psyche, and development which affect their decisions as to what comes into the symbiotic relationship.

TEACHER SPACE

In an ideal scenario, students and teachers would form a symbiotic relationship to activate quality learning for both parties. However, the teacher still takes on the role of service. For teachers, the school environment is their career environment, a place where they learn and develop post-graduation. The structure of an educational institution translates into the work environment. The framework for MLE's are not only common amongst learning environments, but they are also common in the establishment of current start-ups and work environments. Kursty Groves & Oliver Marlow (2017) in the publication *Spaces for Innovation: the design and science of inspiring environments*, explore work environments including K-12 schools, assessing them within the same criteria for "innovation" and "inspiration". The way learning facilitators approach a learning environment and form their pedagogy is also dependent on their own development and educational history. Past interactions influencing the makings of future interactions. However, their education is not only for understanding in order to act, but within the action, they must also be ready to serve (Shulman 2007). This additional step determines the learning facilitator to the learner.

It is important for teachers to also find community and belonging to the learning environment. Such community allows for a culture of feedback, a source of motivation, and an opportunity to converge, reshape, and keep their pedagogies alive and flexible. Additionally, when a pedagogy forms into a habit, the pedagogy may continue to be used despite the loss of its utility and effectiveness. In turn, a signature pedagogy has the possibility of limiting the diversity of learning opportunities in a group of children with multiple thinking and learning methods. A teacher's signature pedagogy is their style and craft. The learning facilitation is their art, and thus it is important for them to receive regular feedback and be in contact with opportunities for collaboration. However, a well-affirmed pedagogy that forms habits, according to Shulman (2007), allows the uncertainty and the outcomes of uncertainly tolerable. Because habits accumulate into behavior, it becomes internalized learning, entering the zone of proximal development. When this occurs, many decisions and uncertainties can be uncovered through the practice of habit. For example, design practice and thinking have a recognized order and method of steps. This is not to say that a design process is linear, because it shifts and alters depending on the nature of the problem and design context. However, in the face of uncertainty of next steps, or for those beginning to learn the craft of design, these order of steps and methods for understanding and action becomes a foundation on which one can begin to make more informed decisions that lend to their own philosophies.

STUDENT SPACE

In entering K-12, learners are already bringing their prior experiences, knowledge, and perception of identity to the learning environment. Students should feel secure so that they can express their ideas and thoughts authentically, priming themselves for meaningful and genuine feedback. Through this quality of interaction, students set themselves up to reach into their zone of proximal development. As they begin to transform and develop their perspectives and understanding through this interaction, they can also begin forming strengthened associations and metaphors to more holistically assess their experiences. Prossner (2005) uses the playground space as an example of a student space in which students develop their own subcultures, outside of their classroom and the supervision of their learning facilitator. These are also the spaces that bullying can take place, where students make judgments of themselves and others, and where they begin to make judgments about their own place within the wider social context. It is crucial, therefore, that such environments should be a place where students feel most confident and empowered.



Figure 6: Two Highlander 5th Grade students observing and conversing about their projects.

A Place Formed by its People

Art on a Cart

“Art on a Cart” describes the nomadic teaching practices of some art teachers who do not have an official classroom space. In this case, the learning environment and its potentials are contained within the cart that the teacher transports with her from space to space. Such teachers are constructing the learning spaces in which the symbiotic relationship exists. I spoke with Alison Plump, a previously practicing artist and painter who now teaches art on a cart at International Charter School in Providence, Rhode Island. Alison and I spoke about the experiences of teaching art on a cart: how she keeps herself organized, how her teaching philosophy takes form in her practice and the effects she sees of teaching from art on the cart upon herself and her students. Art on a cart is an example of psychological environment driving the formation of the physical.

Teaching art on a cart requires the teacher to be highly organized and aware of time. Because the space or the room in which the students are working is not her own classroom, Alison must be prompt in gathering all her supplies and student work back onto her cart before the next class begins. Alison stores her supplies in her own office and prepares the cart with the materials needed for the lesson as needed. She makes sure that her supplies are always labeled and categorized into buckets and containers; her set-up is put together for efficient set-up and clean-up. Through her experiences, she has learned how to think on her feet, quickly adapt to situations, and be more organized.

The limitations of teaching from art on a cart, according to Alison, is that the time constraint and lack of space limit the materials she can use for her classes. One time, she taught her art class in the hallway. Materials such as clay may cause a mess in another teacher’s classroom which requires more clean-up time than actual art time. However, Alison doesn’t see that as a significant limitation nor does she see teaching off the cart to be significantly limiting her curriculum or teaching philosophy. Her aim is to get her students inspired and excited to have a time, no matter how short, creating and enjoying art. Art on a cart would not be a choice if Alison had one, but she focuses her efforts on providing her students with a quality education despite the situation. When describing her students, I could sense the passion she had for their

learning and excitement. Her students anticipate each time she comes around. I asked her if she has any difficulty capturing the attention of the students within their comfortable space where she may be a foreigner. She told me that she has no trouble getting their attention. When Alison rolls her cart into the classroom, the students express immediate curiosity for what materials might be on the cart, inquiring about the materials and making connections to what they imagine the lesson would be for the day. I asked her about her tools for thought and inspiration. I wondered if she ever combined her artistic practice with her teacher. She no longer has time to continue painting or actively pursuing her artistic practice, and she admits that she does miss the times when she used to paint. However, the experiences she has with her students are worth it, and she wouldn't trade teaching with going back to painting. She owes much of her motivation and inspiration to her students. Their excitement excites her. Through my understanding of the three dimensions of spaces, the practices of "art on a cart" speak to how a physical environment is secondary to the actual practices of and for learning. An old saying goes: A place is only as good as the people in it.



Figure 7: Alison Plump's Cart
Credits: Maxine Tu



Figure 8: Students listening to Alison Plump
Credits: Maxine Tu

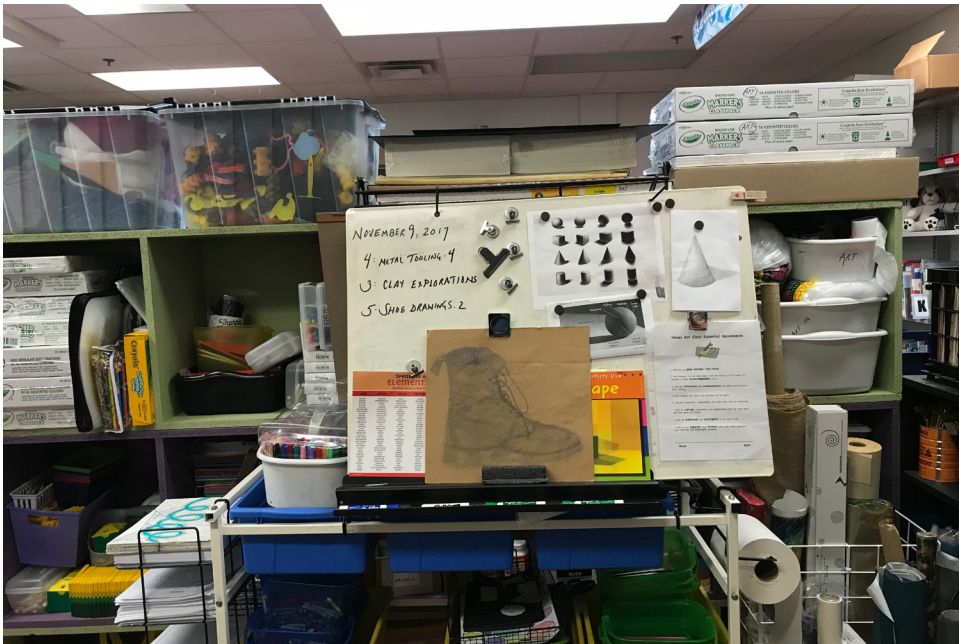


Figure 9: Alison Plump's supplies for practicing
Art on a Cart
Credits: Maxine Tu



Figure 10: Crystal Growing Workshop in the Nature Lab Bio-Maker Space, facilitated by María Eugenia Moya Martínez [MFA '18]

Dimension 2: The Physical Space

Although the preexisting habits and culture before the establishment of a space inform the design of the physical environment, the degrees of flexibility and rigidity of its final design outcome shape, allow and control the evolution of the habits from which these physical environments were born. Kenn Fisher (2016) observes in *The Translational Design of Schools: An Evidence-Based Approach to Aligning Pedagogy and Learning Environments*, that the range of architectural innovations of schools were influenced by theorists such as John Dewey (1966[1916]) who argued for a more student-centered approach to learning, emphasizing, similarly to Vygotsky, the importance of social context and student interaction. The trend towards ‘open-air schools’, similar to the transparency and openness of an MLE, also developed through the ideas of Steiner and Montessori (Fisher 2016). Jon Prossner (2005) in *Visual Methods and the Visual Culture of Schools*, directs attention to not just the school and classroom, but to the non-teaching spaces with which school members interact.

Moreover, since the physical layout of classrooms so typically tracks the premises of a field’s signature pedagogies, the very architecture of teaching encourages pedagogical inertia. Only the most radical of new conditions—such as sharp changes in the organization or economics of professional practice or in the technologies of teaching—are sufficient forces to redirect that inertia (p.57)

The architecture, its physical components, and images combine to make up the visual culture of a learning environment and suggest the community’s signature pedagogy.

The physical space is also a frequently accessed symbol of the school’s identity. The type of identity that a school represents through their space has the potential to influence the associations and assumptions school members to make to their own identity (Prossner 2005). Therefore, the physical environment not only plays the role of allowing the movements and practices of learning, it also plays a key role in representing the culture and beliefs of the community it inhabits. To establish their identity, an educational community should address their physical aesthetics as to align with and communicate their pedagogical theories and practices. Modern learning environments, according to EdTech Staff, are developed to more accurately conform to its contemporary pedagogies and contain connected devices, audiovisual tools, and purposeful furniture. Some MLE’s have referred to the 4 C’s of 21st Century learning as a framework to design their environments. Indeed, due to these similarly broad descriptors, a common visual archive of “modern learning environments” are open spaces that are divided by transparent or no walls, with flexible and modular furniture for personalization, suggesting a culture of collaboration.

The curation and integration of subject matter into the aesthetic of the physical environment varies. The learning environment can be completely constructed such as when teaching art on a cart. Sometimes, the learning environment is a set of standardized rooms which also may be shared amongst different subject matters. They are also physical spaces that are fully curated and designed to supply and communicate their subject matter such as maker spaces.

A CURATED ENVIRONMENT: EDNA LAWRENCE NATURE LAB AND THE BIO-MAKER SPACE

The Edna W. Lawrence Nature Lab, at RISD, houses a collection of life-size to microscopic specimens to inform academic studies and studio work. In 1937, Edna W. Lawrence, a RISD faculty member and a graduate of the Painting program, began the Nature Lab with a starting collection of 1,286 objects including insects, shells, taxidermy, and seed pods. Her collection was found through the times she spent searching and collecting natural objects for her students in the drawing class that she was teaching at the time. This collection now stands as the Natural History Collection on the second floor of the Waterman Building, used for the intensive freshman drawing classes, on RISD's campus. Over time, the collection has grown to host about 80,000 natural specimens. The Nature Lab also has an Imaging Lab with high-speed cameras and a range of microscopes, archives of the tiny specimen and prepared glass slide mounts, and the wet lab which include living plants and animals collected from the Narragansett Bay. The Nature Lab hosts students, faculty, and curious learners who are also outside of RISD, giving them a chance to make use of the available resources.

In 2017 the Nature Lab was awarded a \$280,000 grant from the National Science Foundation EAGER (Early-concept Grants for Exploratory Research) program to develop and prototype a bio-maker space within what is currently the wet lab. The space is to be designed specifically as an environment for students to engage in projects related to the life sciences. The Nature Lab has collaborated with RISD's Interior Architecture department and Teaching+Learning in Art+Design (TLAD) department to invite students in creating the biophilic space that also engages RISD and K-12 students from outside of the campus to engage in STEAM curriculum. Biophilia is the theory that humans have an innate and evolutionary tendency to seek connections with nature. Through the advancement of technology and exposure to the modern visual culture is thought to have, in some discussions, influenced a decline in biophilia, contributing to the distance some humans feel towards nature and the concern to protect it. The Nature Lab aims to, in collaboration with TLAD and Interior Architecture, construct a space that reinforces the biophilic connection and provides the environment for students to explore their disciplines through a bio-inspired lens. When the physical space is established, the TLAD graduate students will contribute to developing a curriculum that centers around bio-design and STEAM ideas. By documenting the outcomes and effects of this bio-maker space, the Nature Lab seeks to use the research to inform the makings of other spaces to be designed in the understanding of bio-design.

The Nature Lab's establishment all began as a result of a progressive learning facilitator's efforts and belief in creating a meaningful educational experience for her students. As a result, an initial space was established, providing a space in which a community gathered and

collaborated. In collaboration, this community developed a culture to form new pedagogies. Such pedagogies and a collaborated community have begun to transform the physical space once again, and in the light of current culture, focusing on the documentation to share and collaborate beyond the Nature Lab's community. This reciprocal, circular relationship between the physical and psychological space all began in the practice and act of a pedagogy.



Figure 11,12:Nature Lab Wetlab, soon to be Bio-maker Space

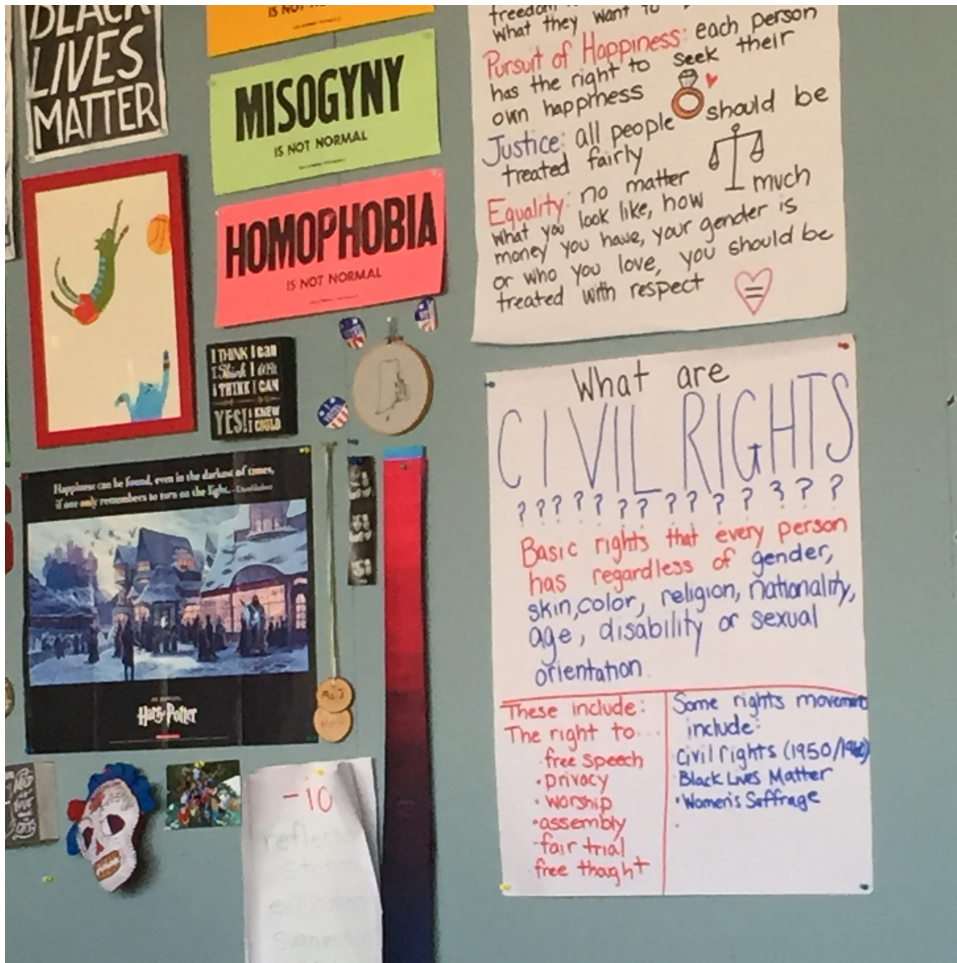


Figure 13: Wall of posters in Justine Mainville's 5th Grade Social Studies Class

An Open Space: Highlander Charter School, 5th Grade Social Studies Class

The Effects of a Comfortable Space Highlander Charter School: 5th Grade Social Studies.

During my first semester in my degree program Bo-Kyung Kim, my colleague from RISD's Master of Arts in Teaching (MAT) program, and I worked with Justine Mainville, a 5th grade Social Studies teacher, at the Highlander Charter School, in Providence, developing arts integrated social studies lesson plans. The 5th grade Social Studies class is an example of the makings and effects of a symbiotic relationship that fosters a learning environment for engaging conversations and quality learning as described by Shulman (2005).

Highlander Charter School follows a blended learning model. The students are shifting around classrooms for each of their classes. The inside of the school is colorful with student work hanging from the hallways. For Bo and me, this practicum was an experience in collaborating with a core classroom teacher to develop art instruction that was interdisciplinary. Before teaching at Highlander Charter School, Justine was a musician in a band and an artist in residence at AS220, in Providence. After receiving her Master's degree in Education from Brown University, Justine began teaching at Highlander Charter School. She told me that she "loves her kids, but sometimes they can drive her crazy." She enjoys Providence and loves working at Highlander with an old-time friend teaching 5th grade Science in the classroom next to hers. Her work allows her to explore other hobbies and activities outside of the classroom.

Inside Justine's classroom, a projector stands at the front of the classroom where Justine sits to its right side, facing the students to teach them the day's lesson. Towards the left half of the classroom, the students are sitting at long tables in the groups of 6. There is no particular order to how the desks are arranged, they are not in a gridded arrangement either. On the right side of the classroom, in front of Justine, is a carpet area where she occasionally invites students to sit and lie around to hear the lesson. Occasionally, there are students who become restless, in the case, they go over to the carpet area

to settle themselves and listen and participate in the lesson next to Justine. To the back of the classroom is another whiteboard with a rounding table within which Justine sits to oversee the class. The students have been in class with one another since their early ages. They are constantly chatting, collaborating, and socializing amongst themselves as they work. If some students find themselves being distracted, they naturally come to sit at Justine's rounded desk. The walls around the classroom are covered in a medley of posters related to the current political context and the week's lessons: Black Lives Matter, LGBTQ, Three Branches of Government, Barack Obama, and so on. Justine explained to me that despite her class being about history, she always actively connects the history to the current context and social issues.

The year I was teaching in Justine's class, her unit was based on the theme of "fairness". In tackling sensitive subjects that her students bring up through their inquiry, Justine interacts with them by giving them a general context of the opposing existing ideas on the subject then redirects their questions at them so that they may begin forming their own hypotheses. In these conversations, I observed that the students began to have more inquiries and often resulted in a conversation, debate, or inquiry amongst their peers. At this point, Justine observes and actively listens to her students making inferences and other connections with each other's inputs. She interjects with a comment or additional contextual knowledge when students reach a limitation in their understanding within their conversation or when a student is having difficulty articulating their perspective.

Justine is an active facilitator for the students to continue leading their conversations and essentially taking initiative in their own learning. Justine's use of projectors is limited to when she's showing videos or providing notes for students to copy. Conversation is their main tool and material for learning. Collaboration, critical thinking, communication, and creativity can be facilitated solely amongst a group of learners and a caring learning facilitator, sitting in an area with an atmosphere of comfortability and intimacy. The students are very comfortable amongst themselves and Justine. They work amongst themselves, and when they are deep into an activity, Justine comes to sit next to them and join in on their lesson's activity as well.

The class is a lively group who are curious and interested in the projects and lessons that Justine facilitates. They have clear opinions and thoughts on political issues, and they articulate why they feel or think a certain way by connecting the day's lessons to an aspect of their lives. During designated work times, the conversations amongst Justine and her students are not just school-work related. Students are constantly sharing what is happening in their lives, at home, and curious about Justine's interests outside of the classroom. Within Justine's 5th-grade social studies class, you will find an intimate group of learners where both the teacher and students learn from one another, where the teacher finds comradery and friendship next door, and

where the students find a community amongst themselves. You can observe the comfort and safety the students feel in asking questions, furthering their knowledge, and trusting Justine with their learning and development. The classroom set-up represents this intimate classroom and its passionate conversations on social topics and history. The subject of social studies is alive and real for these students and their teacher at Highlander Charter School.

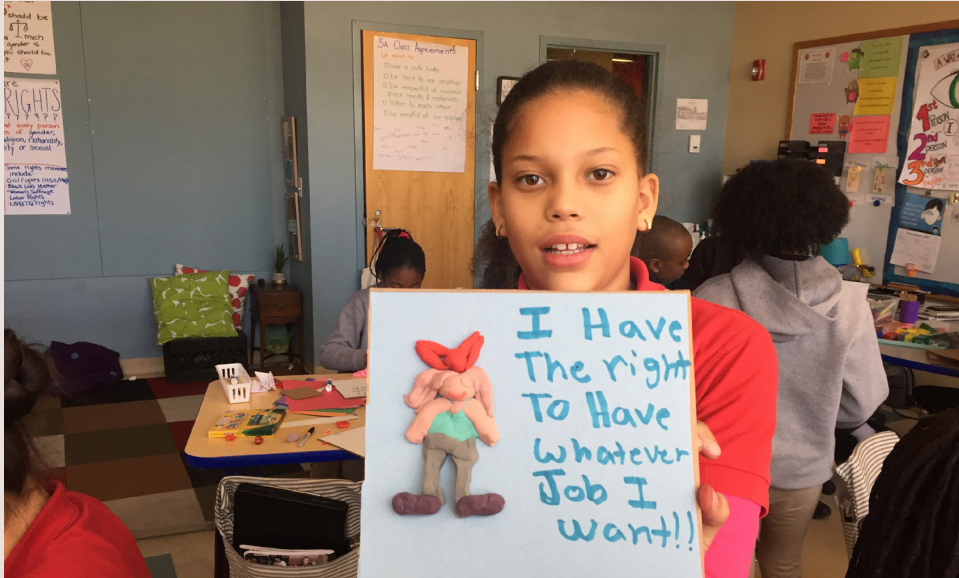


Figure 14: Student project from “I Have the Right” Project, facilitated during Fall Semester ‘18.



Figure 15: Looking up information of U.S. presidents online

Dimension 3: Virtual Space

The virtual environment is a space where all the parts of a learning environment, the physical and psychological space, can be translated to become a digitally summarized experience. The virtual environment thus serves not only as an alternative and accessible space for learning but it also works as a platform to make learning visible. The virtual environment as an alternative learning environment stands for the experimentations in Virtual and Augmented Reality, educational learning tools such as the Google Classroom Suite, video, and open-source, online learning sites which offer accessible, informative material as packaged in services. These are to streamline and offer tools for interaction at the time of learning. Teachers may also use online, digital applications and tools to help them organize and thus further personalize their assessment and teaching. The virtual learning environment is a mirrored reality to which the interactions amongst students, teachers, and the learning environment are addressed. The space functions as any tool or technology, by maintaining the principle of its essence and evolving its presentation, focusing on how we are learning and increasing the speed and efficiency to which we work.

THE INTERNET

The concept of the interconnected internet is seen as accessible. However, a connection does not necessarily equate to accessibility. Because search engines and digital platforms are services through organizations which utilize machine learning and data mining, search results are not unbiased. Researchers and educators familiar with online research understand that the results of their searches are not accurate depictions of the landscape of knowledge. Rather, it is a curation of their previous searches and interactions on the internet. Therefore, students must be aware of this search bias when they are being educated to become critical learners. Learning how to learn, research skills, and the openness to ideas outside of one's perspective is key in accessing information for learning in the virtual dimension. Our open source culture can be endangering for young learners who are in a space where everything is deemed information.

VIRTUAL COLLABORATION

Platforms such as Wikipedia host an open source platform, allowing collaboration and peer review. Although the concept ideally aligns with the 21st-century pedagogies, the lack of peer review and formality in its collaboration often results in information that could offer a good

starting point for general knowledge but alarming inaccuracies in crucial details and presentations which all inform the quality of comprehensive research. Youtube is also a casual platform which hosts a number of sources which are not all educational, but early in its timeline, users have established a community of educational material in multiple channels. However, these platforms often blend sources of affirmed assumptions with research-based theories. Therefore, when students interact in the virtual dimension, they must understand how to assess information and be able to extract well-based information to be applied to their subjects.

A DIGITAL EDUCATOR

The modularity of the Internet has permitted educators to design and construct their own pedagogical spaces within the virtual dimension. Platforms such as Khan Academy and Lynda.com adopt the same pedagogy of multimedia learning, involving interactive activities and videos for learners to learn at their own pace. These platforms have a higher fidelity reviewing process and promote an independent and personalized method of learning. BrainPOP is a particular platform for educators and learners with comprehensive, interactive digital activities and multimedia videos which teach core and supplemental subjects, designed from real standards and curriculum. BrainPOP was founded in 1999 by Dr. Avraham Kadar as a way to explain difficult concepts to his young patients. BrainPOP includes a diversity of topic categories such as the core subjects, arts and music, health, and engineering and tech, offered in platforms translated in Spanish and French. BrainPOP also has separate branches of platforms dedicated to specific audiences: educators, English language learners, and K-3 students. Justine from Highlander Charter School often plays videos found on BrainPOP to introduce the lesson for the day and searches for inspirations for lesson plans on BrainPOP's Educator sector. An often mentioned benefit of technology in classrooms is how they may expedite and streamline the teaching process. I have often observed learning facilitators of all education levels and fields ask their students to visit a lesson video before their class. The intention is to expedite the time of obtaining information to understanding the information. Justine introduced BrainPOP to me as a great resource for herself and her students. She explained that she will never know what her students watch at home, and she knows that the Internet has many strange hyperlinks, tags, and suggestions. She prefers not to take the chances of exposing them to the "darker part of the Internet" through her lessons; it would not be ideal for her nor the students' parents. Platforms such as BrainPOP is reassuring and useful since their content is familiar and can be trusted.

As learning facilitators are active in their subject matter, their presence within the virtual space provides a well-informed education lens for students who may be discovering most of their information online. As appointed leaders and facilitators of learning, their own research methodologies and the process of understanding are important to the curation of a well-informed and equipped learning environment. The sourcing and digestion of information should be collaborative, and it is important for learners and learning facilitators to share their information and understandings so each can affirm their own learnings. As the lens of the learning facilitator helps learners curate unfiltered information, the inquiries of the learner allow learning facilitators to continuously assess their understandings of their subject matter. Educational platforms such as BrainPOP is a tool for learning facilitators not only because they offer a platform of

toolkits for teaching practice, but because it also represents the learning facilitator in the virtual dimension. By directing learners to platforms such as BrainPOP, the learning facilitators can be more assured that learners are accessing well-sourced and reviewed information.

For learning facilitators to be able to affirm such learning in order to maintain updated understandings for their subject, they have a responsibility to be involved within the community and context of their work.

NETWORKED INFORMATION, GLOBAL EDUCATION

Other effects of the access to networked information are the speculations concerning the importance of global learning and global education. The convenience and power of connection are increasingly leading us to globalize locally. According to a study, the United Nations informed the public that out of the estimated world population of 7 billion people, 6 billion have access to mobile phones. In comparison, there are only 4.5 billion people who have access to working toilets (Wang 2013). This disparity in the number of working toilets to the ownership of mobile phones and data suggests that being connected to a global tribe triumphs the need for a community's overall health and sanitation. Indira Nair and Margaret Henning of the Association of American Colleges & Universities (AAC&U), in summary, align global connection as a reason for global responsibility. They state in *Models of Global Learning*:

"In this digital information age, it is impossible to ignore the interconnectedness of the world, in daily life and work. Local problems have global connections and implications, and these problems cannot be solved by individuals in a single country." (Nair, Henning, Forward).

Nair and Henning (2017) make a distinction between "global education" and the more established "international education" in the "Models of Global Learning". They describe "international" as "acknowledge[ing] that organizing components are the principles, models, and methods that distinguish one nation and its culture from another" (p.3) whereas "global" is "a quest to work on shared problems, issues, and interests" (p.3). "Global education" and "global learning" is used interchangeably throughout the text and described as being interchangeably used throughout current literature (p. 4).

"It is about sharing problems, knowing that many challenges ultimately affect everyone because of the way the world is now, and with the hope that we can share solutions. For this cooperation, we must understand one another as people based on an awareness of what our own sense of self is. This is what has come to be called global learning, with 'global' in this context meaning transnational" (Nair, Henning, 2017, p.4).

The idea of global learning and global education reads as a response to the pre-existing interconnected web of information and people. The virtual dimension is as much a space for cultural production as is the physical dimension. The diversity of cultures which interact within the virtual dimension is analogous to the classroom today. Therefore, the multicultural state of our classrooms today can be seen as an opportunity for the society to develop a highly

sophisticated framework and pedagogy for education which includes a broadened understanding of multi-modal learning (Ganesh, 2011).

Robert W. Sweeney (2004), in the article, *Lines of Sight in the "Network Society": Simulation, Art Education, and a Digital Visual Culture*, describes how as often as students access the digital space, they are engaging with digital visual culture and adapting it as a form of communicative language. The virtual dimension is interconnected where a student with a digital device is immediately connected to the world in some way as a node that serves as both a channel, source, and destination for global information. According to Sweeney (2004), this digital culture and the nebulous structure of big data systems influence the ways we are thinking of our concepts, understanding information, and taking action. As a result, there is a growing sense of curiosity and responsibility to educate and be educated comprehensively on digital literacy as well global matters.

ADDED NOVELTY, DIVERSIFIED PROCESS

In addition to the technology's virtual influences, technology's functionality within a physical classroom space contributes a certain novelty and diversifies the process of work that students do. Digital platforms add flexibility and multimodal ways of working through a contained tool such as a laptop or an iPad. The interconnectedness of devices and virtual applications allows teachers to easily monitor students' progress and see summaries of the entire class' process simultaneously. Although these added physical objects, as exemplified in the discussion of the psychological dimension, in many times, do not triumph the ability for a group of students and a learning facilitator to learn, they expand the number of choices and modes of working that students can take. I observed, in the 5th-grade class at Highlander Charter School, that occasionally, students will use classroom laptops to take notes in alternative methods. One student was making a PowerPoint to digest the day's lesson by listing key facts, summarizing information, and pulling images from the internet to supplement their text. I also found that in a media arts classroom, the possible uses of the technology in a classroom expanded. Janine A. Lee's classes at Community Preparatory School made use of a different technological function in every step of the process. When I asked about the necessity of shifting tools so often, Janine explained that she is making use of everything that is available for use. It keeps students engaged and working in a curated rhythm. In addition, she hopes that by exposing them to a variety of tools and techniques, it opens up their imagination to other possibilities and combinations of artistic processes that they may deploy.

Alternatively, this type of added novelty and process does have the potential of serving as a distraction. In the case of technical difficulties pausing the lesson or students who prefer a linear workflow, these continuous shifts may, in fact, inhibit one's learning and focus. However, then again I wonder about the intentions of this process. In the case of Janine which emphasizes learning the diversity of techniques and processes, the focus and standard for learning may not be the final outcome of a project, rather, the exposure and experience of the process of learning.

ACCESSIBLE COMMUNICATION

The virtual dimension also includes the digital platforms for communication. ClassDojo and Edmodo are mobile apps which teachers can use for free to communicate with their students and parents. Applications such as Edmodo and ClassDojo are developed through the inference that most teachers, parents, and occasionally students, own a connected device, which also leads to questions of accessibility. However, according to the National Center for Education Statistics, there are approximately 98,271 public schools as of 2013-14 and 33,619 private schools. In 2015, at least one teacher in about 65% of U.S. K-8 schools were using ClassDojo. The following year, ClassDojo was being used by approximately 90,000 schools across the country. Justine from Highlander Charter School also uses ClassDojo and was the one who introduced it to me. She uses it in the classroom to take photos of her students at work to post them on their class channel. This keeps parents updated on what their children are doing in school. This digital platform acts as a well-embedded communication tool within Justine's classroom, allowing flexibility amongst the teacher and parents. As not all parents have the time to stop in to talk with the teacher, they may fall behind in knowing what is happening in the class. In addition, students are shown evidence that their guardians and caregivers are actively communicating amongst one another and that their learning and actions are being concerned with. Through the virtual dimension, the two physical spaces of school and home which students may have viewed as separate become intertwined through their educational journey. The shared understanding and connection of the three: teachers, parents, and students, allows the cultivation of collaboration within the psychological and physical dimension. This collaboration supports the effort in creating an inclusive learning environment for a student-centered pedagogy.



Figure 16: Janine A. Lee's classroom with main screen for iPad demonstration and animation exercise

“I had some pretty well known people say things like: ‘Art is its own thing Janine, you should not be integrating!’, and I was like, I hear you, but I don’t think that’s the way to go. I think if another teacher was teaching India, there is no reason why I can’t be doing like... the arts of India! The kids need to see that Art is not here and India and History class is over there. We need to be able to make this cross over connection. It also just enriches and kind of inspires what I’m doing. I don’t need to be that specialist in a vacuum—always over here and the rest of the school is over there. I always sort of didn’t like that feeling of how the arts is always separate.”

-Janine A. Lee
Community Preparatory School
Personal Interview, 2017, November 14.

Community Preparatory School

Although many schools and classrooms do not have the resources to make educational technology an integrated system within their learning environment, there are still others who have and are actively pursuing the use of digital tools in a classroom. Take for example the aforementioned arts classes that are taught by Janine A. Lee at the Community Preparatory School, a private school, in Providence, RI. To further examine the integration of digital technology in the classroom as it possibly affects the engagement and relationships between teacher and student, I went to Community Preparatory School to visit Janine in her 3rd-grade technology and 4th-grade art class.

Janine uses a range of Google Classroom applications to lead lessons and to organize personalized assessment. Janine also instructs her students to use a different tool or application for each type of media artwork that they are doing so that the students can, over time, generate a vocabulary of various workflows using media resources and technological tools. Each lesson serves as a foundation to lead and introduce new materials and workflows. For example, learning green screen animations which border along an introduction to augmented reality or collaboratively using Google Classroom applications to share their work and track the work and progress of their peers. The alternating workflows of methodology and technology both introduces students to current educational and media technology and helps students to define each piece of technology to its main purpose and function. This way, Janine's pedagogy allows students to seek this virtual and digital learning environment with a focus not on the exciting tools themselves, but on how they can use the tools to create their own work.

Community Prep's mission statement is as stated on its website: "At Community Preparatory School, we empower our diverse student body to reach full academic and leadership potential while building a Beloved Community." Each morning, the school recites these words:

"This day has been given to me fresh and clear. I can use it to throw it away. I promise I shall use this day to the fullest, realizing it

can never come back again. I realize this is my life to use or to throw away.”

Entering the school, a large banner sign read: “Welcome to Kindness Week”, setting the tone for the community. The architectural aesthetic to the entrance of the school was clean, minimal, modern, and resembled a lobby of a corporate building. As of 2016-17, there had been 163 students enrolled at the school. 59% are children of immigrants or are immigrants themselves. 62% of the student body lives in Providence, and the rest are spread out around Rhode Island (Central Falls, Cranston, Cumberland, East Providence, Johnston, Woonsocket, etc). The community was more diverse than most of the schools I had seen other than Highlander Charter School. Community Prep’s student body was 37% Latino, 18% Bi-Racial, 18% African-American, %16 Caucasian, 9% Asian, and 2% Native-American/Other.

I walked in through the classroom door which was at the back of the classroom. I had naturally expected students to become slightly distracted or curious to an unfamiliar person walking into their class. However, the class kept their focus to the front of the classroom except for the few students whom I sat behind. Each student had an assigned Apple laptop and an iPad. Janine was demonstrating how to get onto her Google Classroom site with her monitor view projected on the front screen so that students could collectively watch and observe their peers’ screens through one platform. Some students were struggling to log-in, and the currently interning teacher’s assistant was answering immediate questions and walking around the classroom. I sat at the back, and one student turned around to ask, “What’s your name?”

I said, “Grace. Nice to meet you.”

“I think that seat is for you.”

She pointed at a chair next to me that was face towards the front of the class. On the back seat, it had a small post-it that had “Hi Grace” written on it.

“You don’t have to sit there if you don’t want to,” she said. The boy next to her turned around.

“Yeah, you can choose to sit wherever you like. You don’t have to sit there,” he said.

They watched me settle myself down. Then they turned back around to their laptop. Throughout the lesson, I observed that the students had already been taught into a routine for how to use all their devices, and Janine was very prompt and detail oriented when it came to making sure that all students were handling their devices the same way and as instructed. This sort of classroom management seemed to allow for unrestricted control over the classroom. Janine used a diverse number of digital devices and applications. It was very clear that she was curating an art-making process by using each device and application for a separate task. This way, students had the experience and knowledge of how to use a specific digital tool and when. The 3rd Grade class was very eager in terms of participation and respectful in how they were handling the devices. Between Janine and the students, the pieces of technology were emblems of expectations and trust that Janine had given to her students.

I had noticed in my previous observations of other classrooms that students were excited by the novelty of materials such as clay. However, Janine's class oversaw or had come to oversee the novelty of technology in a classroom through routine and Janine's trust. Unlike the Highlander 5th graders, the students in Janine's class moved naturally together in an orderly manner. There was less chatting amongst the class, and the questions and conversation which were raised were based on the work that they were doing.

Janine is a multi-task master. After the 3rd Grade class had cleaned up the classroom in an orderly fashion and left, we were able to have a proper introduction. Janine is the main IT person for the school, the visual arts, music, and performing arts teacher. She also coordinates school-wide events and meets with her students' teachers on a weekly basis. Her background was in music therapy where she covered everything within the arts. When she came to Community Prep, and they had asked her if she could teach Art, she claimed that she wouldn't be able to effectively teach the subject without teaching all the subjects. With her firm belief in arts-integrated and lead curriculum, Janine takes the responsibility of making sure that some aspect of the art lesson is related to the subjects and topics that students are learning in their other classes. She believes that all subjects are naturally interwoven with one another and that it is important to curate a cohesive experience for the students. It also allows them to know that their teachers are communicating and talking about them. Community Prep notes that from their 786 graduates, 97% have been accepted to college preparatory schools and 83% of their college-age alumni are attending or have gone to college, an approximately 10% higher rate than the average according to the Rhode Island 4-Year Graduation Outcomes for 2016 (RIDE).

I found that Community Prep had an active scholarship assistance program. About 60% received nearly full scholarship exempting the required deposit amount of \$3,040 which is 20% of the tuition. This 20% was asked of all families. Community Prep's full tuition is about \$15,200 excluding the extra books, fees, and lunches. However, 60% receiving a nearly full scholarship is quite the number: 97/163 students. 42 students (26%) pay quarter tuition. 8 students (5%) pay half tuition, and 14 students (9%) pay full tuition. For the 2016-2017 school year, the school had awarded over \$1,000,000 to more than 90% of their students. The school's student population has also been increasing over time.

Community Preparatory School and Janine Lee's teaching pedagogy demonstrates the possibilities of collaboration amongst teachers to enhance the experience of teaching and learning for the students. Her use of tools also demonstrates how technology can contribute to the building of trust in the relationships between teacher and student. Technology is a tool to expand students' technical vocabularies. However, it seems to serve mainly as a tool, in its representation, that enhances the students' development and growth: culturing responsibility and allowing the ability for digital collaboration.



Figure 17: Students setting up the class for the next, incoming lower grade level students



Figure 18: Display for student work

The virtual dimension is the third due to its reliance on the already established foundations of pedagogy. It is a space with tools that is for enhancing and supplementing learning. However, it cannot become a proper space for learning without the well-established foundations of classroom management and the efforts to make learning accessible and meaningful. Such tools should not be merited for what it does rather how they are used. Janine's use of technology in her classroom is grounded in her interdisciplinary practice and belief that art teachers must be collaborative and engage with what their students are learning in their core subject classrooms. She is highly organized and disciplined in framing and creating a foundation to execute her teaching philosophy. She sets up weekly meetings with the other teachers that her students have in order to integrate some of the contexts that they are engaging with into her own curriculum. The students also discover that their teachers are communicating amongst themselves about their students, raising the students' feelings of visibility. She believes it helps students maintain a continuous focus and seek education and all their courses to be interconnected. Janine believes in working to provide her students with a comprehensive education. Her background in music theory led her to believe that arts are all-encompassing and that one cannot have a well-rounded arts education with the absence of any one of the arts subjects. Equally, without Justine's natural essence to personally connect with people and her students, ClassDojo would not be as effective or be effective at all. For a tool to be able to supplement anything, it requires something to supplement.

Chapter III: Defining Modern Learning Environments

School One

In a quest to identify practical applications of the theoretical ideas I had uncovered during my thesis investigation, I visited School One, a small, private high school located on the East Side of Providence, RI. The school is a close-knit community that uses an arts-based curriculum to teach its students. Although the school does offer core subjects, there is a particular focus on writing and arts learning. Kristen Jones is the Arts Coordinator and Head of the Arts Department at School One. She kindly helped me familiarize myself with the school's campus and spoke with me about School One: her experiences at School One, her sentiments, and reflections on her own teaching philosophy and experiences.

PHYSICAL

At first glance, School One may seem to be an ordinary building with a “functional” aesthetic. The architecture of the building was based on a floor plan of a previously standing Catholic school which divided the boys’ and girls’ study areas. As I circle around the building, I found myself going up and down stairs on both sides of the building to get to classes. The facility hosts art classrooms, a media arts room, music room, and a handful of classrooms designated for core subject classes. Student work is clearly visible all along the hallways of the school, displaying the creative community that makes up School One. School One also hosts an art exhibition that is open to the public every beginning of May.

Although School One is a specialized school, their classrooms contain the usual classroom furniture such as desks, chairs, shelves, and projectors. Their arrangements are not like RISD’s Nature Lab Biomaker Space nor fit into the general aesthetic of a modern learning environment. However, their pedagogy is clearly shown through the content that populates the classroom, and in the way, the general classroom furniture is being used. The artwork is everywhere. Projects from years past to the most recent are hung and stacked in the classroom. Kristen applauded for the large sink that had finally been installed into their class. It was clear that the community was focused on creating work and focusing on their concepts, and these stacks of work that hadn’t been removed as evidence for their relentless making. When we walked around to find a place to sit and talk, all of the downstairs halls were filled with the sound of bands playing. Kristen mentioned how sometimes it can get very distracting since some of them like to “experiment”, and because other subject classes were being held above that floor.

There was talk about building a second wing on the other side of the school to contain the noise distractions.

Kristen took me around towards the music room and media arts area. “If you’re not from around here, you probably know about the Rhode Island thing,” she said as she pointed to the sign above the music room that was labeled “library”. This room had become a music room years ago, and the school community had made their previous library into an entire music room but hadn’t changed the outside library sign. She explained to me that the first day she started work here, the staff warned her that the students are not as well in-tune with change and that they will have some difficulty adjusting to having a new teacher.

As we walked down the hallway, a small section of the kitchen was to the left. She explained that they didn’t have a cafeteria. Instead, their students went either brought lunch or more often, went to Thayer Street or nearby to pick up food. They will all go out and walk to get food, bring back their Starbucks, and maybe that would be their exercise for the day. Kristen explained to me that the community here wasn’t big at all on sports. They bring in yoga teachers and they also have Tai Chi classes, and though they might not sound like high-intensity cardio workouts, the students are interested in these activities and definitely sweat out, feeling sore the next day. One time, as it was raining outside, Kristen decided to set up Just Dance on a Wii inside the Media Arts room with the projector screen and its facilities. She described how some of her students became super focused on the activity and were drenched in sweat afterward. Many of these activities and curriculum are planned for the needs of that time, just as how Kristen put together space for physical education in the media arts room. I found these interactions to be both witty, intimate, and inspirational to how the existing physical environment, despite its design, could be manipulated through the hands of pedagogy.

PSYCHOLOGICAL

I observed as general classroom spaces are shifting from the “traditional learning environment”, that they seemed to be adapting parts of art and design education pedagogies to transform their own pedagogies and the design of their learning environments. I was curious to learn about how School One, an arts-based school teaching all the subject courses with a focus on Kristen and I discussed and share our thoughts on the current trends within education such as student-centered approaches, project-based learning, and modern learning environments, as well as how these topics resonated or didn’t resonate in School One’s learning environment.

According to Kristen, a student-centered learning approach is about balancing between addressing their needs and leaving them directionless. Different students require a varying amount of direction. You can’t force a single way of working on all of them. They all learn differently. Sometimes, a teacher must assume the authority of an adult. Previously, there had been some confusion as to how much autonomy a school should give students. Kristen emphasized the importance of clearly defining the role of a high school. High school wasn’t college. Meaning, the intention of high school is to prepare students for college and so that is what the focus should be, getting students into college. Part of preparing students to be college ready is about

helping them to embed the necessary skills and habits that will equip them in figuring out how to learn, how to adjust, and how to manage their own learning. This was especially true for what Kristen had told me about students not being able to adjust very well to the “new”.

RELATIONSHIPS

Advising is a large part of School One’s pedagogy. It’s advising system allows students to take lead in their learning by planning their classes and deadlines, as well as articulating their plans for post-high school. Advisors are the students’ primary contacts, and School One hires social workers and specific mental advisors to help students who are struggling socially or emotionally. Kristen describes the school as a “group of misfits”. Many come to the school from previous experiences of bullying, social trauma, or neglect. However, School One is known house these students and help them find a community within which they have proven to show increased active participation, satisfaction, and expression. The community is welcoming, and the staff attends to the physical and social needs of students including social trauma, sexual orientation, and LGBTQ issues. The school’s strong support networks allow an environment that caters to these diverse learning methods. Kristen’s flexibility and adaptability as a learning facilitators are shown in the diverse group of engaged students who trust Kristen with their learning and concerns. One particular case was with a student who had been severely bullied at their previous school. The student had developed suicidal conditions, and the parents quickly made decisions to move their child to another school. After transferring to School One, overtime the parents found that their child had quickly found a community that openly accepted them. The student began to express themselves, find friends and showed strong improvements in their mental health.

PROJECT BASED LEARNING

There is a lot of rave about project-based learning. However, Kristen wonders about its effectiveness in relaying the contextual information. There are times when project-based learning occupies a large amount of class time to teach students the technical skills to proceed the project. In those cases, there is less time dedicated to teaching the students the necessary knowledge and context that the project was about. Project-based learning is effective, according to Kristen, at certain times when there is a designated focus in a students’ studies. However, in a high school setting where they are required to learn a breadth of subjects, it often times consume more time than it is available.

VIRTUAL DIMENSION

In our conversation about technology in the classroom, we talked about the phone use in class. I was surprised to hear that despite allowing students to leave to get lunch on Thayer Street, a popular college town area, that phones hadn’t been allowed. Some faculties were afraid of it causing distractions. The matter of trust was at hand, whether the allowance of phones could be trusted in the hands of young students or whether the allowance made room for

responsibility and higher expectations of student performance. Kristen noted that, if students are constantly referencing and researching things from their phones outside of the classroom, they should be able to use it within the class. Many times the difficulty with these students were their organization skills or habits that would help them maintain their work. School One has advisors specifically for this, who will sit down with students and teach them how to organize their schedule and keep track of their homework. In Kristen's perspective, aligning outside school experiences with their experiences within the classroom was important, and bringing phones into the classroom was not an issue, but necessary. However, what was important were the skills that students needed to form in order to make the best use of the phone as a resource or their current resources so that they would not get disorganized.

Above all, School One emphasizes a well-knit community. Everyone is welcome, though the outside building of their school may not fully represent the vibrancy of relationships and creativity that lives inside, School One is right about who they are aiming to support. The students and teachers manipulated the space as they need and wanted. On their website, they describe how many of the new students entering School One are surprised by the "lack of competition, stress or exclusive behaviors. They're also disarmed by the "genuine affection" within the community. This was true, as when I had entered the school, I was immediately greeted by the students there. Despite the usual assumptions of "cliques" and "groups" in high school, the only distinction in the group of students at School One was the new students who had grouped amongst themselves and were standing by the front of the school. The space was designated area for gathering, and School One was a community who respected one another's individuality, creativity, and pursued an education in their mutual interest in the arts.

"While our no-frills facility may best be described as "functional," students are quick to tell others, it's not the building, but the people inside it, who make them love and feel at home at School One in Providence, RI."

-School One,



Figure 19: Photo displayed in the hallway of past School One students working

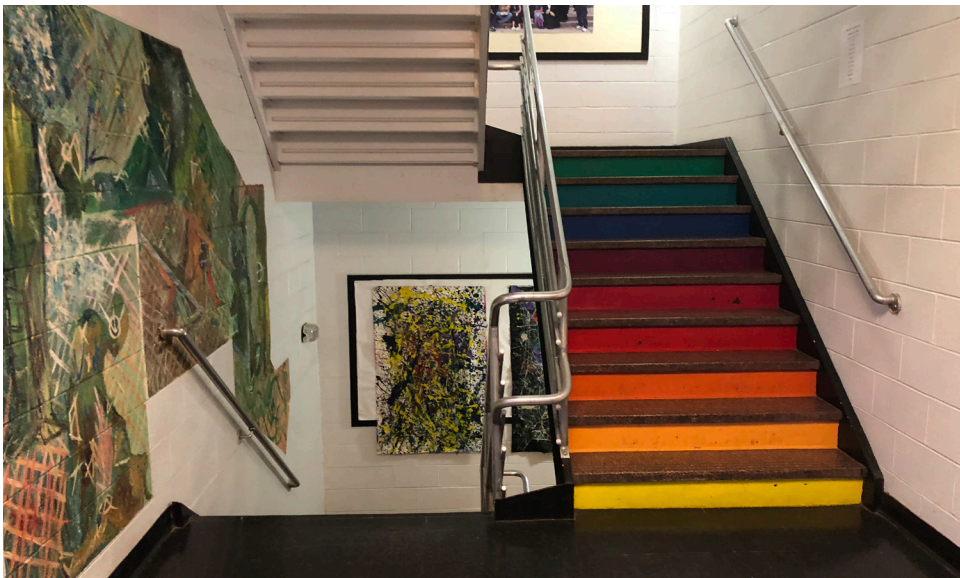


Figure 20: Hallway and stairs near the front of School One

Chapter IV: Modern Student-Centered Learning

Summary Framework for Designing a Culture of Learning

Throughout my research, I have come to find evidences of reoccurring themes and characteristics which contribute to the construction of a quality modern learning environment. First, the act of collaboration is about creating a tribe of learners. Then, within this tribe, balanced relationships are formed between students and learning facilitators through the student-centered approach. The process of learning is well granted through teaching students about learning to learn. The physical space is described as a place of gathering and a tool for communication. Lastly, the digital tools and layers of virtual spaces over the learners' cultures, offer an opportunity to connect with the rest of the world and readily view the applications of learning in context . This section combines and presents these findings as a framework to bring a more nuanced definition to the pedagogies that define the formations of future modern learning environments.

COLLABORATION: CREATE A TRIBE

A modern learning pedagogy has an embedded culture and ritual to its learning process. A classroom with its thirty-some students and teachers is its own tribe. It a relationship that is different from the previous teacher the students have had. And in the case that there is no form of technology for assessment and organization, it is true that it may become difficult to personalize learning. However, the establishment of a common culture established in a pedagogy, relationship, and space, lays the foundational vocabulary for a more streamlined communication and co-creation. As observed in the development of the Nature Lab, every group, community, and tribe have congregated through a sharing belief or culture. Thinking of the subject broadly and holistically, capture the common foundational understandings and interests of its students.



Figure 21: Annual art exhibit in Kristen Jones' class

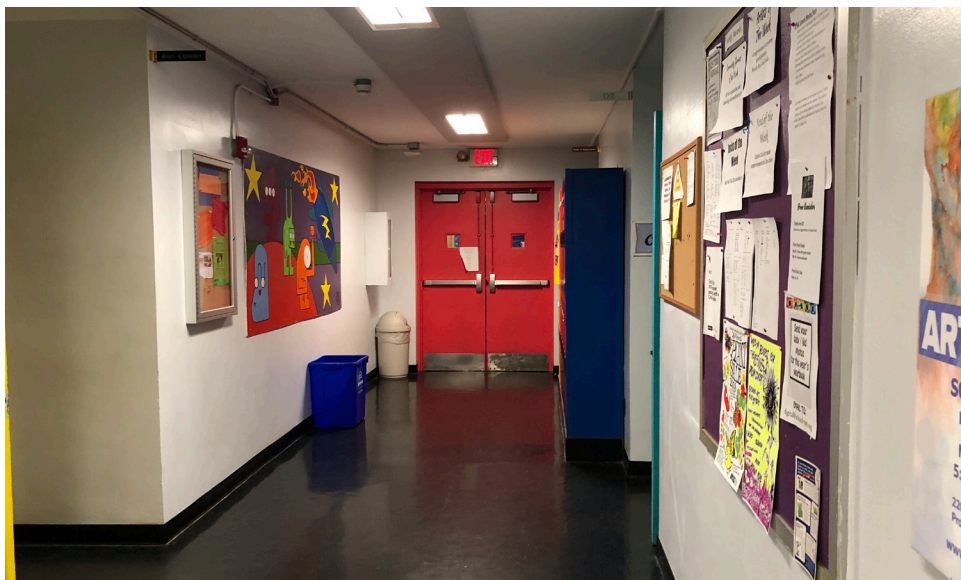


Figure 22: School One Hallway

STUDENT-CENTERED: A BALANCED RELATIONSHIP

“Student-centered” is, in summary, to prepare its learners to manage their future. Each student’s future will be different, and to take an active and understanding role in preparing students, involves keeping students in the loop about why and how they are learning. Kristen Jones from School One aims to prepare students for a post-secondary education. Alison Plump aims to bring students a meaningful experience at that moment. Janine A. Lee works to expand how students define art. Justine Mainville endeavors to connect and equip her young students to understand the world outside of their classroom and homes.

STUDENTS: LEARNING TO LEARN

Studying and working are not fun and perhaps will be difficult to put into a rhythm. However, the moment of learning is the tipping point of engagement and curiosity. Learning begins at the moment a student feels a two channel connection between themselves and what they are learning. Engaging processes in order to learn can be discovered through the connection between learning facilitator and student. At the least, students should understand the moment of learning, and it is important for them to experience that moment signify the reason why they in the pursuit of their education.

PHYSICAL SPACE: A PLACE OF GATHERING AND A TOOL FOR COMMUNICATION

The physical space is “modern” due to the presence of its new learners. As learners understand how and why they are learning, they themselves may begin to take co-ownership of their learning environment. Physical limitations of the learning environment may minimally affect the pedagogy, however, the pedagogy may significantly define and shape its physical learning environments (Shulman 2005). A designated place for gathering and a tool to communicate with the learners and the learning facilitator are the essentials to a physical environment. A foundational pedagogy and the innate human creativity will broaden the use of the few tools at hand.

VIRTUAL

The virtual environment seems to foremost raise potential in the communication and fostering of collaboration within a learning environment: engaging parents, monitoring students, and documenting the quality and effects of learning facilitation. It applies the Reggio Emilia's documentation process into a curated experience, and applies it to not just assessment but to the cultivation of collaboration.

Remaining Principles, Evolving Presentation

During the course of this thesis investigation, I have come to more fully understand that there are many variations in the translation of learning theories that drive the development of modern learning environments. One of the common pedagogies examined in this thesis is that of the “student-centered” approach – an approach I discovered that is, despite the terminology, an approach for inclusive education, which brings attention to the inequality of student voices in determining the quality learning in a learning environment. I argue, that such an approach not only attends to the desires and needs of the student alone, but that all the stakeholders actively involved in the education of our society.

It has been argued with some justification, that the pedagogies which were historically the foundation of traditional learning environments, have been found to fall short of the demands of the evolving 21st century. Progressive thinkers about education identify the importance of critical thinking, social and knowledge development, and career readiness as central characteristics of contemporary education. I argue that these very components can be found in art & design education, which is centered on the interrelationship of experimentation, critical thinking, creativity and making. I contend that technology, an increasingly advancing tool in society, requires a creative approach to further experimentation with critical thinking, intensive evolution, and refinement through the process of making. Amongst the classrooms that were examined in this thesis, Janine Lee’s Community Prep classroom exemplified, for me at least, the possibilities of integrations and varying workflows in which old and new technology could be explored.

I strongly believe that art and design education can make a significant contribution to contemporary education as it has the potential to cultivate open learning environments of exploration both in material and concept. Art and design education further has the capacity to foster, in a multicultural student population, the ability to quickly adapt to the current technology into use. As various signature pedagogies are transforming to adopt modern pedagogy to current culture and future visions, I urge the art and design education sphere to uphold its identity and expand its learning environments, its physical, psychological, and virtual dimensions, to make visible its true potential to lead and indeed envision possibilities for future learning.



Figure 23: Evolution of Chisels

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