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The Physical Space of the Classroom and its Impact on Creativity

By
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An Honors Thesis Submitted in Partial Fulfillment of the
Requirements for Graduation from the
Western Oregon University Honors Program

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Abstract:

This thesis will address the impact of the classroom environment on the creative thinking of elementary learners. Using extensive research, the following writing will address factors such as physical space, flexibility of the classroom, desk arrangement, resources, curriculum, hierarchy of systems, and range of activity/subjects. For example, the proposal will give strategies as simple as switching the arrangement of the room or where the students sit, but also suggest changes to the system of public education as a whole. In our current education system, there is something about the way children are being taught and what they are being taught that is discouraging originality. As a nation, we understand that creative thinking is often difficult to find. My interest in this topic grew from a concern about the lack of emphasis in our classrooms on creativity and its importance. If we cannot value creativity, then we will lose the potential of new ideas and discoveries as well as the ability to use critical thinking and problem solving. These are all essential skills for our society, and they need to be addressed for our upcoming generations.

Problem Statement:

For many years, people have debated about creativity and the factors that affect it, especially when it comes to the classroom. This has been controversial because of the lack of solid research on creativity and, rather, the emphasis on curriculum and standard based instruction. Many people assume that creativity is an innate ability that only applies to certain people. In other words there are people who are born to be creative and some people who simply are not. At first glance, it may seem like this assumption is correct, but if we really look at research we find that creativity can be fostered in the correct learning environment. The initial perception fails to take into account physical factors and strategies that cultivate creativity in a daily setting. If we continue to believe that creative thinking cannot be nurtured, we will continue to have trouble with a lack of creativity in the work place and our society.

In order for creativity to be a prominent trait, it needs to be a priority in our classrooms. Creativity is something that can be taught. Children are not meant to be robots who simply repeat facts from rote memorization. Additionally, the robotic behavior that we are instilling in young people is not what many employers are looking for in their employees. We need to be intentional about implementing creative thinking and uniqueness in our students' minds and celebrating new and

interesting ways of thinking *even if those ways violate our current perception of the "ideal student"*.

In order to validate intentional creative instruction I investigated this question: *What environmental factors affect creativity and how can we manipulate those factors to produce creative thinking in our students?*

Introduction:

Creativity is something that the workplace has been trying to harness for a long time. It is what drives innovation, invention, and new perspectives, and it is vital to the furthering of our technology and society. However, it seems that our country is disappointed with our progress in creativity. In a global benchmark study conducted by Adobe, they found that only 25% of people believe they are living up to their creative potential, and more than 75% of people feel that their countries are not living up to their collective potential to be creative (Parekh, 2012). Ms. Lewnes, the senior Vice President of marketing at Adobe commented, "The most disturbing data was on the state of education... Teachers were perceived as the least important judges for creativity, which is troubling for the future and for youth" (Parekh, 2012, p.5). The goal of this project is to address teachers' approach to creativity in the classroom and form new ways to promote creativity in students by constructing a classroom that is useful in spurring creative thinking in students.

Where exactly is it that creativity seems to disappear? From Glasgow, a conference in March, 2005, by the Scottish Book Trust, "Of 1,600 children aged three to five who were tested, 98% showed they could think in divergent ways. By the time they were aged eight to 10, 32% could think divergently, and when the same test was applied to 13 to 15-year-olds, only 10% could think in this way" (Bartel, 2008, p.43). Students should become more creative as they move through their schooling –

not less; so what is it about education system that is discouraging divergent thinking? We need to be able to address the factors that are killing creative thinking so that we can change them, and one of these factors is the physical environment that children are placed in.

Personal Interest/Relevance:

I started to become more interested in this topic because I am aspiring to become an elementary teacher and I think that creativity is vital to deliberately integrate into the classroom. When I was a student in elementary school I remember that the style of teaching was often very dry. I feel like I missed out on the opportunity to really talk about how to spark creative thinking and do it deliberately. I am of the opinion that we can teach students to be creative thinkers if we give them the tools and the right conditions to practice. I think that teaching children to be innovative is what we need to put emphasis on the importance of generating new ways of thinking. We have standardized our public schools, which can be a good thing in ensuring equal opportunity. However, has innovation been lost in the process? Standardizing seems to have the connotation that every student must produce the same work and the same results. In this model, it is vital that we create unique classrooms that deliberately encourage and reward creative thinking so that creativity is integrated into the very curriculum we teach and the physical spaces that we teach in.

Research Methods:

In order to complete this project, I looked at the research that has been done to define creativity, to outline the factors and strategies that influence creativity, and at how physical space and learning environment can encourage or discourage creativity. I also looked at the research that highlights how businesses encourage creativity in their workplace because this can be transferred into the workplace of the classroom. I used both of these types of factors to create a collection of ideas for organizing a classroom and curriculum to intentionally create a creative atmosphere such as desk arrangements, amount of free space, types of resources, the organization of communities, and creative teaching strategies. These strategies include giving learners opportunities for choice and avoiding teaching by imitation when possible. To facilitate this, the learners might be given choices in what they use to create something or given little instruction and open ended assignments. In regard to resources, students must be given the chance to invent, so having unconventional resources and inventing time would spark this skill in students' minds. Beghetto and Kaufman (2014) comment on creativity with regard to physical space, "With respect to the physical environment, the flexible use of inside and outside spaces, materials, and time can promote student creativity" (p.74).

Ultimately, this thesis will develop ways to encourage originality in a variety of settings including small groups, individual learning, and whole class experiences. By

changing arrangements such as desk organization or “centers” around the room, the classroom setup will clearly devote itself to innovative learning. For example, Gomez (n.d.), a researcher from the University of Alabama, talks about the difference between convergent and divergent (creative) thinking. The process of creative thinking is described as fluent, flexible, and original (Gomez, n.d.). To encourage this kind of thinking we need a classroom space that is flexible and easily manipulated as well as original. This means that the desks and classroom should be easily moved around. One example of flexible objects would be desks with unattached chairs. Bartel (2008) explained, “I emphasize the importance of divergent approaches by changing habits of work” (p. 54). I will use this and many more examples to create a classroom space that is conducive to divergent thinking.

Outcome/Purpose:

My purpose in completing this project is to take what we know about creativity and integrate that into both the physical environment of the elementary classroom and the strategies used within that environment. Physical space, environment, and classroom set-up can influence creativity. A creative classroom, as I have come to understand it, will not be a cookie-cutter design, but rather a classroom space that fits the needs of creative thinking. What I am hoping to create is a way for teachers to make a versatile space that can be easily maneuvered in for young learners, so that they can reduce any barriers to creativity while still keeping the classroom

functional. All of these strategies are based in the sound research that has already been conducted on creativity this far.

The Current Situation:

Guilford questioned, in his inaugural speech to the American Psychological Association, the role of schools in not producing more creative students, “Why is there so little apparent correlation between education and creative productiveness?” (as cited in Fasko, 2001, p. #32). There is a growing interest in the study of creativity, especially with regard to public education. However, people are becoming very dissatisfied with the results of creativity in the classroom. At a conference in Glasgow, England, Bartel (2008) explained that “Of 1,600 children aged three to five who were tested, 98% showed they could think in divergent ways. By the time they were aged eight to ten, 32% could think divergently, and when the same test was applied to 13 to 15-year-olds, only 10% could think in this way” (p. 6). So what is happening as our children are educated that causes this drop in creative thinking? There is more data to support this decline from Torrance (1961), “Kirkpatrick in 1900 presented data to show that there is a drop in the imaginative abilities of children in the fourth grade and that it continues through the fifth and sixth. [...] Some investigators regard this slump as more or less inevitable, maintaining that the most parents and teachers can do is to ‘keep open the gates for its return’. Others maintain that this ‘loss of creativity’ can be offset at any period in

the life-cycle though creative teaching or supervision” (p. 21) It is evident that there is a decline in creative thinking as children travel through education, however, is it because of an inevitable shift in the development of a child, or is it rather the direct result of a decline in creative teaching? I would argue the latter and the purpose of this research is in fact to implement intentional creative teaching into the pedagogical strategies of educators through the physical space in order to offset the loss of creativity.

Hennessy (2004) explained that “Creativity does not come about in a vacuum” (p. 3). There are conditions, factors, environment, stimulators, and practices that can either positively or negatively affect creativity in both scale and frequency (Hennessy, 2004, p. 8). Because of this, there is a potential to intentionally generate an environment that stimulates creative thinking and production. This research will focus on defining what the word creativity means and identifying environmental factors that will produce a creatively responsive environment.

In a global benchmark study conducted by Adobe, they found that only 25% of people believe they are living up to their potential to be creative, and more than 75% of people feel that their countries are not living up to their collective potential to be creative (Parekh, 2012). Lewnes comments again on the state of education, "The most disturbing data was on the state of education... Teachers were perceived as the least important judges for creativity, which is troubling for the future and for

youth. (Parekh, 2012, p. 5) As more and more people are realizing the value of creativity and the unfortunate lack of emphasis on creative learning in education, there is a call for change in the way that we educate our next generation and the way that we value creativity in our society. In a Ted Talk “Do Schools Kill Creativity?”, Robinson (2006) states, “My contention is that creativity now is as important in education as literacy, and we should treat it with the same status” (minute 3:15).

Isenberg and Jalongo (2014) shed some light on this issues that we are facing in schools with regard to creativity:

Schools suppress creativity. How can this be stated so categorically? The reasoning goes as follows: most children are naturally curious and highly imaginative. Then, after they have attended school for a while, something happens. They become more cautious and less innovative. Worst of all, they tend to change from being participators to being spectators. Unfortunately, it is necessary to conclude from the investigations of many researchers (most of whom have been professional educators) that our schools are the major culprit (as cited in Dacey, 1989, p. 200).

The shift that this article mentions of children changing their role from participator to spectator is very important. Creativity is a very active process that demands

student engagement and work. It is the opposite of rote memorization and regurgitation of information.

Robinson (2006) remarks,

[...] kids will take a chance. If they don't know, they'll have a go. Am I right? They're not frightened of being wrong. I don't mean to say that being wrong is the same thing as being creative. What we do know is, if you're not prepared to be wrong, you'll never come up with anything original — if you're not prepared to be wrong. And by the time they get to be adults, most kids have lost that capacity. They have become frightened of being wrong. And we run our companies like this. We stigmatize mistakes. And we're now running national education systems where mistakes are the worst thing you can make. And the result is that we are educating people out of their creative capacities (minute #12:54).

So through education, our students are switching from participators to spectators and they are also given a fear of being wrong. We can see this in the emphasis on state testing. Students experience test anxiety and fear of failure because being wrong means failure. How can children be creative in this kind of learning environment? Creativity comes with a certain amount of freedom to explore and test and retest and create. It's a process that cannot be measured with a multiple choice quiz. This is the problem with creativity... it cannot necessarily be controlled.

Hierarchy:

Robinson (2006) continues to say,

We know three things about intelligence. One, it's diverse. We think about the world in all the ways that we experience it. We think visually, we think in sound, we think kinesthetically. We think in abstract terms, we think in movement. Secondly, intelligence is dynamic. If you look at the interactions of a human brain, as we heard yesterday from a number of presentations, intelligence is wonderfully interactive. The brain isn't divided into compartments. In fact, creativity — which I define as the process of having original ideas that have value — more often than not comes about through the interaction of different disciplinary ways of seeing things. (minute 13:09)

The brain is not divided into compartments. We cannot expect students to put each content area into a box only to be brought out at a certain time. They will use what they learned in math while they are learning about science. And then science will apply to literacy. And literacy will apply to art, and so on. The brain is not meant to function in zeros and ones. There are no on/off switches and we are always naturally looking for connections. This should affect the way we teach. Every content area is important and needs to be given value in the classroom. So why is there a hierarchy of subjects? Robinson (2006) goes on to say,

Every education system on Earth has the same hierarchy of subjects. Every one. Doesn't matter where you go. You'd think it would be otherwise, but it isn't. At the top are mathematics and languages, then the humanities, and at the bottom are the arts. Everywhere on Earth. And in pretty much every system too, there's a hierarchy within the arts. Art and music are normally given a higher status in schools than drama and dance (minute 8:42).

Because of this hierarchy, we have given value to certain contents over others. We have essentially compartmentalized education, but that's not the way the human brain functions! Robinson (2006) talks about the consequence of this hierarchy, "[...] many highly-talented, brilliant, creative people think they're not, because the thing they were good at at school wasn't valued, or was actually stigmatized" (minute 12:10).

Defining Creativity

There is now a growing bulk of research on creativity in children and what factors affect that kind of thinking. The first hurdle that researchers have to jump, however, is the problem of defining what creativity is. It is a word that is used somewhat ambiguously in everyday context, so in order to study it researchers must first define it. There are now several working definitions out there that are useful in defining the

abstract concept of creativity. Torrance (1965) sheds some light on the vast collection of possible definitions by finding the commonalities in each:

Some definitions are formulated in terms of a product (invention and discovery, for example); others, in terms of a process, a kind of person, or a set of conditions. The production of something new (to the individual or to the culture) is included in almost all of these definitions. Some writers have defined creativity as being different from conformity and as requiring non-habitual rather than habitual behavior. Some specify that creative contributions must be true, generalizable, and surprising in view of what existed at the time of the discovery. Some scholars insist that the term “creative” be reserved for very rare and particularized kinds of ability, while others apply the term to a general creative ability possessed to some degree by all essentially healthy individuals. Others have suggested that we think in terms of different levels of creativity (p. 663).

There are a few things about this excerpt that I would like to highlight and summarize. First, Torrance (1965) describes creativity as a kind of process. There is an order of thinking that occurs before creativity or a product is produced. Another important element of creativity that Torrance (1965) mentions is that every definition of creativity seems to have the commonality of something being produced from the process. A new idea, a technology, a product of some sort comes about

after the process of creative thinking is concluded. This product is a result of the thinker trying to fix the problem that they have been presented with. The new production is not something that is frivolous, instead it is useful and meaningful to the creator. Another thing worth noting about the new product is that it only has to be new to the thinker. Torrance (1965) even says above that the production is “new to the individual or to the culture” (p.43). In fact, originality in the global sense of the word does not necessarily need to occur for the person to be executing creative thinking. It is of course more useful to society if the product that is created is something entirely new that would improve life for others, but this is not as important for the classroom setting where the teacher is simply trying to get the students to think in ways that they have never thought in before. Further, Torrance (1965) continues to define creativity as:

The process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies; testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results (p. 663-664).

Consider that creativity occurs in response to a problem or lack of knowledge that gives the individual purpose in finding or generating a result. This is a very important

element in creativity as it gives us a way to generate creative thinking. The students need to be presented with a problem that they have to solve using unconventional methods. This is something that needs to be primed, so to speak, as the students have to first be taught to become sensitive or aware of these kinds of problems. In fact, it is imperative that the students are encouraged to seek out problems to solve that are a part of their daily lives. This will make the problem relevant and give motivation to solve it. There is no joy in finding an answer that didn't apply to the person. After the problem or deficiency has been solved, the student needs to be able to effectively communicate the results.

My Definition of Creativity

After all of this research, my definition of creativity has come to this: Creativity is being able to generate ideas relevant to a problem and then having the gumption to test and manipulate that theory without fear of failure. Every piece of research that I have examined has led to the fact that creativity must come about with new ways of thinking, and certainly creativity is not useful unless it is relevant in solving a problem or making an improvement. Then, creative thinking also must come about in the minds of individuals who are willing to attempt the ideas, or else the creativity is lost. So creative persons are brave thinkers who are solving problems.

Factors Influencing Creativity

Now that we have a working definition of creativity, the next step is to analyze the factors that affect creativity. While this paper will focus on the factors of the physical environment, other factors that influence creativity will also be discussed to help shape the physical environment.

There has been growing research on whether or not the physical environment can affect creativity, and through this research I have come to the conclusion that it does. Beghetto and Kaufman (2014) comment on creativity with regard to physical space, “With respect to the physical environment, the flexible use of inside and outside spaces, materials, and time can promote student creativity” (p.4). It is important to note that spaces, materials, and time are listed as elements that can affect creativity. These are all physical in nature and structure; additionally, they are all what make up the physical space in the classroom. Time seems to be an interesting one that stands out from the others, but the amount of time that is spent on certain things places value in some things above others. What is important in the classroom will also be important to the students. Hennessey (2004) also explained that

[Creativity] can be nurtured if conditions are right for an appropriate interaction to take place between the individual and the environment.

In fact, the influential effects of classroom environment on motivation

and creativity of performance are staggering. Research is reviewed that reveals that the typical American classroom is fraught with killers of intrinsic interest and creativity (as cited in Hennessey, 2003, p.14).

This quote speaks to the purpose of this thesis. The classroom environment has staggering effects on the thinkers in the room, so it should certainly be used thoughtfully and intentionally.

The classroom environment has equal effect on both motivation and creativity, which are two defining factors of the creative process. The students must first be interested in a problem or question and then motivated to use creative and critical thinking to improve, rebuild, or create something to solve it. A student's motivation in solving a problem is directly correlated with their amount of effort. So the classroom should be a place where students are allowed to ask questions that they are genuinely interested in. In turn, the teacher should make every effort to present the students with problems that pertain to their lives or that they can make connections with. What I mean by connections is that a student will be more interested in solving a problem that involves something or someone that they already have background knowledge with. In other words, the student has something to stand on to start the problem solving process. You wouldn't hand a toddler a Rubik's cube and expect them to solve it. But a 10 year old might see the different colors and how it moved and probably be able to work out its intended

purpose. This is because they have some background knowledge of colors and puzzles and spatial awareness that give them something to stand on.

Beghetto and Kaufman (2014) state, "Creativity is an inherent part of the everyday human experience. Certain conditions make it more or less likely to be expressed, but human creativity is resilient" (p.9). Some scholars argue that creativity is a rare form of thinking that only pops up on occasion or by chance, but creativity is a part of the everyday human experience. We all go through the creative process in many ways, however the key is to be intentional about promoting creative thinking. The last step in the process of creativity that Torrance (1965) mentions in his definition is that the person ends the process by communicating the results. So now teachers must intentionally create a space that involves creative thinking and then give the students an outlet for expression. This might involve things like places to display work or to share with others, table groups or grouping strategies that allow for collaboration and sharing, even publishing stations that give materials to finalize work to be shared. This concept greatly affects the physical set up of the classroom so that students have avenues to share their work in a safe and accepting environment.

Matt Norquist, executive Vice President at Strategy One says, "We see [creativity] as being hampered by lack of time and the environment they are in not being conducive to creativity" (Parekh, 2012, p. 41). Norquist continues, "We clearly

haven't quantified the value of creativity in the workplace. ... Productivity and creativity shouldn't be [contradictory]. If we can get to the point where the two are brought together, that value can be taken to the bank" (Parekh, 2012, p.41). I would argue that this same attitude has been adopted in the culture of education. We haven't valued the practice of creative thinking and it is only recently becoming a new focus. There doesn't seem to be time for creative learning when teachers are bombarded with testing and standards. The students are under a lot of pressure to be productive and to compete in the world as students and eventually citizens, however creativity shouldn't be a side bar. In fact, creativity is a partner in getting our students ready to be world competitors in business, economics, politics, education and all other professions that make up our society. . As Vasquez (2006) argues, we allow students to think creatively and critically when we give them time with a problem or a text (p.37).

According to Torrance (1981), the purpose of creative teaching is to create a "responsible environment" through appreciation of individual differences, high teacher enthusiasm, and so on. Feldhusen and Treffinger (1980) and Davis (1991) also believed forming a "creative climate" was vital to inspire creative thinking (p. 18). Feldhusen and Treffinger (1980) have provided several recommendations for establishing a classroom environment conducive to creative thinking:

1. Support and reinforce unusual ideas and responses of students.

2. Use failure as a positive to help students realize errors and meet acceptable standards in a supportive atmosphere.
3. Adapt to student interests and ideas in the classroom whenever possible.
4. Allow time for students to think about and develop their creative ideas. Not all creativity occurs immediately and spontaneously.
5. Create a climate of mutual respect and acceptance between students and between students and teachers, so that students can share, develop, and learn together and from one another as well as independently.
6. Be aware of the many facets of creativity besides arts and crafts: verbal responses, written responses both in prose and poetic style, fiction and nonfiction form. Creativity enters all curricular areas and disciplines.
7. Encourage divergent learning activities. Be a resource provider and director.
8. Listen and laugh with students. A warm, supportive atmosphere provides freedom and security in exploratory thinking.
9. Allow students to have choices and be a part of the decision-making process. Let them have a part in the control of their education and learning experiences.
10. Let everyone get involved, and demonstrate the value of involvement by supporting student ideas and solutions to problems and projects.

(as cited in Fasko, 2001, p. 32)

While these recommendations are not purely focused on the physical space, these aspects of intentionally creating an environment that stimulates creative

thinking and learning can translate to a physical space. The question is what kinds of physical attributes would best lend themselves to these concepts? Mutual respect and relationship between the teacher and students is an evident theme within this list, so the classroom should not be set up to separate the teacher and students. I am in no way suggesting that the authority a teacher has should be undermined, however the teacher needs to be accessible to students at all times. The teacher's desk or space should be inviting and turned in a way that students are allowed to approach it.

The seventh recommendation states that the teacher needs to act as a resource provider and director. So the classroom needs to have portals to access resources of all kinds. This means that there should be a diverse collection of resources or tools to access resources in the classroom. This can include an extensive library, a computer available to the students with internet access, physical objects of study, manipulatives, construction materials, publishing materials, and so on. The teacher is also to adapt to students' interests and ideas whenever possible so as the teacher gets to know the students it is vital to adjust the classroom to their interests and provide as many materials for their ideas as possible. Part of making an environment intentionally fostering for creativity is providing the tools and outlets for creative thinking and production.

Lastly, the ninth recommendation on Feldhusen and Treffinger's (as cited in Fasko, 2001) list is to allow students to have choices and be a part of the decision-making process. While this should most definitely apply to student learning and activities, shouldn't it also apply to the students' own learning environment. Students should be as active as the teacher in creating a learning space that is for students and by students. The teacher should limit their own production of the décor on the walls and arrangement of the room and let students be a part of the design. Why not let students decide how the room should be arranged? They must explain their thinking and they are accountable for using reasoning to design the space, however the very classroom is an exhibit of student creation. This is in fact supported by the last recommendation of letting everyone get involved. If students all have a voice and feel that their input is valued, then they are given purpose in the creative process, which is just what Torrance (1965) has implied in his definition of creativity.

In the definition that Torrance (1965) has given above, the first step in the creative process is to be sensitive to and define problems before using creativity to attempt to solve them.

According to Sternberg and Lubart (1991), there are two aspects of intelligence that are relevant to creativity: problem definition and redefinition, and insight skills. They reported that creative people not only

solve problems, but also pose the right problems. In this regard, Sternberg and Lubart suggested that students should be responsible for the problems they choose to solve. Thus, teachers need to provide these types of problem-finding opportunities for their students (p. #84).

It is the job of the teacher to find problems that are worth solving and then presenting those problems to the students to solve while giving them sufficient resources to do so. This is essentially the task of teaching in general. This directly affects the physical environment of the classroom because the class must be equipped with problems to explore and resources to solve them. These worthwhile problems will be most likely driven by the curriculum, however the teacher should allow for flexibility in the direction of instruction. Fasko (2001) calls this experience an inquiry discovery learning experience and provides seven steps on facilitating this process:

1. Provide the initial experience to interest students in inquiring about a problem, concept, situation, or idea.
2. Provide the students with manipulative situations and materials to begin avenues of exploration.
3. Supply information sources for students' questions.
4. Provide materials and equipment that will spark and encourage student experimentation and production.

5. Provide time for students to manipulate, discuss, experiment, fail, and succeed.
6. Provide guidance, reassurance, and reinforcement for student ideas and hypotheses.
7. Reward and encourage acceptable solution strategies. A supportive positive climate will spawn the best results (p. 85).

Notice that the teacher is the one who provides the *initial* experience or essential question that interests students, however that does not mean that students are not allowed to follow the inquiry to other questions. This model is also sometimes known in the pedagogical field as guided discovery, however the students are the inquirers and they are the ones that ultimately drive instruction. This provides for them an active role in the process and jump starts the creative thinking process that has been established in this paper.

Flexibility is a key component in a creative space. In fact, it is one of the most important factors of the physical space that will affect students. Creative teaching demands adaptability to whatever the students' interests and ideas are whenever possible, so the optimal space is also adaptable for their needs. Does a student want to present or build something? Where? How about an art project that requires a place to dry? What if the students need individual thinking time and wants to be alone to do it? Is there enough space to spread out around the room? Can the desks

be manipulated and rearranged? These and many more questions are things that the teacher needs to be observing and investigating in their classroom. There is not often an opportunity for a teacher to actually request more physical space in the classroom, so it is about thinking creatively to arrange the classroom in the most optimal way to allow for flexibility. Teachers should be very intentional on the furniture choice for the room, the amount of shelves or bookcases around the room and how the students can interact in the space. According to Hollie (2012),

Understanding the relationship between environment and behavior enables teachers to organize and to equip the classroom so that optimal learning is more likely to occur. Organization of the physical space can influence behavior and learning. Conspicuous features include furniture placement, learning materials, bulletin boards, use of technology, and spatial viewing capacity can have a profound impact on the students by sending strong messages for powerful learning (p.12).

This research has examined the growing need for creative teaching in our classroom, the worrisome decline in creative thinking that occurs as children grow older, the working definition of the creative process that is the baseline for this paper, the factors that have been found to affect creativity, and the specific strategies for manipulating the physical environment of the classroom that adhere to the positive factors that affect creativity.

Implication for Practice:

Now the goal for this paper is to get teachers to facilitate creative instruction in the classroom. How can we do this? The first answer is to spend some time to balance out the hierarchy and give instruction on all subjects. This implication can be really frustrating for public school teachers right now. There doesn't seem to be enough time for anything, let alone the arts. However, the only way to give meaning to the talents of all of our students is to give each student a chance and a place to showcase that talent. Let's stop trying to create university professors and start trying to create humans.

How can we make the classroom a more creative workspace? Teachers can add things like flexible seating, break spaces, and exploration areas. I recently did a service learning project with a second grade classroom in which we built a Lego station on the wall of the school. The students designed and implemented the Lego wall and it has been a huge success in fostering creative play during recess. Using building tools like Legos is a great way to spark creative thinking and it can also be easily tied in with multiple subjects. The purpose of this project was to create a place on the playground for students to build, engineer, and explore by using Legos. The project was based on a need for an alternate activity for students during inclement weather and also on a strong belief that kids learn best through interactive play. Some of the things that Lego play encourages are teaching kids to think in three

dimensions, developing problem-solving, organization, and planning by construction, improving creativity, enhancing communication and critical thinking, and boosting kids motor development. From what I have observed, this project has been a huge success. The students have been really engaged in the process and the entire class is really proud of what they have accomplished. I have been observing the students from the primary grades using the Lego station and I have been pleased with the amount of respect and care that the students have shown. Some of the students who struggle with behavior seem calmer around the station and there have been some truly amazing Lego creations that the kids have come up with. I often observe collaboration at the station when students work together and around each other. This is a valuable tool to naturally teach the kids about teamwork. I have also observed a lot of trial and error at the station. When the station first went up the first idea that the students had was to see how far out they could build from the wall. So they immediately made the tallest stack of Legos that they could hold and tried to attach it to the wall. They soon learned that the weight of the stack was too much for the base mat to hold and the Legos would come crashing down. It was fascinating to watch the kids discuss and problem solve so that they could improve their designs.

This project is already having an impact on the school and the community. The school is talking about putting more stations around the school and there have

been several colleagues from other schools that have been interested in implementing the same kind of project at their elementary schools. This project has been a great learning experience for me and it has inspired a lot of creative thinking in my classroom.

Conclusion

As educators we have a big job. The best thing we can do is remember to teach to the whole child. We are not spitting out cookie cutter molded humans. Instead we have the privilege of working with a diverse group of people who have different talents and unique minds who will (hopefully) grow into one of a kind people.

My original question for this thesis was *What environmental factors affect creativity and how can we manipulate those factors to produce creative thinking in our students?* Through classroom exploration, fostering a mindset that encourages bravery in the face of failure, and teaching to the whole child we can foster creativity in our students. This takes time, ingenuity, and a passion for learning that the students will be able to mirror. Creative thinking is not disengaged, in fact it requires engaged thinking and a personal relevance to the problem being solved.

Some questions that came up during this research that need more exploration are how can we stop academic inflation? What does our education system value in our students? How can we foster creativity in adults in the workplace?

Creativity is important and needs to be researched and discussed in the educational community. In our current system we are educating our students out of creative thinking and squashing some of their intellectual confidence, and that's something worth addressing.

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