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Abstract

This literature review explores the impact that alternative flexible seating has on student achievement and on task behavior in the classroom environment. The presented method of classroom arrangement offers options for students to select the best environment for their needs and provides measurable improvement in academic achievement. This literature review contains scholarly based articles, journals, and other information from dependable sources to explore a detailed look and explanation of how flexible alternative seating can impact and change the behavior and achievement of students in a general education setting.

Flexible Alternative Seating in the Classroom and On Task Behavior

Student engagement is an ongoing topic of discussion in most early childhood communities as well as in almost all school settings. Finding new ways to change the classroom layout to foster student learning is a challenge that many teachers are facing today, however with more research on these developments, teachers can implement these findings to the benefit of their most challenging student behaviors. The importance of student success and learning isn't purely from curriculum and test scores, it can come from something as simple as a seating option that enables them to move while they are working.

Student achievement in the classroom comes down to being not only developmentally appropriate but developing strategies that help this occur organically in the classroom. Increased demands from legislation for standards and benchmarks in education have left students with less time to play, and more time being sedentary focusing on goals set for their grade level. This is very true for many students at all levels, and by looking at the research about the demands of small motor skills in early education have students at their desks even more. "This exorbitant amount of time spent sitting in an upright position provides minimal opportunities for children to move their body in natural ways throughout the school day to release built up energy. Ultimately, leaving students restless, fidgeting, and off-task in their chairs due to lack of exertion" (Stapp, 2018, p. 37). This has caused many teachers to reflect upon their practices and look for other options in which they can provide more for the student needs. Looking at many classrooms and the sedentary nature is not following developmentally appropriate practices for young learners. "To produce this positive change, administrators and educators continually evaluate their schools' needs. Following evaluation, action plans are created with the goal of increasing overall student achievement. Inevitably, most plans include new pedagogies,

curricula, or professional development on current research-based practices. As these action plans are developed and implemented with best practices in mind, it is imperative to include strategies that foster high levels of student engagement” (Stapp, 2018, p. 36). By educators and the administration in the schools looking to keep children more engaged in their classrooms by seeking alternative methods for the classroom, they can meet the needs of students and follow developmentally appropriate practices that enhance the classroom experience for students. When these needs are not met, and old methods of teaching students don’t change, students experience and an environment that does not meet their needs. “As their senses become deregulated, students tend to become fatigued. Oftentimes this leads to disruptive behavior, when the cause may be a lack of movement” (Stapp, 2018, p. 37). By expecting students to sit in ill-fitting desks and in environments that do not meet their needs as a whole child, the education system is doing a disservice to the children they strive to serve and can lead to students that struggle to concentrate and succeed in their studies.

One of the answers for this presented problem is a recent development of flexible, alternative seating. With alternative flexible seating, students can choose a seat that works best for them, like a stability ball. This option enables the student to move while they work and then let them self-regulate their own behavior. Some methods of bringing these changes with the classroom environment are being sought out and implemented in the classroom. Stability balls, stools, disc seat cushions, floor sitting, rugs, and even standing height tables among many other options. By letting the student have some choice in the classroom, even as small as a seating choice, it can make a lasting impact on the classroom climate and community according to classroom action research. By using differentiated research-based methods of classroom design in classroom lighting, noise level, temperature, and seating teachers have found that student

productivity increases, and off task behavior is curbed. “All teachers must be taught how to redesign their classrooms correctly so that all students will be provided with the necessary space to accommodate their environmental learning-style preferences. By altering the classroom, teachers give some students the opportunity to work in the formal areas—desks, chairs, and tables—and other students the chance to choose informal areas—couches, rugs, soft chairs, and so forth. Within the areas of every classroom, adaptations can be made for sound preferences, lighting needs, and temperature controls” (Burke & Burke-Samide, 2004, p. 238). For teachers that seek out the information and training for these options in the classroom, there are great rewards. Educators can then differentiate and truly provide a productive learning environment that is conclusive to all learning styles. Then in turn improve student behavior and student achievement from those results.

Literature Review

The classroom environment, traditional seating, and student behavior

Having a learning environment that addresses all issues that students face is an important consideration in today’s classrooms. Factors such as curriculum, seating, and the environment are equally important with alternative seating being the newer researched topic. Upon reviewing the research conducted on the correlation between off task behavior and classrooms that have become more sedentary, now researchers have begun to explore and discuss the theory that classrooms have become outdated when it comes to layout. Alicia Stapp’s (2018) research discusses the amount of distractions students can face, purely based on the classroom environment.

“This exorbitant amount of time spent sitting in an upright position provides minimal opportunities for children to move their body in natural ways throughout the school day

to release built up energy. Ultimately, leaving students restless, fidgeting, and off- task in their chairs due to a lack of exertion. Traditional desks and chairs are also sized based upon a child's age and normally do not take into account a child's height or allow for ample movement while seated.” (Stapp, 2018, p. 37)

Most of information and research on this subject is for students that need accommodations, however; those accommodations have become standard for students as interventions for children with sensory issues as well as Attention Deficit Hyperactive Disorder (ADHD). The need for classroom educators to provide developmentally appropriate curriculum isn't the only concern. Now focus has shifted to include the need for appropriate classroom arrangements be up for the challenge as well. Stapp's (2018) article provides many references from professionals in education as well as health. These professionals state the current need for an alternative option to help students expel energy that allows them to remain on task and engaged. “A decrease in movement and play throughout the school day has led to increased sensory issues” (Stapp, 2018, p. 37). Her article states that by providing student centered seating, students are more engaged and participate more in the classroom. Stapp (2018) further states that the majority classrooms are just like they were many years ago. “From its inception, traditional seating and arrangements were designed to allow for the best use of natural light in classrooms that did not have electricity this type of seating still persists in twenty-first century classrooms” (Stapp, 2018, p. 37).

The link between student engagement and off task behavior

Stapp (2018) argues within her research that one main cause of student off task behavior links to that students are not fully engaged in their classrooms. She notes that when the classroom becomes more student centered, the students are more inclined to stay on task, stay

focused on learning, and participate more frequently. She presents her case with many aspects on how this can be beneficial for all students, including those with special needs. Stapp (2018) reports “a possible correlation may exist between the use of alternative seating and the improvement of daily academic behavior and performance. Even though the use of alternative seating has significantly increased with occupational therapists, there are few studies that have examined the relationship between alternative seating for children and its effect on learning for all populations of students in the general education classroom” (Stapp, 2018, p. 37). She presents an argument that this concept needs further investigation and study with students reaping the benefits.

Research for alternative seating and its link to classroom success

Megan Haan’s (2015) research with alternative seating and handwriting similarly looks at the sedentary nature of the classroom and the amount of time spent with small motor activities. In the journal *Stability Balls and Handwriting Proficiency in a Kindergarten Classroom* Haan (2015) states that “Research found that 31-60% of the academic day used fine motor activities with ten percent of that time spent on pencil and paper activities” (Haan, 2015, p. 1). Haan expresses how much instruction time kindergarteners spend on fine motor activities in the day in poor fitting traditional desks, and that handwriting can translate to other difficulties across other subjects. “There are many factors that contribute to proficient handwriting, one of which is body posture and positioning” (Haan, 2015, p. 5). This can lead to difficulties in attention as well, according to her journal article. Haan (2015) states

“The literature on handwriting in general and the use of stability balls in particular seems to indicate that a connection can be made between the amount of time spent on handwriting in an elementary classroom, the importance of handwriting, the influence of

posture on handwriting, and how stability balls can improve posture. Since handwriting makes up a large portion of the elementary student's day, teachers should work to make sure that they are supporting their learners with seating that can improve range of motion and postural control.” (p. 8)

The research presented by Haan (2015) on the correlation between handwriting and posture showed that there was a measurable correlation of the two within the research performed. With the research that was presented the positive effects of using a ball chair with the young learners proved to be a great tool in helping the students have good posture at their desks, which in turn helped the students with control with a handwriting instrument.

Another aspect is that a struggle with handwriting can be misconstrued as a student not being able to perform grade level tasks.

“Errors made when in Kindergarten can lead to struggles later in both reading and handwriting. Writing difficulties may also have connections to lower math achievement, lower verbal IQ, and attention issues. If students struggle with handwriting, they may not produce adequate proof that they understand material, which may lead teachers to assume a child does not know concepts or skills. As children grow older, the amount of work that is required also increases and if children have writing difficulties, it may be difficult to keep up” (Haan, 2015, p. 6).

Haan (2015) highlights that posture has a place to alleviate many writing problems. “Use of the limbs and hands allow for better control of writing materials. Teachers of students in early elementary grades need to consider ways to positively impact a student's posture and seating so that handwriting will be positively impacted” (Haan, 2015, p. 2). Haan's (2015) statistics pose

that poor posture is the culprit for difficulties in handwriting and offers a solution with using a stability ball as an alternative seating option. The stability ball not only allows students to bounce or move when they need to expel energy, it also strengthens the core of the child. “When a person sits on a stability ball, the body is activating core muscles. By using those core muscles, the body is able to improve its posture” (Haan, 2015, p. 3) Haan (2015) also found that there were other aspects that replacing a student’s seat with a stability ball provided for the child physically and academically. Students not only improve in those physical attributes, but there can be other benefits for the child. “These benefits include improved flexibility and range of motion, improved strength and stability, improved balance, improved posture, and increased ability to stay on task” (Haan, 2015, p. 7).

There are many types of studies out expressing the pros and cons of alternative flexible seating. Positive research and discussion on the effects that alternative seating has on the classroom environment were expressed in a journal *Bringing the background to the foreground: What do classroom environments that support authentic discussions look like*, by Xenia Hadjioannou (2007). In the journal the researcher discusses the most important parts of the classroom for students to be successful. Hadjioannou (2007) stated that

“The process of identifying the major elements of the classroom environment was a generative one...a list of seven major environment features emerged: physical environment, curricular demands, teacher beliefs, student beliefs, relationships between members, classroom procedures and norms of class participation” (p. 375)

The information gathered helped the researcher to determine where, if any, problems were to arise in the study changes could be made to pinpoint where changes needed to occur. The main

theme for this research found that by providing what the classroom needed to succeed, the results were authentic for that group of students.

“Despite the assorted pressures arriving at the doorstep of this classroom community, the capacity of the classroom environment to support authentic discussions was not hindered... Classroom communities that aspire to foster authentic discussions must find their own rituals, norms, and balances.” (Hadjioannou, 2007, p. 396)

The research was seeking to further prove that the environment has a huge impact on student outcomes and needs further research on how to make sure students have these supports to be successful.

Although not a traditional route for research in education, the physical environment (classroom layout) plays a part on the whole child and their school success. One of the research journals that tested a seating method and discussed alternative seating cushions specifically. In *Effectiveness of Disc 'o' sit Cushions on Attention to Task in Second-grade Students with Attention Difficulties*, researchers Amy Henry, Stephanie Miller, Beth Pfeiffer, and Suzie Witherell (2008) proposed that by using this alternative seating option they could help students with these learning difficulties not only concentrate better, but it helped improved their productivity in the classroom and improved relationships with their peers (Henry et al., 2008). Because the students were comfortable and could move during their class, attitudes and perceptions began to change in the classroom as well as towards each other. The researcher noted that not only were the students benefiting from the change, the teacher was able to focus on curriculum and less on distracted off task behavior. This classroom flexible seating option is one that many teachers are using. The researcher looked to observe the effect they have on student posture and sensory integration in the classroom for those with attention difficulties. The

method for this journal was done by providing students with attention difficulties and the general education classroom Disc 'o' sit Cushions. “After identifying the children who met the inclusion criteria...the students in regular education placements were randomly assigned to either the treatment group or the control group” (Henry et al., 2007 p. 277). The researcher noted that not only did the students that had attention difficulties that the study was aimed to improve, but also behaviors and concentration in the whole general education classroom improved as well.

“The children who used dynamic seating interventions in the studies were more focused and attended better, which led to increased academic performance. In each of the studies using dynamic seating, the children demonstrated increased attention to tasks when permitted to actively move...The results identified an increase in attention while engaged in sedentary tasks in the classroom.” (Henry et al., 2007 p. 278).

Looking further into making accommodations for students with additional needs in the general classroom, Caren Martin studies how alternative seating can help students that are on the autism spectrum in “Exploring the Impact of the Design of the Physical Classroom Environment on Young Children with Autism Spectrum Disorder (ASD)” (Martin, 2016). Martins (2016) research stressed that having mainstreamed and inclusive classes with students that have ASD could greatly benefit by having the flexible seating choice and then offering it to all students. The researcher explained that by including all students in using the seating option helped not only all students in the classroom but made the transition easier for students with ASD (Martin, 2016). By providing the same opportunities for all students in the classroom, it was shown that there was improvement for all students across the board. Those seating options used were varied in height tables as well as different textures.

The one common outcome from the research into flexible seating was the importance of changing the environment to suit the student, instead of making the student conform to the environment. Karen Burke and Barbara Burke-Samide conducted research in a classroom that has a lot of structure. In *Required Changes in the Classroom Environment: It's a Matter of Design* (Burke & Burke-Samide, 2004), researchers stated that because of this extreme structure of the teacher's classroom, she was preventing the achievement. Researchers believed this because the environment was too controlled, too bright, the seating was unnatural and uncomfortable, and she does not allow the students to fidget (Burke & Burke-Samide, 2004). Looking at this research study the researcher makes it very clear that the role of the environment is important, and productivity is dependent upon it, but they stress that the teacher is the one that must make the changes.

“All teachers must be taught how to redesign their classrooms correctly so that all students will be provided with the necessary space to accommodate their environment learning-style presences. By altering the classroom, teachers give some students the opportunity to work in formal—desks, chairs, and tables—and other students the chance to choose informal areas—couches, rugs, soft chairs, and so forth. Within the areas of every classroom, adaptations can be made for sound preferences, lighting needs, and temperature controls.” (Burke & Burke-Samide, 2004, p. 238)

The study also talked about differentiation and its need to always be present in today's classrooms. The researchers stated that:

“Considerable attention has been devoted to promoting educational practices that provide options to accommodate diverse learners. New practices are added, but they often provide only an overview of the more recent buzzwords being addressed at conferences and in

journals. Regardless of the approach, it should never be presented as appropriate for the entire class-without taking into consideration the individual needs and learning styles of students.” (Burke & Burke-Samide, 2004, p. 239)

Peter Lippman explores another aspect of alternative seating in his research study “Designing Collaborative Spaces for Schools” (Lippman, 2015). Lippman (2015) remarks that “the physical environment, the spatial design, and the information technologies must be planned to support a variety of collaboration spaces. When designed thoughtfully, these spaces help create optimal experiences for learning.” (Lippman, 2015). The researcher also stresses that

“Design influences how people engage with one another, and whether or not they are able to fully participate in activities. For this reason, learning environments must encourage collaboration. Collaborative settings can include all areas of a school, encompassing classrooms and adjacent areas outside them. Collaborative spaces must provide areas for independent learning, 1-to-1 learning, small group learning, and large group meetings in which the entire class comes together.” (Lippman, 2015, pp. 2-3).

By having the collaborative flexible seating, the classroom climate can completely change, according to Lipman’s research. All the information that this researcher gathered on the topic see. This article studied sensory needs being met in the classroom like visual, auditory, kinesthetic, tactile, and how using these with alternative seating as an intervention. It also looked to take these interventions and see if it had any effect on early literacy skills as well as on task behavior.

Dr. Jill M. Merritt, explored the early childhood aspect in her research *Alternative Seating for Young Children: Effects on Learning* (Merritt 2014). This research provided more

detail into the early childhood classroom and the data collected could be used in the pre-k to kindergarten classrooms. One of the biggest challenges for students entering these grades is that the expectations are hard for them when movement is not part of the classroom, with the result being students that might act out and effect classroom management as well as added pressure to perform on assessments at such an early age.

“In recent years, there has been added pressure on teachers to support their students’ learning and increase test scores. Coupled with that pressure are recent research findings that suggest if something is not done to help young children who have attention and focus problems, such issues may get significantly worse in time... It may be that when students start off behind due to attention issues or other learning problems, they may never get the opportunity to catch up. Teachers of young children may be the first line of defense in assisting students in attaining academic success.” (Merritt, 2014, p. 13)

Because of the importance of a good classroom experience is so vital, it is a necessity that teachers are aware of students needs in their classroom. The researcher stressed the importance of these issues and suggested that those needs could be addressed with the addition of some type of stimulation physically. By providing a sensory cushion the students could move while the teacher was presenting material, as well as individual seat work.

“The study also attempted to examine use of alternative seating during reading instruction and preschool students’ on-task behavior... the study did show a significant drop in the number of times each teacher had to interrupt instruction to address off-task behavior.” (Merritt, 2014, p. 16)

Although the study did not find a connection with limited time constraints, the researcher did conclude that the teachers witnessed less interruptions. The study then concluded that the cushions helped in the area of classroom management, with fewer interruptions and more on task behavior led to have positive recommendations for implementing alternative flexible seating; however, Merritt (2014) strongly suggested that more time was needed to appropriately test the hypothesis that there was a connection between academic improvement and alternative flexible seating.

Another group of researchers in a classroom in Saudi Arabia looked at seating for those students in the classroom, however from the college student standpoint. Einas Al-Eisa, Syamala Buragadda, and Ganeswara Rao Melam did a clinical study for this age student entitled *Effect of Therapy Ball Seating on Learning and Sitting Discomforts among Saudi Female Students* (Al-Eisa et al., 2013). The researchers found that information for this age student was very similar to those younger students.

“Factors like student’s gender, personality differences, and class room environment affects the student’s learning and participation in the classroom. Most of the college and university professors follow a lecture method of teaching which involves delivering a lecture where the instructor speaks, and the student sits for a prolonged period of time in the classroom. Human brain maintains an optimal state of arousal and attention only with the help of sensory stimuli, and arousal can be either low associated with lethargy and drowsiness or high leading to hyperactivity and distractibility. Sensory modulation is required for optimal attention and learning. Researchers found that the design of the class should be flexible, creative, and problem solving. Cornell defined furniture as both a tool and an environment. To create a suitable learning environment for students it is

mandatory to think of the furniture and seating arrangements of a classroom.” (Al-Eisa et al., 2013 p. 1)

This information from the clinical study performed found that those similarities were almost identical when it came to the classroom environment and student on task behavior. Researchers for this clinical study chose to replace seating with a therapy or yoga ball to see if students’ retention of material changed when the seating addition was introduced. “The results of the study showed that there was a significant improvement in sitting discomfort and attention in students with therapy ball seating” (Al-Eisa et al., 2013, p. 3). This data correlates with almost all research that was presented making the option of flexible alternative seating a viable choice for changing the physical environment for student success.

Recommendations for Further Study

This researcher recommends that further study needs to occur in the area of flexible alternative seating to look at long-term effects on this nontraditional seating option in all ages classroom settings. It would be beneficial for teachers, administrators, and districts to have current data on how these new options work long term and is the evidence for the method positive. The other area that needs further study in this classroom arrangement would be how the students are able to transition into another classroom that does not use alternative flexible seating. This would be an area that would take several years to complete and all of the research that this researcher performed was done within a short block of time.

Conclusion

Alternative flexible seating is nothing new for other countries around the world. Until within the last fifteen years has it become the latest buzzword for educators in the United States.

Some argue that it is distracting to the teacher and other students, but from the research that was presented, all opinions seem to be positive in that this seating provides an outlet for pent up energy. By allowing students to stand or move in their seat, they can focus more on the curriculum and off task behavior is shown to decrease. Researchers found that any changes that help personal and academic development of skills and self-regulation had lasting impact for not only the student, but for the classroom as well. Classrooms had less interruptions and more collaborative learning than those that used traditional seating. Students were able to choose seating that worked the best for their needs and most teachers that were discussed in the studies had nothing but positive remarks and had planned on retaining the flexible options for their classrooms in the long run.

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