Classroom Design: Making a Case for the Importance and the Impact of Setting on Learning and Instruction

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Background

Before deciding to go to graduate school, I taught elementary school for 7 years and was an instructional coach for 2 years. Over these 9 years, I became aware of the critical role that the design of a classroom plays. Small changes in the setting can have great impact on the teacher and learning that occurs. As a classroom teacher, I spent a great deal of time before the school year began planning and designing my classroom. I wanted to make sure the classroom was inviting, organized and a place that I wanted to spend countless hours. It was important to me that the children felt comfortable and were motivated to learn. In designing my classroom, I made a list of the behavioral or other issues that arose the previous year and planned design elements to control and eliminate these things. Student independence and self-reliance were also important elements I incorporated into my classroom design decisions. I experienced first hand the positive impact the classroom had on my students, the school community and myself.

My first semester at Peabody I took a reading course with Dr. Deborah Rowe. She encouraged me to explore my interest and passion for classroom design further through a literature review. Since her course, most of my projects and papers have centered on classroom design. I concluded my graduate course work with Culturally Relevant Pedagogy taught by Dr. Waddell. This course was insightful and inspiring. It was the perfect final course; it confirmed and fueled my passion for improving the design of classrooms in public schools. Through her course, I came to realize that classroom design is an important social justice issue that desperately needs to be addressed. I plan to continue pursuing work and research in the area of classroom and school design after graduation. The purpose of this capstone essay is to explain the significance of classroom design and the impact of design on learning and instruction and in turn society and future generations.

Introduction

The educational community can use classroom design to increase student learning, while driving ambitious instruction, and supporting the implementation of curriculum. There is currently not enough attention, in practice or research, to the design of schools and classrooms. This is an area that is overlooked and underappreciated.

For the purpose of this paper, the terms classroom and classroom environment are referring to the space, arrangement and physical components of a classroom. This includes but is not limited to: furniture, spatial patterns, flexibility, organization, materials, light, color, artifacts, access, ownership, value, roles, agency, purpose and power. Safety, comfort, versatility, and flexibility should be considerations in classroom design (Rydeen, 2008, p. 46). Nair, Fielding and Lackney (2009) state "human brains are actually hard-wired to understand and respond to patterns in all spheres of our life and, particularly, to those that exist within our built environment" (p. 12).

I begin by defining and justifying the major theoretical approach from which I ground this work. I frame the classroom as the major **context for learning** in schools and explain the importance of purposeful design. Next, I explain the impact of the classroom design (context) on: **the learner**, **the instruction and curriculum**. Then, I discuss the **assessment** of effectively designed classrooms. Finally, I review key implications and make future recommendations.

Constructivism

According to constructivist theory of learning, we construct meaning from the world we live in and our interactions with the people, things and environment in which we are situated. Patton (2002) states "constructivists study the multiple realities constructed by people and the

implications of those constructions for their lives and the interactions with others" (p.96). There tends to be misconceptions and controversy concerning constructivism in education. The theory when taken to extreme, or misunderstood can seem unrealistic to classroom teachers. Many critics of constructivism view it as a student-only or individual-only theory of learning. This is not the intent of a constructivist theory of learning. These misconceptions may come from confusing a theory of learning with a theory of pedagogy. Constructivism is a learning theory while it may guide instructional decision; it is not a theory of instruction.

This theory is based on the premise that individuals construct knowledge using prior knowledge and interactions with people, resources and the environment. This is a shift from a traditional-didactic approach to learning where student receive information directly from teachers. Teachers can no longer take the role of presenting information directly to students by was of transmission. The individual and the environment are important to the construction of knowledge.

This view of learning not only affects children but all learners (including adults and teachers). The individuals within it construct the environment and the environment impacts the knowledge constructed by those within it. This relationship is similar to what Rosenblatt (2013) describes in her theory of the reading process as transaction. In her theory, meaning is constructed during the transaction between the reader and the text (p. 927). Similar to this, meaning is constructed when people interact with other people, with resources and with the environment.

It is important that teachers take special consideration when designing and constructing the physical environment in which they will instruct and where students will learn. According to Vygotsky's (1978) theory, 'The More Knowledgeable Other' and tools are major resources,

which help people learn and develop. The classroom is a complex, multifaceted tool that can aid or impede learning. Overlooking the classroom as a tool is a costly mistake.

Classroom as Context

Do traditional classrooms support and encourage learning for all? I argue that they do not. I define traditionally designed classrooms as the typical socially constructed manifestation of what a classroom should look like. It is rooted in tradition but has not made much progress. Where almost every other area of education has evolved or progressed, classrooms remain stagnate. The educational community needs to be honest and aware of the history behind the development of education in our country and whom classrooms and schools were designed by and for. We cannot keep operating out of tradition and comfort especially when that tradition is rooted in oppression and inequality. We need to learn from the past, stay relevant to the present and look towards a better future.

"Anyon (1981) discusses her observations of how actual physical characteristics and dynamics of the classroom work to produce learning contexts suited to promoting particular interests and patterns of social control among lower, working, middle, and elite classes of students" (as cited in Ball 2000, p. 6). For example, many charter and public schools that serve lower-income children focus largely on behavior management and conformity. Some of these schools require student to wear uniforms, eat silently in the lunchroom, chant rules and creeds, limit social interaction and time outdoors. They reflect more of a prison-like environment than a community or learning environment.

Ball (2000) states, "Generally speaking, discourse patterns are generated and lived out within political contexts, within structures and relations of power inherited by humans inhabiting a given cultural and social time and space" (p. 7). Do our classrooms reflect our culture values,

social time and space? Or that of another time and space? What types of students are we attempting to shape and for what purpose? Do our schools reflect the values of the society and the current and future work force? These are questions that need to be considered when designing schools and classrooms.

According to Lippman (2007), the physical environment cannot be viewed as the backdrop for knowledge acquisition, but rather as influencing learning (p.6). Purposeful and effective classroom design is not only an important factor to support learning and instruction; it is one of the most fundamental components (Kiefer, 2012, p. 23). Students and teachers spend the majority of their day in the classroom. Neglecting the impact the space has on the teacher and the students is careless.

As Lackney (1999) states, "The classroom is the most important area within a school" (p.5). When design is done with purpose and intention, strong positive effects on teaching, the teacher, learning and the learner result. In a space designed with intention and purpose, teachers can learn from student interactions with the environment.

Gee's "Discourse" refers to the community that comes from and along with the environment (2003). "A Discourse integrates ways of talking, listening, writing, reading, acting, interacting, believing, valuing, and feeling (using various objects, symbols, images, tools, and technologies) in the service of enacting meaningful socially situated identities and activities" (Gee, 2003). The physical environment and all of its components (furniture, arrangement, organization, materials, artifacts, etc.) shape the 'Discourse' of the classroom. Schools and teachers need to be intentional about the community they are constructing through design decisions.

Classrooms "have 'affordances' and place constraints on what people can and cannot do" (Gee, 2003, p.31). What do our public school classrooms afford? What constraints do they place on teachers and students? If we value collaboration and critical thinking then we need our classrooms to afford these behaviors. Traditional classrooms with individual student desks and teachers standing at the front to lecture do not reflect these 21st century values (critical thinking and collaboration). If we want students to be resourceful we need to allow them the materials, organization and opportunity to use resources (in classrooms, in schools, in the community and through technology). If we want teachers to guide student learning and steer away from didactic teaching styles, then why are they placed in traditionally designed classrooms with traditional materials (i.e. lecture stands, heavy teacher desks, individual student desks, workbooks, large textbooks, outdated or limited technology).

Barnard noted that other physical structures in our society have encountered numerous advancements leaving school buildings far behind (as cited in Rydeen, 2005). Malls, restaurants and amusement parks conduct research and make appropriate adjustments on a regular and ongoing basis to effectively reach the public. These industries are also extremely conscientious when it comes to the design of physical space. The commercial industry spends a large amount of time and money researching physical space; they understand that people's thoughts and feeling are affected by the setting they are in (Bennett, 2008). Rydeen (2005) points out that even shopping centers regularly remodel to attract new buyers and to reflect preferences. Although students are required to attend school, considerations should still be given to attracting them. Schools and classrooms need to progress and adjust in anticipation of the upcoming generation or at the very least along with each generation. The Partnership for 21st Century

Skills (2002) warns, "Today's education system faces irrelevance unless we bridge the gap between how students live and how they learn (p. 4)."

Learners and Learning

Kenny (2011) states that Shakespeare would not find himself out of place in the classrooms of today (p. 24). Diminutive advancements have been made to the basic structure and arrangement of schools and classrooms throughout time and history. Most students today sit in classrooms that were designed for past generations. Robinson (2010) explains that schools were designed based on the industrial revolution and he challenges schools to prepare students for what he calls 'the learning revolution'. In order to prepare students to be contributing members of society, schools need to adapt accordingly to the changes and advancements in society. Students need to do much more than take orders and follow directions. We are no longer a country that is preparing students for factory work and conformity. Students need to be creative, innovative thinkers who can express their ideas and work well with others. According to Ball (2000) if we want to empower students and show them that they are valued and respected then we need to adjust the learning environment to meet the needs of the students instead of forcing students to conform to a rigid or irrelevant environment (p. 17).

Studies have shown that space impacts student behavior, attitudes and interactions with peers and teachers (Nair et al, 2013, p. 16). This impact can be positive or negative. The appropriateness of design elements depends on purpose and intent. For example, design elements, like ceiling height, affect energy levels and student behavior. Lower ceilings promote quiet behavior while tall ceilings stimulate active behavior (Nair et al, p.16). If teachers want to create a quiet reading space it would be beneficial to make a nook or cave-like area with lower ceilings.

Students interact with the environment to create meaning and construct knowledge. This is why what is included (and excluded) in a space merits special consideration. Classrooms benefit from design elements that allow students to understand and create meanings effortlessly (Whitmore & Laurich, 2010, p. 21). When planning and designing classrooms, it is important to consider the implications of what the classroom affords and what it does not. Student learning is stimulated in classrooms where relevant and active engagement is afforded (Alexander, 2006, p.85). Affordances are created by what teachers and students perceive as valuable in an environment. Classrooms that offer and create more affordances for students see better results (Kyatta, 2002). For example, a classroom with a variety of books and a rich library available for students portrays very different values and affordances than a classroom without a library or with only basal reading books available to students. A classroom with basal reading books as the only option for student reading positions reading as a school subject, not an authentic part of every day life with a variety of goals and purposes.

The layout of a classroom speaks to the power and value in a classroom. For example individual student desks arranged in rows facing the teacher at the front of the room places the power and knowledge with the teacher. Students are positioned to look toward the teacher and acquire knowledge from the teacher instead of collaborating and constructing knowledge. The layout tells who belongs, or does not and for what purpose (Whitmore & Laurich, 2010). For example, classrooms designed in rows all facing the board with a teacher's desk or area that students are not allowed near, paints a clear picture about where power resides and what type of interaction is valued. A teacher desk that is positioned in front of students' desks or that takes up a large amount of space portrays the teacher as the supreme authority and does not reflect a shared learning environment (Cookson, 2006, p.15).

The decisions teachers make about what to include and exclude in the classroom also speak to what is valued. According to Boldt (2001), each of these decisions weighs heavily on students and has strong implications about who children are and what they are capable of becoming (in this particular setting). Teachers have to be very cognizant of how the classroom positions students and the roles students are situated in. For example, print should be limited to what is relevant and useful. It should reflect the authentic experiences and learning occurring in the classroom (Tarr, 2004). She argues that commercial print can "silence the actual lived experiences of those individuals learning together" (Tarr, 2004, p.90). Too much print can cause overstimulation and be a distraction for students. Charts should be authentic, reflect the learning and instruction that has actually occurred, involve students in creation, and be purposeful for student use. Print that is not relevant and useful to students should be removed.

Curriculum and Instruction Strategies

I argue that classrooms designed with attention to pedagogic goals, student learning goals and the curriculum have a greater impact on student learning. "Weinstein recommended that learning environments in schools should be considered as important as the curriculum and that the physical aspects of learning should be carefully planned by teachers in order to match with teaching objectives and the learning needs of students" (as cited in Cleveland, 2011, p. 57). Additionally, I believe that classrooms designed with attention to quality, ambitious teaching and learning goals provide guidance to the teacher and influence instruction decisions. A purposefully designed classroom is an avenue to shape and support the instruction that occurs.

The Reggio Emilia approach identifies three educators in the classroom: the teacher, the child and the environment. Often times the environment is overlooked completely (Strong-Wilson & Ellis, 2007, p. 40). If the environment is an educator then precise planning of the

space is vital. Both intentional and incidental learning occur in many different contexts. Classrooms exert influence on both teachers and students. The classroom design can reflect or contradict the teacher's beliefs and pedagogy. The teacher's view or beliefs about knowledge and how it is constructed can influence what is included in a classroom.

According to Fisher (2002) spatial arrangements impact the development of pedagogies. If schools and districts want updated pedagogies and 'best-practices' in schools then we need to update the space to reflect these desires. We spend so much time, energy and resources on changing teacher behaviors without changing the space. The classroom affords particular pedagogies and can impose certain agendas on teachers as well as students. Traditional classroom design affords a didactic pedagogical approach, transactional teaching and passive learning. Many traditional classrooms reflect a behaviorist view of development (Alexander, 2006, p.65). According to Upitis (2004) traditional classroom and school design comes from the Industrial Revolution and a factory model of education. This (transmission) model of instruction is limited and designed for homogenous group of students. This model does not reflect the workplace or expectations of teachers in the 21st century. If educational leaders expect ambitious instruction, they need to put teachers in settings that reflect those expectations not the expectations of the Industrial Revolution, or past generations.

Much time and money has been put into updating curriculum to keep up with current educational research. Updating curriculum without updating classroom space creates troublesome contradictions. Current and new curriculums are difficult to implement in traditionally designed classrooms. The type of learning that is valued in new curriculums and the Common Core standards is in direct conflict with traditional classroom settings.

Traditional classrooms are more conducive to didactic teaching approaches and curriculums. Upitis (2004) argues that a major reason teachers fall back on the previous ways of teaching is due to outdated classrooms. She states, "the buildings in which we house students and teachers play a large role in perpetuating the transmission model of teaching, despite the alternative models of teaching and learning that have been proposed and analyzed and discussed and modeled by educators, researchers, and psychologists for the past century" (p.21).

Assessment

I argue that since classrooms have such great impact on teachers and students, we need a way to assess the effectiveness of the space. How do we assess the effectiveness of classroom design? To answer this question much more research is required. I believe the first step in assessing classroom design is awareness. Once the educational community is aware of the impact of design, we can begin to reflect upon alignment and effectiveness.   With awareness, teachers can be more purposeful; administrators can guide teachers, families and students; districts and policy makers can influence and strengthen implementation of ambitious practices.

Cleveland's (2011) research on middle school learning environments found that effectiveness of learning environments was dependent upon alignment of the environment with pedagogies, curricula, assessment practices, and social factors. He suggests policy reform address needs in the classroom design, which he refers to as the 'built environment'. Cleveland (2011) argues that flexibly in the environment is not enough; environments need to be reflexive meaning they are designed to guide teaching and learning. This is an innovative perspective that can guide classroom design.

The design of the classroom directly influences the teaching and learning that takes place within the classroom. The classroom itself can be a support or a hindrance to the teacher, the

implementation of the curriculum and the learning that occurs. We need a way to assess the

degree to which the built environment reflects and supports curriculum or to what degree it does

not. We also need a way to assess the impact of space on student learning, motivation and

behaviors. When people become aware of and observe the environment, they realize the active

role it plays in both learning and instruction. According to Nair et al (2003), " A physical space

can hinder learning either directly (for instance noise or crowding), or symbolically (students

make limiting assumptions about learning based on the limited way it is presented at school)" (p.

16). Student surveys could aid in the assessment of school and classroom space.

Another way we can look at assessing classrooms is through Dewey (1938)'s theory of

experience in education. His ideas of making school relevant (to students lives and for their

future success), exposing children to authentic and meaningful experiences and breaking from

old habits to reimagine what schools need to be can all be used when evaluating what makes

classrooms and schools effective (Dewey, 1938). Dewey (1938) explains, "in a well-ordered

school the main reliance for control of this and that individual is upon the situations in which

these activities are maintained" (p. 54). He goes on to explain that when teachers in successful

environments have to exhibit control or intervene that they do so as a member of the community

(in which students are vital and respected members) (p. 54). Using Dewey (1938)'s theory, a

successful and effective classroom is one that: draws upon personal experience, is relevant to

student's lives, creates and maintains a sense of community and belonging, and where students

and teachers work together towards common and shared goals. Through updated standards,

curriculum and pedagogy we are advancing towards Dewey's ideas, in school and classroom

design we are far behind.

Key Implications

Change in school and classroom design is overdue and imperative (Bennett, 2008; Kenny, 2011). Currently schools and classrooms do not reflect societal norms and values (Robinson, 2010; Upitis, 2004). Classroom design impacts students, teachers, curriculum and the community (Bennett, 2008; Kiefer, 2012; Lackney, 1999; Lippman, 2007; Nair et al, 2009; Rydeen, 2005). Traditional classrooms are not designed to meet the needs of all students nor do they reflect societal and workforce values (Ball, 2000; The Partnership for 21st Century Skills, 2002). If we want to see changes in student and teachers behaviors then we need to change the space they occupy (Fisher, 2002). It is important to remain flexible and reflexive in order for schools to become and remain relevant (Cleveland, 2011). Successful classrooms are well-planned, relevant, co-constructed, purposeful communities of learning (Cookson, 2006; Dewey, 1938; Tarr, 2004). More research is needed to help inform teachers and educational leaders.

Future Considerations

Although theorizing and research has begun around classroom design, we are only in the beginning stages of this important work. As an educational community, we need to raise awareness and understanding of the significance of classroom design. There are a good amount of scholars and educators who have theorized about the importance of classroom design elements such as, seating arrangements, furniture, lighting, and air quality but very limited current and reliable qualitative or quantitative research studies are available. According to the information we do have, this is an area that can no longer be overlooked or trivialized.

Public school education, as a whole, is behind other educational approaches in recognizing the importance the classroom plays. Montessori and Reggio Emilia are educational approaches where the physical classroom and the artifacts included in the classroom are valued and given considerable planning and attention.

Research on the classroom design is wide-open for researchers. Every area needs to be explored. This is an important area of research that has yet to be thoroughly explored. A grounded theory approach to classroom design research may help lead other research in new and important ways. Below are *some* suggestions for future research questions:

What constraints and affordances are created by/in classrooms?

What supports do teachers need when designing literacy classrooms? For designing more effective learning spaces?

What makes a classroom/learning space most effective?

To what extent are classroom design decisions grounded in literacy theory?

What are the findings when classroom design decisions are linked to theory and aligned with teacher beliefs (vs classrooms that are not grounded in theory or that contradict teacher beliefs)?

How can theory help teachers design classrooms? What knowledge or information do teachers need in order to make this a practical task? How can we practically provide these resources and information to teachers?

To what extent do classrooms align with teacher values and beliefs about learning and instruction?

Is the classroom design a reflection or a contradiction of teacher pedagogy?

How can we design classrooms to drive ambitious instruction?

Do classrooms reflect the goals of current curriculum(s)?

How can classroom design be used to support curriculum implementation?

How can classrooms best support students of this generation and future generations?

How can we make classrooms and schools attractive places for students, parents and

teachers?

Which elements of classroom design have the most impact learning and instruction?

How can schools collaborate with other industries and successful corporations to improve our schools and the design of classrooms (i.e. Disney, arcades, Google, IDEO, architects)?

How can public schools incorporate principles from Montessori and Reggio Emilia to improve schools and classrooms?

How much flexibility/structure needs to be given to teachers around design classroom?

How to ensure policymakers and districts do not use this as another way to micromanage teachers?

Conclusion

The classroom is the setting in which the majority of school-based learning takes place. The design of the classroom significantly impacts learning and instruction. It is important that we find ways to understand and evaluate the impacts and effectiveness of learning spaces.

Traditional classrooms arrangements still reflect the design of one-room schoolhouses. The majority of schools and classrooms are outdated; they have not been updated since the Industrial Revolution. Education is behind other fields and industries when it comes to updating, utilizing and maximizing space.

Purposeful and effective classroom design is not only an important factor to support learning and instruction; it is one of the most crucial components (Kiefer, 2012). The physical arrangement of learning environments should be carefully constructed across all grade levels and domains (Alexander, 2006). The layout and organization of materials should strengthen the learning and instruction that occurs (Cookson, 2006).

The world students live in is rapidly and drastically changing while school buildings remain stagnant. In order to remain relevant, schools must keep up, remain flexible and adapt with the demands of the changing world outside of the school building (Partnership for 21st Century Skills, 2002). Schools and classrooms must also keep up with the changes in the educational world. The majority of school building and classrooms have yet to do that.

The classroom environment can either hinder or help the teaching and learning that occurs within it (Rydeen, 2005). Classroom design should not be a secondary consideration or afterthought for teachers and administrators. My hope is that the educational community will: be mindful of the implications of classroom design, come to understand the significant and active role the classroom plays for teachers and students, and take careful consideration when planning future classrooms and schools.

We shape our buildings, and afterwards our buildings shape us.
- Winston Churchill

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