

Marketing the Green School:

Form, Function, and the Future

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Chapter 8

The Places Where Children Play

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ABSTRACT

Most of us remember playgrounds that consisted of an asphalt or gravel lot with swings, teeter-totters, and monkey bars. When recess came, we went outdoors to play tag, Simon says, or kick ball. Just as educational reform has changed the classroom and the curricula, concern about the environment has changed school design and construction. This chapter examines the evolving changes in playing at school and on playgrounds. The chapter introduces the reader to general information about playgrounds and discusses the importance of green construction and sustainability. This includes a closer look at playgrounds from the perspectives of health, child development, and related moral issues. Children need to play in a safe and enjoyable environment.

INTRODUCTION

Playgrounds always have been a safety concern. States and school districts have written playground manuals and instituted policies and regulations to protect the users. Principals and staff routinely inspect the places where children play. Having safe playgrounds, however, is only one component of today's schools. The concern for playgrounds has expanded from the needs for green, sustainable, reusable materials to the epidemic of childhood obesity.

The average American child no longer receives a sufficient amount of exercise, which has many negative ramifications that go beyond physical

health risks. Research indicates that physical fitness is positively associated with academic achievement (Castelli, Hillman, Buck, & Erwin, 2007; Chomitz, Slining, McGowan, Mitchell, Dawson, & Hacker, 2008; Van Dusen, Kelder, Kohl, Ranjit, & Perry, 2011; Welk, Jackson, Morrow, Haskell, Meredith, & Cooper, 2010; Wittberg, Cottrell, Davis, & Northrup, 2010). It is well documented that an increase in physical activity improves physical fitness, which also improves cognitive functioning and academic achievement (Abadie & Brown, 2010; Archer & Kostrzewa, 2012; Edwards, Mauch, & Winkelman, 2011; Fedewa, & Ahn, 2011; Hillman, Pontifex, Raine, Castelli, Hall, & Kramer, 2009). The extent

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of the positive impact of physical activity reaches far beyond the benefits that can be directly measured by standardized tests, such as significant psychological and social benefits that also can improve students' academic performance (Florin, Shults, & Stettler, 2010; Fortson, James-Burdumy, Blecker, & Beyler, 2013).

Although many of the factors that contribute to this sedentary lifestyle are outside the control of education, schools have traditionally been tasked with the responsibility of addressing many of the social issues that exist within our society (Tyack & Cuban, 1995). Because many students no longer receive a sufficient amount of physical activity at home, schools have been tasked with the moral obligation to provide this opportunity during the school day (Story, Kaphingst, & French, 2006). Societal demands, both implicit and explicit, for an increase of physical activity during the school day have steadily increased during an era of educational reform that also has experienced unprecedented increases in standardized testing and accountability (Ravitch, 2010). The accountability creates a demand for lengthening instructional time and competes with the demand for an increase in physical activity, stretching the ability of schools to accomplish both goals.

Educators at all levels, from superintendents to teachers, are influenced by the enormous political pressures created by high stakes testing, and thus often act in a manner that is incongruent with their own beliefs. As Martin and Kulinna (2005) articulated, "although teachers might strongly value physical activity and feel quite efficacious about their ability to teach physically active classes, feelings of distress or anxiety might undermine their efforts" (p. 267).

The physical health of students has commonly become an afterthought in an era when failure to achieve increasingly rigorous results for the math and reading portions of standardized tests can result in school closure. Unfortunately, the epidemic of obesity continues to spread like a virus among our nation's youth and should be prioritized

as equal to math or reading. It is imperative for educational leaders to recognize the connection between a healthy mind and a healthy body and, thus, the importance of healthy, safe playgrounds.

HISTORICAL PERSPECTIVE

The emphasis of physical activity in the educational system of the United States was well articulated by many of the influential leaders of our nation's educational history. One of the prominent forefathers of American education, Thomas Jefferson, acknowledged, "exercise and recreation are as necessary as reading. I will rather say more necessary because health is worth more than learning" (The Thomas Jefferson Foundation, 2012). During the common school era of the mid-nineteenth century, elementary schools were primarily concerned with instruction in the core subject areas of reading, writing, and arithmetic. The need for physical education became more apparent when successful results were experienced in Boston in 1852, as schools began to provide time for physical exercise (Elmakis, 2010). St. Louis and Cincinnati quickly copied this trend in 1855 and 1859 respectively, which became formalized for the first time in 1866 when California passed a state law that required physical education to be a part of the daily curriculum (Humphrey, 1990).

Although the early inclusion of physical education experienced some resistance from traditionalists, Dewey articulated the basic human need to integrate physical activity as a means of making education enjoyable for children. In the words of Dewey (2011), "Experience has shown that when children have a chance at physical activities which bring their natural impulses into play, going to school is a joy, management is less of a burden, and learning is easier" (p. 108). Dewey (2011) expanded on this concept, emphasizing the importance of recreation, not

only for physical exercise, but also as a fundamental human need,

Recreation, as the word indicates, is recuperation of energy. No demand of human nature is more urgent or less to be escaped. The idea that the need can be suppressed is absolutely fallacious, and the Puritanical tradition, which disallows the need, has entailed an enormous crop of evils. If education does not afford the opportunity for wholesome recreation and train capacity for seeking and finding it, the suppressed instincts find all sorts of illicit outlets, sometimes overt, sometimes confined to indulgence of the imagination. Education has no more serious responsibility than making adequate provision for enjoyment of recreative leisure; not only for the sake of immediate health, but still more if possible for the sake of its lasting effect upon habits of mind. (p. 113)

Throughout the latter half of the 20th century, the inclusion of physical education programs in schools experienced unprecedented growth, including an increased emphasis on measuring the physical fitness of students (Mood, Jackson, & Morrow, 2007). Physical education surfaced as a hot topic in many national conferences, as numerous organizations emerged that emphasized physical education and student health. The abundance of evidence that physical education had become an integral part of our educational system was epitomized by the significant increase in teacher preparation programs for physical education.

In 2004, Congress capitalized on this momentum when they passed the Child Nutrition and WIC Reauthorization Act (CNRA), which included specific language that mandated the implementation of school wellness policies by all federally funded school divisions by 2006 (Brownell, Schwartz, Henderson, & Friedman, 2009). Not only was physical activity gaining momentum in the curriculum of America's schools, it was now required by the federal government.

GENERAL INFORMATION ABOUT PLAYGROUNDS

Current guidelines recommend that children participate in a minimum of sixty minutes of daily physical activity, and the National Association for Sport and Physical Education recommends 150 minutes per week of physical education for elementary schools. Unfortunately, only eight percent of our Nation's elementary schools meet this recommendation (Story, Kaphingst, & French, 2006). Researchers attributed this shortcoming to the focus on student achievement in specific core subjects mandated by the No Child Left Behind Act of 2001.

In an attempt to "squeeze in" physical education requirements and still maximize instructional time in the areas that are included on standardized tests, many schools have experimented with teaching physical education online. While this may provide a short-term solution for scheduling issues, many of these courses use the honor system to verify the fulfillment of exercise requirements, and students often complete the online courses without any form of physical activity (Daum, & Buschner, 2012). Although there is a limited amount of data on the long-term effectiveness of these programs due to their newness, researchers have already noted some detrimental effects of online education, such as the sense of isolation that results from a lack of social interaction among peers (Barbour, & Plough, 2009). Partly due to the lack of interest in teaching the modern form of online physical education, Virginia Commonwealth University has considered dropping their physical education program, which now consists of only one full-time faculty member (The Associated Press, 2013).

With the previous information in mind, how and where do schools meet mandates about play and playgrounds? We know that there are organized sports, recess, physical education courses, and some movement activities in lower grades. The center of most play actually occurs on playgrounds.

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Play ranges from bare fields with perhaps a swing to very elaborate systems for play and fitness. Old playgrounds were furnished with equipment that was metal framed, painted with lead paint, and may or may not have exposed nuts and bolts. The playground itself may or may not have had grass on it. As the states began to pass laws about playgrounds, the safety of the equipment and grounds came into focus: accessibility, surface, equipment, hardware, paint and finishes, safety hazards, and maintenance.

MAKING PLAYGROUNDS GREEN

When discussing green playgrounds, the topic is sometimes misinterpreted as being “natural” playgrounds. While that can be the case, the next discussion will review green playgrounds built with green and sustainable materials.

As design of green playgrounds is conceptualized, the most important and first issue is to design for safety. Safety is the umbrella for all playground concepts. The second most important concept to ponder is the number of children using the playground and the range of ages. If the age range is too wide, the play area may need to have subtle divisions for age groups.

Once the number and age range of children is ascertained, the actual space needs to be computed. The National Institute of Building Sciences (Ruth, 2008) recommends the optimal space per child as being 200 square feet and an optimal 6 feet extending from each piece of equipment. The equipment may be steel or aluminum, reinforced plastic, treated wood, or other recycled, reinforced material. The latter may be from recycled milk jugs to other waste materials. Another element for playgrounds is to have aesthetically interesting colors and presentation for children—it needs to be inviting. In all cases, however, the intent of green construction is to reuse or recycle materials from the most common of waste products, especially plastics. The Earth

Day Network (DeHartchuck, 2012) calls this the three “Rs”: reduce, reuse, and recycle.

What once was an easy fix, a playground surface of gravel, concrete, or asphalt has been replaced with safer, more comfortable and cleaner surfaces. Safe fall technology is employed to eliminate serious injuries, and proper water drainage helps to prevent falls and slipping. Artificial grasses, rubber mulch, rubber surface pads, all, which are recycled materials, have made the playground more inviting as well as safer. Hypoallergenic and antimicrobial play surfaces are important to children who have difficult allergies. Nearly all such surfaces are recycled synthetics that minimize the use of water, raw materials, energy, and the life cycle of the playground, and they are developed to be healthy surfaces for children.

Saint-Gobain (2008) notes the following best practices for indoor and outdoor facilities:

- Cost effectiveness and long term affordability.
- Durability and strength.
- Conservation of water and other natural resources.
- Comfort.
- Human productivity, safety, and health.
- Reduction of outdoor air, water, and ground pollution.
- Aesthetics.

Parents, teachers, and community residents can join together to create a process for improving their local schoolyards by:

- Assessing the existing playgrounds.
- Envisioning a quality playground, researched by visiting other school districts and meeting with expert engineers, designers, and landscape architects.
- Creating a plan for a green, sustainable schoolyard and carrying it out.
- Ensuring ongoing maintenance. (NCCOR, 2012, p. 21)

Generally there are state guidelines for the frequency of playground observations and evaluations. For instance, in the Commonwealth of Virginia playgrounds must be inspected once a week for breakage or any other problems. Playground equipment can be made of the safest materials and installed correctly; the surfaces may be constructed using the safest material that is currently available; however, if the playground is not correctly maintained, it will not be safe.

MAKING PLAYGROUNDS NATURAL

There is one more way to make playgrounds green or even greener. If the reader has ever caught frogs in high grass, taken a nature walk, climbed a low hanging limb, made a sand castle, or built a fort from sticks and vines, you have experienced natural play. These playgrounds are designed to be natural landscapes, with natural vegetation. Native trees and plants are planted along with structures to play on and to work on fitness. In some situations, there are garden areas in which children are encouraged to plant flowers and vegetables for pleasure and harvest to eat.

There is a trend for schools to create multiple use playgrounds. Such playscapes or play spaces are developed for creative play for students during recess. The designs encourage children to seek out one another, make their own play, and enjoy nature. To expand the use of such areas, landscape architects also are designing the use of these areas for outdoor classrooms, with plants native to the area and small ponds for wildlife.

Architects, landscape designers, or playground construction specialists need to be consulted when a playground is being renovated or built. The process is not as easy as simply putting an old tire on a tree limb or setting up an a-frame swing set. Play areas that are going to be used by dozens or hundreds of children need designs that are not only green, but also sustainable, strong,

safe, and an invitation to children to play. With the materials that are available today, all of the above elements can be met without great concern that the cost will be a great deal more than equipment or grounds that do not meet the guidelines of the U.S. Consumer Product Safety Commission or the American Society for Testing and Materials. It should be noted that recycling and reusing does not have to mean a poorer quality or standards. Most recycled products have better quality, strength, and greater sustainability. They are not only safer, but also are better for the environment and the future of the children who play.

Finally, school leaders and communities interested in Leadership in Energy and Environmental Design (LEED) should be aware that LEED points can apply to playgrounds. Some of the areas, which can qualify for earned points, are outdoor classrooms, material reuse, site selection, storm water design, and restoration of habitat.

MORE THAN JUST A PLACE TO PLAY

Children grow in many dimensions, including healthy bodies and healthy minds. While some children have parents who encourage play at home and in parks, the only physical activity other children experience is during recess. Recess plays an important role in counterbalancing the increasingly sedentary lifestyle that children experience both at school and at home. Ramstetter, Murray, and Garner (2010) conducted a comprehensive review of current research, including an examination of the many benefits of recess. They acknowledged that recess offers a tremendous amount of social and emotional benefits, including the opportunity for children to engage in unstructured social interaction, develop communication skills, adjust and adapt to the environment, and enhance their cognitive development.

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The researchers emphasized that recess provides a much needed break from the challenging mental tasks that occur within the confinement of the classroom and assists in students' abilities to manage stress. In addition to these social and emotional components, there are many physical benefits for children, even if they do not play vigorously during the unstructured format of recess. Because recess provides students with the freedom of activity, students benefit from being able to make decisions and gain a feeling of sheer joy and improved self-efficacy during free play that will contribute to a more active lifestyle (2010). The playground is more than a structure with equipment. Play makes a whole child.

This is complicated as the child gets older and higher in the grades. Although the means vary according to the characteristics of the school population, the opportunity for daily physical activity decreases as students transition into grades that include high stakes standardized tests. Dale, Corbin, and Dale (2000) found that elementary school students do not compensate for a lack of physical activity during the school day when they get home from school. The problem exacerbates as the students get older.

In a non-experimental study to examine the impact of national policy and practice regarding children's outdoor play, Burriss and Burriss (2011) surveyed 173 randomly selected school divisions on topics such as recess, playground access, outdoor play, and outdoor learning. The results of the survey indicated a national trend of decreasing children's time outdoors during the school day. Consistent with social cognitive theory, although there was evidence of administrative support for increased opportunities to get outdoors, pressures created by federal policies limited the administrators' ability to make a positive change (2011).

The link between a healthy body and a healthy mind begins at a very young age. Ommundsen, Gundersen, and Mjaavatt (2010) studied the role of healthy behaviors such as physical activity and

weight status in first grade, with social standing in fourth grade. In an experimental study that examined the behavior of 80 randomly selected Norwegian students, researchers found that motor efficiency and physical activity in the first grade was a significant predictor of social standing among classroom peers in the fourth grade. A socio-metric indicator, which included a nomination procedure in which students indicated with whom they preferred to associate in specific situations such as class work and play, measured social standing. The results of this study provide support for early intervention efforts in schools to increase opportunities for physical activity and exercise at a young age in order to enhance students' psychosocial development and ability to form positive relationships with peers.

Sandford, Duncombe, and Armour (2008) also studied the impact of sport participation and physical activity programs on youth disaffection and anti-social behavior related to education. This non-experimental study specifically examined two initiatives that have been implemented in the United Kingdom designed to re-engage disaffected youth: the Outward Bound project and the Youth Sport Trust. Extensive data were collected on more than 7,000 children, who participated in at least one of these two programs during the past three years. An analysis of this data indicated that both of these programs had a significant positive impact on attendance rates and behavior of a large number of participants. Most notably, participants of these programs improved in engaging in their lessons and were able to form and sustain better relationships with both teachers and peers. The impact on classroom engagement and the development of healthy social relationships that can result from participation in programs that promote physical activity is significant.

In a review of literature, Archer and Kostrzewa (2012) examined the effects of physical exercise on students with *Attention Deficit Hyperactivity Disorder* (ADHD). Despite the benefits of

medication, children with ADHD performed below average in their interpersonal relationships and academic achievements. The findings presented in this study indicated that physical exercise provides a multitude of benefits against anxiety, depression, stress, poor impulse control, compulsive behavior, and negative behavior, alleviating many symptoms that are typical of students diagnosed with ADHD. These findings also suggested that physical exercise may provide a healthy alternative for parents who are reluctant to use medication to treat the symptoms of ADHD. In a similar study reviewing the literature on this topic, Halperina and Haeleyc (2011) came to the same conclusion, emphasizing the importance of directed play and physical exercise as a cost effective and healthier alternative to medication for the treatment of ADHD.

RECOMMENDATIONS

Children are impressionable. They observe adults and whether they “practice what they preach,” when it comes of conservation, thinking green, or respecting the environment. Students watch their teachers conserve on paper, they observe gardens on the roof, and they listen to lessons on clean water. As adults, however, we send our students other messages. When a school is built, is the first thing that happens to a site the removal of all of the trees and vegetation? Are the natural slopes of the land leveled? Are all of the play spaces contrived and sterilely designed? Architects and the community must work together to send both overt and covert positive messages about the spaces where children learn and play.

While there is research about the school facility, energy conservation, lighting, noise factors, density, and other important school plant elements, there are not many studies about the effects on children, teachers, and staff of LEED certified

facilities and healthier environments. There are multiple research questions in search of data:

- How can natural schoolscapes be used to enhance the STEM curriculum and other curricular initiatives? Is there a positive effect on student achievement?
- Do principals and teachers perceive that green playgrounds engage students in more play and less bullying?
- Can beautiful, safe, sustainable playgrounds meet the play needs of students?

The above are just three examples, but there are many areas of possible research: urban play areas versus suburban playgrounds, safety issues of play on natural playgrounds, and the effects of play on students immediately prior to test taking. Educators often note the importance of play, but we do not spend adequate effort to conduct supporting research. It was mentioned earlier that school leaders succumb to pressure to cut play for curricular activities. Research in the appropriate areas may provide support to school administrators to “stand up” for play time and physical activity.

CONCLUSION

Despite the extensive research that documents the positive effects of increased physical activity on physical health and well-being, state and federal mandates and the pressures caused by high stakes testing have caused administrators to sacrifice opportunities for daily physical activity to dedicate more time to instruction in the core subjects (Burton & VanHeest, 2007). Thus, it is up to parents to speak up about physical activity and encourage schools and communities to develop play areas that are safe, inviting, and environmentally sound.

Children should have the benefit of learning that a healthy environment is reflected not only in their diets, but also in their style of living includ-

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ing play and other physical activity. This message can be sent subconsciously by having green spaces for children to play and sustainable playgrounds. Smilansky and Shefatya (1990) contended that school success largely depends on children's ability to interact positively with their peers and adults. Play is vital to children's social development. According to Piaget, Gattegno, and Hodgson (1962), play supports emotional development by providing a way to express and cope with feelings. Pretend play helps children express their feelings. What better place for this to happen than on a green playground? What better way to inculcate green and sustainability habits in children and young adults than to provide them with play areas that are environmental friendly and safe?

REFERENCE ORGANIZATIONS

American Society of Landscape Architects
International Playground Equipment Manufacturers Association (IPEMA)
National Playground Compliance Group (NPCG)
National Program for Playground Safety (NPPS)
National PTA
National Recreation and Park Association (NRPA)
The American Society for Testing and Materials (ASTM)
The Consumer Product Safety Commission is an Independent Federal Regulatory Agency
U.S. Product Consumer Safety Commission (*Public Playground Safety Handbook*)
United States Architectural and Transportation Barriers Compliance Board

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KEY TERMS AND DEFINITIONS

Green Playgrounds: Playgrounds with sustainable design, incorporating green materials. Green playgrounds are designed to reduce the play structures' carbon footprint, including an improved manufacturing process of the equipment, an increased life cycle term, and efficient reuse of industrial and consumer waste products.

Natural Playgrounds: Playgrounds constructed with resources that are produced by nature, with

as few manmade components as possible. These playgrounds may make use of plants, trees, and the natural lay of the land. Sometimes referred to as playscapes or play spaces, children are encouraged to make use of open-ended play.

Outdoors Learning: The acquisition of knowledge that occurs outside of the school building, such as a field, trail, or playground.

Recess: An unstructured or semi-structured break from classes during the school day, when children are free to play with their peers.