

The Effects of The Sit-Upons

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This research was conducted under Professor Christine Mondor at Carnegie Mellon University for the Human Factors In Architecture class. More specifically this research was tested with permission granted by Dr. Sharon Carver, Director of The Children's School, under the supervision of Mrs. Jean Bird, AM 4's and Extended AM Teacher, at The Children's School at Carnegie Mellon University. The goal of this experiment was to test the effect of environmental influences on a four-year-old child's ability to learn during the most important time of day, circle time. More specifically this experiment tested the effect on one variable, the child's sit-upon or seat mat, and its ability to define a child's boundary and sense of personal space. Circle time takes place from 9:00-9:30 am Monday through Friday and is a chance for the teacher to work with his or her group of about ten to eleven children on the most fundamental topics in a preschool education. This was also a special opportunity because normally circle time is forbidden to individual research at this laboratory-based school due to the nature of crucial information being taught. I want to extend a personal thanks to Mrs. Jean Bird for providing me with this opportunity and her cooperation to do research on the children during her circle time.

Overview

Before this study was conducted from March 23, 2011 to April 7, 2011, I had the pleasure of working with Mrs. Jean Bird since August 2010. I had previously been helping out with teaching, helping prepare activities, interacting with the children, and performed an observational case study on one of the children for Dr. Sharon Carver's Practicum in Child Development class. Due to all of this constant interaction, I feel the idea of the researcher effect was eliminated from the equation. The children had become comfortable with my presence and did not seem uneasy, distracted, or act out by the fact that I was in the room holding a handheld video recorder during the experiments. I had become part of the children's world, truly minimizing the subtle impacts I had on the children by changes to their sit-upons. I continued to help with the children when they came to me while video recording as if I was still part of their daily lives. The only way the experiment could have become more unobtrusive by me would have been video recording through a one-way mirror, where the only change in behavior in the room would be the child's and teacher's reactions to the changes in the sit-upons.

Due to all these preceding conditions, it was a real shock to the children when changes were

conducted to their environment. No previous warnings were issued to the children about the experiment, so when the changes did happen, the results observed were truly a spontaneous conscious four-year-old's solution to solving and handling a change in his or her environment. In order to provoke these kinds of reactions, I tested this through the manipulation of a single variable, the child's sit-upon. I tested three different changes over a three day period for three weeks. After each experiment was conducted, a control day was recorded and observed to see how the children returned to the original condition of the classroom. The three experiments were removing the seat mats, reversing the classroom orientation to face a window versus a wall, and placing the seat mats in rows. This study was conducted with Mrs. Bird's older four's Green Room Annex friends. The demographics of the children were five girls: Sarah, Genevieve, Aiko, Natalie, and Sally, and six boys: Issac, James, Jack, George, Alex, and Matthew¹. These children were also the oldest of The Children's School's four-year-old friends, thereby making them the most mature and competent group of children to handle changes in their environment for their age.

¹ The names in this paper are fictitious.

Experiment 1

For the first experiment, I believe the most radical and influential of the three subtle changes in the sit-upons was conducted, removing the sit-upons entirely. I also felt as each experiment was conducted, a less extreme manipulation in the sit-upon was conducted. This experiment took place on Wednesday March 23rd, Thursday March 24th, Monday March 28th, and control day on Tuesday March 29th. Through removing the sit-upons entirely, the children were free to choose to sit anywhere in the room in any arrangement. The only sense of place and boundary that remained to sit in was the Green Room Annex rug that covers the entire floor of the classroom and is where the sit-upons are normally placed.

Hypothesis

Before this experiment was conducted, the following was hypothesized and written on March 21, 2011. In this group of children there is a friendship group of three boys, Issac, George, and Matthew. George and Matthew seem to be the closest of the three friends and sometimes include Issac and other times seem to reject him. When the mats are removed, these three boys will try to sit together and there may be some controversy between who gets to sit next to whom among the three of them. The other three boys Alex, Jack and James are more solitary in nature. Jack is the shyest of the children and will probably take whatever space he can find left after the other children run for a spot. He will not be territorial over a space as I feel Issac, George, and Matthew will fight for the best spot. James is also sort of a loner, too, among the group of children. He likes to talk a lot and will definitely ask questions on what is going on. He will have some trouble probably figuring out the situation but then should be comfortable after awhile. George and Matthew will definitely have trouble at first concentrating and focusing, if not all three days, because they struggle with the classroom now and are normally separated to try and help them focus.

On the girls side there is only one real group of friends in this bunch and that is Genevieve and

Sarah. Genevieve is very shy and is still having some attachment issues in the school. She will occasionally be clinging on to Mrs. Bird's leg when going into new situations or uncomfortable settings. She is starting to form a relationship with Sarah and Sarah does help give her some comfort with her attachment issues and shyness. They should definitely try to sit together in order to cope with the new situation. Aiko and Sally are fairly shy and quiet and should not have too much trouble with the adjustment. Aiko is much more shy as she does not like to speak so it should be interesting how she reacts if she has to confront someone. I expect a lot of grunts and groans to get a spot if someone gets in her way. I should also mention Aiko is Japanese and is still learning to communicate in the English language, making her more silent. Natalie is very loud and likes to ask lots of questions. She gets very involved in new situations and will definitely struggle at first with this change. Of course I think she might be able to handle the new change after the first day or so. She will definitely get loud and territorial if someone goes for a spot she wants. I expect some crying and moping from her in this new situation when something does not go her way.

Right now the children sit in a half circle toward the outskirts of the carpet. Either the children will initially go to their original spots without the carpet squares or hover close to the front of the room where Mrs. Bird sits. It will be interesting to see how well they can focus on the material in the new sitting patterns. The question is will this minor change be a big distraction and cause a lot of chaos or will they start to adapt quickly to it? I think initially there will be a lot of confusion and chaos and as time goes by they will adapt to the new environmental change. I will try to instruct Mrs. Bird to just say, "Please sit down" when they first ask what happened to their carpet squares. Her language of how she tells them to handle the situation could be crucial to how the children react. As time progresses I feel like the children will try to sit in the same spot each day. If there is a territory battle for a space, the children will probably fight to be first in the line and rush to the spot they want. Of course this is the oldest group of four-year-olds in the Children's School and I feel like they should become fairly mature over time and find ways to solve their issues.

Day 1 Results

Upon entry to the classroom, the initial cries from the children were “What the heck!” “There are no seat mats!” and “What the heckero!” Once a child stated one of these phrases, it was as if a chorus of the same responses followed. The children seemed stunned and confused as what to do. They all entered the room together and just stood there staring for a few seconds trying to figure out what to do. Mrs. Bird instructed the children to “find a seat please.” After that, one child would sit down and the rest seemed to follow. What was interesting about this day was that the children still sat in the previous U-shape defined by the seat mats, but sat closer together. They sat so close to one another that it was as if someone was squeezing them into the room (See Figure 1).



Figure 1

However, it did not take long for the children to start taking advantage of the removal of the assigned seating. Issac seemed to not like being squished sitting by his friends George and Matthew. After about a minute or two into circle time, he ran across the room to an empty space. Matthew and George followed this behavior and ran over to Issac. Issac once again did not like this, probably due to some other unknown lurking variable, such as having trouble interacting with George and Matthew earlier in the morning, and then ran across to another spot in the room. George and Matthew followed once again until Issac made some faces and ran away once again to an open space and

George and Matthew got the point and left him alone. This kind of behavior from Issac toward George and Matthew is not uncommon due to seeing previous interaction problems with his friends over the last year. What was a change in behavior was that the children were being rude and running across the classroom during circle time. They even continued to have trouble interacting with one another as was expected when about twenty-five minutes into circle time, Matthew spit on Issac (See Figure 2). The two boys were arguing over looking at Matthew’s karate belt that he presented for the sharing bag during circle time (See Figure 3). However, even though I expected some problems among Issac and Matthew, I did not expect see such awful behavior in a classroom setting.



Figure 2



Figure 3

As for the rest of the children, they seemed to sit with their friends as hypothesized earlier, except they all sat squished together toward the outer edges of the rug. The only child that ended up sitting in solitary and a great distance from the rest of the children was Issac after his running around the room incident. The child that behaved the best during circle time was Sally. However, Sally's mom was there visiting to celebrate her birthday. She sat in her mom's lap the whole time giving her a sense of personal space and boundary (See Figure 1). After about two minutes into getting settled down in the room, Mrs. Bird started off circle time by playing her guitar and singing the songs "It's So Nice To Be Here" and "Row Your Boat." The singing and songs seemed to immediately grab the attention of the children and get out, as Mrs. Bird likes to call it, their "wiggles and giggles."

Once the music was over and calmed the children down, it did not take long for the children to start taking advantage of this situation. Aiko and Genevieve who chose to sit together took advantage of the close proximity to sit there whispering and playing with one another when Mrs. Bird was not looking. When Sarah entered the room later, Genevieve quickly called her over to sit with her and add to their shenanigans. By being allowed to sit together for the first time, the distractions between these three girls continued. There was anger from Genevieve toward Aiko for sitting too close and bumping her. Also Genevieve was distracted by her best friend Sarah and would tap her constantly during circle time to get her attention and whisper things to her. Eventually, Sarah did not seem to like this and made faces at Genevieve, which angered her and prompted the response "stop making faces like that!" (See Figure 4) All of these interactions and disruptions described between Genevieve, Aiko, and Sarah only took place ten to fifteen minutes into circle time.

All of these examples of bad behavior were only a small proportion of what happened. George seemed to struggle the most with the new situation. He would exhibit strange behavior such as doing pushups after he interrupted another child and was stopped by Mrs. Bird or occasionally get distracted and zone out and bang his head against the radiator in the back of the room (See Figure 5). He would also shout a lot to answer questions without raising

his hand and was clearly exhibiting trouble adapting to all the new stimuli from the misbehaving children and the new classroom situation. George also enjoyed being able to sit with his best friend Matthew during circle time for the first time in awhile and they played with another most of the time. Mrs. Bird seemed to get very annoyed with all this bad behavior and would ask a question, stand there for a few seconds waiting for a response, while the children went on talking and not paying attention. Mrs. Bird would have to ask the same question multiple times to get the children's attention or start counting backwards until they listened and followed her orders. When I asked Mrs. Bird at the end of circle time how she felt about teaching and the children today, she responded with "They were bad."



Figure 4



Figure 5

Day 2 Results

On the second day of experiment the results were not much different. The children entered the room with the question “No sit-upons?” and stood in confusion again for about a minute trying to figure out what to do. But as one child sat down the other children followed and they still ended up sitting in the U shape. The only difference today was that the children seemed to sit a little further apart from one another, but still closer than the boundary of the sit-upon would let them. There was an improvement in one behavior as I saw no running across the room. Instead the children decided to crawl when they changed spots to sit.

As circle time progressed, once again Mrs. Bird started off by playing her guitar and singing to get the children’s attention. The difference in disrespectful behavior today was I saw a lot of lying down. Although this happens from time to time in circle and is to be expected, it seemed more prevalent with the seat mats removed. However, this could be due to some unknown lurking variable that day, such as a bad night’s sleep and being tired and exhausted or just being tired from running around from activity time before circle and now having a chance to relax and rest. I still feel that with removal of the seat mat, it makes the child think less before they would break the square boundary defined by the seat mats, leading to more children lying down and rolling around during circle time.

One of the most intriguing activities of circle time today that challenged the children’s sense of space was a cooperative puzzle of transportation vehicles. As the puzzle started out and the children were given a few pieces, the children would be asked by Mrs. Bird to place a piece and they would come to the center of the rug and then scoot back to where they were sitting. By using the seat mats for over a year or two it seemed to have ingrained into the children’s mind that each person has a sense of personal space and place to sit even when the seat mats are absent. This gives good evidence to suggest that the children over time were learning to develop a sense of personal space and boundary through using the sit-upons as training. However remarkable as this was, over time as the puzzle got larger the children forgot about this

concept and piled onto the puzzle to finish it. This example could show that the children are developing a way to construct and stay in a space during classroom time, but still have not yet fully matured to handle their body’s impulses to get up close and see what is going on in the center or front of the room. This would be evident by the constant remarks from Mrs. Bird to “scoot back” when the children were getting too close to her or an activity during circle time.

The last thing I observed today was the children adapting to not having the sit-upons to do their number charts. Normally the children turn over the seat mats and use the bottom hard surface of the carpet square as a desk. Instead the children found unique ways to handle this situation, such as when Jack started using the hard surface of the chair in the room to write on. This gives good evidence to suggest that when we are presented with a change in our environment, we try to find ways to handle the change and adapt to still accomplish our daily goals.

Day 3 Results

“Where can we sit today?” was the response from Natalie as the children entered the room for their final day with no seat mats. What was different about this day is that the children came in the room with their letter binders and seemed to sit down faster. There seemed to be less time devoted to confusion on where to sit. Either the children had finally become accustomed to the new environment or the binders were large enough to substitute in the space taken up by the sit-upons and be used to sit evenly spaced out. In fact, today the children sat even further apart almost at the same spacing as the sit-upons.

As with the previous circle times, music was used once again to calm the children down as they listened to a tape recording for the letter “U” today for their letter journal. This circle time was also unique in that the children were able to do their entire letter journal, which included practice writing the letter, writing a word that starts with the letter, and drawing a picture of that word. Normally letter journal consists of two parts where the children practice writing the letter and do the word and picture later during activity time. However, now the children seemed to have matured enough to handle

all of it at once in circle time and I was impressed with their ability to accomplish this task in the changed environment.

But with every new goal comes the variables of the children that did not meet up to par. Alex seemed to struggle this day as he sat in the corner and was distracted by the shelves next to him. This led to his not being able to finish the entire letter journal during circle time. Yet I point out this event because of Alex's response during letter journal. While Alex was trying to write the letter U on a piece of paper on the large green room rug, he made the remark, "Whoops! Where is my seat mat? I need to put this on the table." While writing, he had poked a hole into the paper from trying to write on the carpet. This surprised me because it seemed as if the seat mats had just disappeared for him today and he did not realize how valuable it was to him. This gives good evidence to suggest that we as humans get accustomed to our environments and struggle with change no matter how subtle it may be.

Lastly, as with the other circle times there was still a struggle to sit up and not lie down (See Figure 6). There was also trouble with children talking with their friends. Mrs. Bird had to constantly say, "Everyone needs to be quiet and sitting up" to stop this kind of behavior. However, I still felt as if there was a tremendous improvement in the children's behavior from day one. They seemed to misbehave less and pay more attention to Mrs. Bird today. This shows the adaptability and flexibility of humans to changes presented in their environment over time.



Figure 6

Control Day

When the children entered the room on the control day, the mats had been returned to their original U-shape and their nametags were placed on the seat mats for where the children should sit. Mrs. Bird had also arranged the children to break up friends sitting next to each other or children that normally are distracting to one another when they sit together. This is normally how Mrs. Bird chooses to sit them so they can concentrate and pay attention the best to learn the important material.

As usual Mrs. Bird started off with a song and the children calmed down and focused their attention on her. However, after about two or three minutes into circle time I heard Alex make the remark, "Why am I in a new space?" The children had grown accustomed to sitting in their new and favorite places and were not happy with the change in environment again and assigned seating. It seems that some children enjoy getting into a favorite routine and do not accept change easily.

Throughout circle time the children were still much better behaved than without the seat mats. They stayed on them the whole time except for one exception when Mrs. Bird was about to show a light crystal experiment and the children forgot the meaning of the seat mats and ran to the front of the room to see. The only thing I saw in sense of the testing the boundary of the seat mat was that the children would stretch their legs off of them or lie down across the seat mats. If they tried to lie down, they tended to scoot toward the middle of the room making sure to have at least some body part on the sit-upons. When this behavior was demonstrated, Mrs. Bird normally responded with "sit in your space please" or "I'm wondering if everyone is in the correct space" to get the children to think about and correct their behavior.

The biggest distraction to the children during circle time was not the new arrangement, but when new objects were presented in the room. For example, Sarah and Aiko at about twenty-two minutes into circle time were arguing over holding and playing with an empty paper towel tube. The children ran out of paper towels after passing them out to use for spraying water on the light crystal during their experiment. Also after James presented his sharing bag object of a tin can at about twenty-

seven minutes into circle time, it became a distraction to the children as they were passing it around to look at. The children kept putting it on their heads instead of paying attention to what Mrs. Bird was teaching (See Figure 7).



Figure 7

Conclusion

In conclusion, my research from experiment one seems to suggest a need for the seat mats. I saw an increase in misbehavior and rudeness such as fighting, yelling, running, spitting, and lying down. This experiment gives good evidence to suggest that the sit-upon does provide some structure for the children and keep them in a controlled area. However, the children did show improvement over the three days. Had this experiment been continued, the children may have matured enough to regulate their behaviors, but this may still be difficult for children of this age and maturity.

Experiment 2

For the second experiment the classroom orientation was reversed to face a window versus a wall. This experiment took place on Wednesday March 30th, Thursday March 31st, and Friday April 1st, followed by a control day on Monday April 4th. The seat mats were kept in the room except the U-shape was reversed where the children sat in front of a wall containing the calendar instead of being under a window that overlooked the school playground. All of Mrs. Bird's loose articles for

classroom instruction such as the instructor stool, weather drawing board, and any other instructional material for the current topic was reversed to be in front of the window. This meant that all classroom instruction would have the children facing a window except for when the calendar would need to be taught from the new back of the room.

Hypothesis

Before this experiment was conducted the following was hypothesized and written on March 29, 2011. The children for this experiment should be arranged in an order determined by Mrs. Bird to minimize distraction from one another. Groups of friends such as Issac, George, and Matthew will be separated. When they are placed next together, they have more trouble concentrating on the material together than separated apart from one another. This was very evident in week one of the experiment when they sat together and they had twice as much trouble concentrating, working out friendship issues, and paying attention than when they were separated on the control day and behaved much better. Also among this group George and Matthew normally have trouble concentrating on a normal daily basis due to their current personalities and stage of development. I feel that looking out the window the whole circle time will cause distraction and trouble for the children to pay attention to Mrs. Bird. I expect them to either "zone out" for some of circle time or to shout about something they see outside, especially George. This same kind of behavior I also expect from Natalie and James since they are normally very vocal about new changes in their environment. As for the rest of the children, I think they will handle the situation pretty well. I expect trouble on the first day and gradual improvement as they get used to the new environment. This was very evident in week one as the children slowly showed signs of improvement over the duration of the experiment.

I also expect this change in environment to have less impact on the children's behavior than week one's experiment. The only issue with this experiment will be to see how the children handle going back and forth between the front and back of the room since all the material cannot be moved to the rear of the room. This is the one flaw in this

experiment and may cause some confusion and trouble teaching the children. However, it also may help the children to pay more attention as they will have to be more aware of where Mrs. Bird is in the classroom and pay attention to the material being taught. In conclusion, I feel that this experiment will show which children have a better attention span and can pay attention to the new stimulus and the more ADD children who have trouble concentrating on new and changing distracting stimuli (events happening outside the window). This experiment should show the children's attention span and ability to focus on the task of what Mrs. Bird is trying to teach, disregarding distracting stimuli.

Day 1 Results

The initial reaction upon entry to the reversed room was the response "Huh?" and by children such as Issac, "What happened to my world?" The children were very confused upon entry and had no idea where to sit. They all just came into the room and stood there looking around in confusion waiting for the first child to make a move on what to do (See Figure 8). The room had been reversed to where all the seating was the same and the children had trouble spatial processing where their new seat would be. They had to check under the seat mats for their names to find where to sit (See Figure 9). In fact the children were so confused by the reversal that children such as Sarah responded, "We're upside down" or by James, "The sit-upons are upside down." Mrs. Bird quickly responded to the children saying, "We're backwards" to help the children understand the new classroom orientation. The children were also aware of the trouble of the new situation as pointed out in the hypothesis when Matthew said, "We have to turn around to do the calendar." However later in circle time, this seemed hard to teach with children in the way to trip on and children being at a disadvantaged viewpoint of directly below the calendar, but not that crucial this far into the school year to teach. Most of the children had a handle of the material and did not really need to see everything on the calendar in order to understand its concept.



Figure 8



Figure 9

After the two or three minutes of confusion and finding everyone's place to sit, Mrs. Bird proceeded to get the children's attention by playing songs such as "This Little Light of Mine, I'm Going To Let It Shine" and "Twinkle, Twinkle, Little Star." This calmed the children down except for the occasional child still calming down with an outburst from Natalie shouting to say something and Mrs. Bird reminding "Natalie can you remember to use your inside voice." Eventually all the children seemed to be concentrating until about ten minutes into circle time where the children started to lie down such as Natalie or from Alex who said "I'm tired" as he started to lie down. There were also the children that had trouble sitting still that started to move around such as George after twelve minutes into circle time.

Finally my hypothesis came true that facing the window would cause distraction to the children from outside. After fifteen minutes into circle time I heard a cry from Sally, “Squirrel!” All the children and Mrs. Bird stopped what they were doing and looked out the window at the squirrel running around the window ledge (See Figure 10). However this only lasted about thirty seconds to a minute. In past observations from before, when a distraction took place, one child noticed and then the other children gradually noticed it. It took longer for all the children to realize what the other children were looking at and children ended up being distracted longer when facing the front of the classroom than being turned around toward the distraction. By having the children facing and recognizing the distractions, this reversed classroom orientation seemed to have a positive effect on if the children were to get distracted; the distraction lasted for a shorter duration of time.



Figure 10

Day 2 Results

On the second day of the reversed room the children still entered the room with confused responses such as “Huh...Not Again!” by Aiko or “Why is it still upside down?” by Alex. However, the children remembered the new classroom layout from the day before and were much faster at finding their seats after their initial stage of confusion of what had happened to their change in environment.

As it seems to be a reoccurring theme, Mrs. Bird started off circle time with the songs “Mr.

Sun” and “This Little Light of Mine.” She also played a tape recording of “Turn On The Light” and let the children play with shaker eggs and rubbing sticks. This still seemed to cause a calming effect and to get the children’s attention for Mrs. Bird.

Throughout this circle time the children seemed much better than any of the other days. However, there still was some lying down by children such as Issac and Natalie about halfway through circle time. The only issue I saw was Aiko knocked out the Radon detector from the plug in the back of the room. This does propose a safety hazard by exposing the plug for the children to play with. It gives cause for us architects to make sure a room is designed with child safety in mind in the future. In the end, this new orientation proposed a new safety risk for classroom instruction by having children such as Aiko sitting where Mrs. Bird needed to stand for teaching (See Figure 11). This made it where Aiko could not see or pay attention when Mrs. Bird stood in front of her to point and teach the calendar.



Figure 11

Day 3 Results

On the final day of the classroom being reversed the children still entered the room with responses such as “My world changed!” from Natalie. However, they still were much more quiet and less vocal and sat down faster than the previous days. Mrs. Bird then proceeded with music and the song “Mr. Sun” to get the children calmed down and paying attention.

Today was the first time the children noticed my camera. After about four minutes into circle time Natalie discovered what I was doing and played with the camera, but I ignored her behavior and she went back to paying attention to Mrs. Bird. Later she also got distracted and started singing to me in the camera after about seventeen minutes into circle time. However, I was surprised it took so long for a child to act out by my new presence. This could give good evidence to suggest as earlier mentioned that the children felt comfortable at all times with me in the room from working with them for so long, eliminating some of the researcher effects on their behavior.

As with the previous day, the children seemed to be very well behaved. There was some lying down by Sarah, Aiko, Natalie, and Matthew, but I feel as if by now this is to be expected by children at this age occasionally. One lurking variable I wondered that may have been contributing to this improved behavior was the weather. This week of research was very rainy, hence why they kept singing “Mr. Sun” and may have soothed and calmed the children. It would have been interesting to see how the children responded to staring out onto a bright and sunny day. Would it cause more restlessness in them?

Lastly, I saw some strange behaviors once again by Aiko. There was one point where she went under a chair in the back of the room to sit or started getting fidgety and pulled out tacks in the back of the room causing some things to fall off the bulletin board. Mrs. Bird noticed this and stopped what people were doing and responded, “This is not safe” and got the children to stand up and look for the missing tacks. Once again this shows the importance to design a room with safety for children of this age. It also does show the one flaw of this experiment of if I had the ability, I would have truly reversed the room removing these distractions and safety hazards from the children.

Control Day

By conducting control days where the room was returned to its original state, it has almost become an experiment of its own by now. The children entered the classroom with the response “What day is it?” by Natalie or “Our world changed

again!” by James. They have seemed to become confused as to what is the correct arrangement of the room. The children are now having trouble finding their spots and remembering where they sat in their old configuration of the room before I began conducting experiments. This could be a developmental milestone in lack of memory or due to the many changes in the children’s environment by now. Realistically, if I had more time, I might have spaced the experiments out more so the changes were not so close that the original room configuration felt like a change to the children.

After the children had trouble reversing the room again to its original orientation and finding their same seats, some of the children made some comments that surprised me. I heard from Alex “We wanted it like this” and from Natalie “I don’t like it this way. I wanted it the other way.” Both children were referring to the fact that they enjoyed the change of scenery and facing the window. I wonder if this gives evidence to Biophilia studies and our connection to nature. Did having the opportunity to look out the window and see nature help the children? Could they have made some connection to nature and felt more comfortable causing them to learn better? Clearly my observations suggest this. Of all the experiments, the reversed room seemed to cause the children to behave the best. In fact on this control day, the children started to misbehave more by lying down, talking, and giggling with one another than the reversed room days. Mrs. Bird had to say numerous times “The teacher is waiting to talk and there are some people being very rude” or to “sit-up.” Some children seemed to be unresponsive to Mrs. Bird in this configuration that after Mrs. Bird said this, children such as Matthew sat up, and then a few seconds later laid down ignoring her requests. Although there could be other lurking variables and I cannot conclude causations from my study, I can conclude that there is evidence to suggest a possible improvement in behavior due to classroom orientation of having views of nature to calm children down, increasing attention, and improving ability to pay attention and learn.

Conclusion

In conclusion, experiment two seemed to cause a positive effect in the behavior of the children. By facing a window and having a connection to the outdoors, the children seemed much more subdued and calm. There was less misbehavior than the original classroom configuration. The children also remarked that they enjoyed this layout much more than the old. However, the rainy weather could have contributed to this. Further study would be interesting to see how the children react to different circumstances outdoors such as snow or a sunny day. This further research would give rise to Biophilia studies and the human's connection to nature. This experiment does give evidence to suggest a positive effect of Biophilia and the ability for humans to see nature and the outdoors leading to better learning habits.

Experiment 3

For the third and final experiment the seat mats were placed in rows of three, four, and four respectively from the front to the back of the classroom. The experiment took place on Tuesday April 5th, Wednesday April 6th, and Thursday April 7th. By placing the children in rows, this meant that some children would have a very limited amount of space to spread out and would truly be confined by the boundaries of their sit-upons. To test the true ability of the sit-upons to give a child a sense of boundary and personal space, the two most fidgety children, Matthew and Natalie, who struggle with sitting still the most, were placed in these two middle spots. This also was an experiment to test their ability to learn in a traditional classroom setting where children are placed in front of them. This added a level of distraction, as some children would have to find new ways to make sure they could see around their peers to observe Mrs. Bird to learn the material.

Hypothesis

Before this experiment was conducted the following was hypothesized and written on April 4, 2011. As stated in the experiment description, the

children should be placed together in the least distracting order determined by Mrs. Bird. This means that friends that are disruptive to one another and have trouble concentrating will be separated. However even by doing this I expect this situation to cause a lot of problems for learning. The first is that you will have children such as Natalie, George, and Alex constantly complaining they cannot see. It will be important to see where the "whiners" of the group are placed. If they are in the back of the room, I expect to hear a lot of "I can't see!" I also expect the close proximity of the children to be distracting. They will probably poke one another or play with one another constantly. I am sure there will be at least one tattletale situation where one child tried to poke another without the teacher seeing it. However, the children should be reasonably competent in adapting to what they like to refer as "my world has been turned upside down again." When the children move to the kindergarten next year, they are placed in rows similar to this experiment and these children are close to moving up to that level next year. So there must be some evidence that this type of learning works at higher level of learning for children. It will be interesting to see how mature the children are at this stage in development.

The only other remarks and trouble I see in this situation is how the children will handle activities in the room such as letter journal and number charts. There might be an interesting situation emerge when the children try to find space within their small area or run to spread out in the room to do their activities. There might be some interesting territorial boundaries provoked since the children may already be on edge from adjusting to the new close proximity of the children surrounding them. This also goes with the idea of how the children handle sitting in their sit-upons. Normally the children get away with stretching out and lying down sometimes. This will definitely not be possible for the children in the middle rows and it will be interesting to see how well they can regulate their behavior and sit up so long during circle time. Overall I feel this experiment will be a true test to the children's sense of personal space and regulating their behaviors.

Day 1 Results

Upon first glance of the new classroom layout of being placed in rows, the somewhat standard response now of “What happened to my world!” was vocalized by several children such as George, Matthew, and Natalie. The placement for the children was from left to right in the back row: Genevieve (absent), Sarah, Issac, Alex; middle row: Matthew, James, Aiko, Natalie; and front row: Jack, Sally (absent), George. As hypothesized, the close proximity started to cause initial problems. Although separated, George and Matthew figured out they were close enough to almost touch hands and play with another. Natalie who has trouble focusing noticed this behavior and tried to join in (See Figure 12). Also by having children behind one another, this became a distraction for some children such as George. He was constantly distracted and interested in checking behind him to see what other people might be doing, especially Matthew.



Figure 12

After being allowed a few minutes to adjust to the new situation, Mrs. Bird started using songs such as “This Is My Speaking Voice, This Is My Singing Voice” and “Humpty Dumpty” to calm the children down and get them to focus on the front of the room. However, it did not take long for some children to start having trouble with this classroom orientation. The normal fidgety people such as Matthew and Natalie started to struggle. They realized they could not stretch out as easily and

started to find ways to cope with this new anxiety. Since they were placed on the sides of the group, their solutions were to move to the side more and lie down. Also Natalie seemed to not enjoy being placed behind people because some of her view was blocked and would constantly scoot to the front or squeeze between Jack and George to see better. She would also sit up on her knees to see over them, not realizing she was blocking the view of other children behind her. This could be a developmental milestone of not recognizing how their behavior affects the views of the other children, such as blocking their view of Mrs. Bird. Children at this age can be egocentric and only care about themselves and how they view the world. Due to these circumstances, Mrs. Bird had to constantly remind children such as Natalie and Matthew, “See your square where you are. It is your responsibility to stay in your square” or “Can you stay in your square if you are lying down?”

As circle time progressed further, not much changed. Matthew and Natalie were moving all over the place and struggling to sit still. Mrs. Bird had to actually come over to Matthew and tell him to sit up because he would not listen. The only children that could handle this and sit still on their seat mats the whole time were Issac, Sarah, and James. Other coping strategies the children invented were bending the mat trying to stay sitting and blocking them from lying down or if they scooted around off the mat, they made sure at least one body part was on it. This seemed to be their rationalization to staying within the boundaries of the mat while at the same time being able to stretch out some.

Day 2 Results

On the second day of the classroom seating being placed in rows and talking to Mrs. Bird, we changed the order of the children to test the true ability of the sit-upons to give a child a sense of boundary and personal space. The seats were as follows from left to right, in the back row: Genevieve, Sarah, Sally (absent), Issac; in the middle row: Alex, Matthew, Natalie, James; and the front row: Jack, Aiko, George. We placed the children who have the most trouble sitting still, Matthew and Natalie, in the smallest area to stretch out, the middle of the room, to test how effective

the seat mats were at keeping children in a certain place.

When the children entered the classroom with the new seating, they were placed with the challenge of their last name up on the nametags. Some children such as James struggled with this and recognizing words of their last name. This gives good evidence to suggest the importance of the Children's School using the nametags to help children recognize their names at this age and read words by having them as label for their seat mats. Also the children still had the response of "What happened to my world" when entering the room. They still were curious why their environment kept changing on them.

This new seating arrangement as hypothesized caused great trouble for Natalie and Matthew. Matthew was bouncing all over the place during circle time trying to control himself to stay in his seat mat (See Figure 13). There was also the lurking variable of his mom giving him Dunkin' Doughnuts that morning that may have hyped him up on sugar adding to the struggle to sit still. Natalie on the other hand just could not stay in her seat mat. She kept scooting forward and trying to lie down. She would squeeze between Aiko and George constantly and then move back. At one point she intruded so much on Aiko's space that she started to get very annoyed. She tried scooting and leaning forward to get away from her, eventually being fed up and turning around pointing and making an angry face to get Natalie to move back (See Figure 14). To help reinforce the idea of sitting down so the other children can see, Mrs. Bird became creative and used the current topic of light and not being transparent to reinforce this idea. Although this helped for a little bit, Natalie and Matthew continued to test their boundaries. The only thing during circle time that had a calming affect was when a tape recording of the story *Abyoyo Returns* was played for the children. They seemed to sit there like statues behaving perfectly fine in their seat mats.



Figure 13



Figure 14

Day 3 Results

On the final day of my experiments the same patterns seemed to continue. The children still had to check under their seat mats to find their names from so many changes in the environment. Matthew and Natalie still moved all over the place during circle time testing their limits bothering and bumping into other children. They had to be reminded multiple times to sit down on their bottoms and sit in their seat mats. In fact, Natalie rushed to spread out showing her dislike of being confined when Jack and Aiko in front of her left to get a book for Mrs. Bird (see Figure 15). When they returned she was reminded of her boundaries and quickly moved back to her space (See Figure 16). Also having friends sit together such as Genevieve

and Sarah in the back seemed to be a distraction. I saw them multiple times whispering and distracting one another from learning from Mrs. Bird (See Figure 16). Lastly, reading books or singing songs seemed to calm the children down and get them to behave. It is as if they turn into zombies or robots and immediately pay attention and behave due to this kind of stimulus.



Figure 15



Figure 16

Conclusion

In conclusion, experiment three showed the real ability of the sit-upon to regulate and control a child's sense of boundary and personal space. This was evident by the fact that Matthew and Natalie struggled really hard to maintain control of their body. By being placed in the middle of the room,

they were constantly being reminded of having to respect the "personal bubble" of the children around them when they intruded into their space. By placing the children in rows, it seemed the most effective of all the classroom arrangements to regulate the behavior of problem children. What would have been interesting for further research is how the children responded to the reverse room situation plus being placed in rows. Would the two combinations of improved behavior control cause much better or the best classroom behavior?

Final Thoughts

Overall this study was a test of the usefulness and effectiveness of an important behavioral classroom tool in The Children's School, the sit-upons. This study was also interesting in testing the ability for a four-year-old child to react and adapt to new and subtle changes in their environment. Moreover I was interested in testing their ability to adapt to changes in their behavior setting by changes to the placement of the sit-upons and classroom orientation.

My findings suggest that it is very difficult for children of this age to adapt to subtle changes in their environment. What we as adults may see as trivial and easily adaptable, is very hard for children at this age. Some children can handle the changes better than others due to their personality and stage of development. Also my research findings suggest that the sit-upons do in fact prove to be a useful tool in helping regulate a child's sense of boundary and personal space.

The reason I point out this phenomenon is as an example and educational tool for architects and teachers interested in education based design. This study gives good evidence to suggest that we need to be very aware of all the design decisions that go into designing a classroom. One little thing overlooked such as classroom orientation or seat layout can cause a huge change in behavior and learning ability for children at this age. Children are so impressionable and learning so much at this age, that stability in their environment proves to be beneficial in regulating their behavior and ability to learn from the teacher. However, further research should be done to find the best classroom design and stability for children of this age.