High-impact Learning Environments

A Complete Guide to Creating Engaging Learning Spaces
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Physical learning environments significantly impact student engagement and success.

Unfortunately, the vast majority of learning environments found in today’s schools look and feel just like they did more than a hundred years ago.

With digital technologies and competitive education coming to the forefront, schools have reached a tipping point and can no longer afford to do “business as usual” in their decades-old classrooms.

The Connection of Space and Engagement

Fast-forward to 2016 and a growing body of studies clearly demonstrate the vital connection between academic achievement and design of the physical learning environment. The time for transformation and harmony among pedagogy, technology, and space has arrived. Some schools and districts have already awakened to the need to overhaul their physical learning environments. And while the infiltration of educational and consumer technology in the classroom has helped to drive some of this awareness, technology is but one piece of the puzzle. When rolled out to student and teachers within the context of traditional, low-impact learning environments, for example, the technology often winds up underutilized as instructors gravitate back to their favored teaching methods.

The good news is that there are solid, proven steps that districts can take to ensure they are fully supporting changes to the learning environment and with 21st Century learning as a whole. In this white paper we’ll explore the concept of the high-impact learning environment, the key design criteria that goes into such spaces, and the benefits that districts can expect from putting the time and effort into developing them.
Learning Environments are Not Neutral

The core premise of the physical learning environment is simple: it either has a positive or a negative impact on engagement and achievement.

The engagement and motivation of students to become life-long learners is the ultimate goal of education. Without the right space in which to foster effective and holistic learning and success, student engagement is severely hampered. There are no “gray” areas – the classroom either serves as a supportive and nurturing place to learn or it doesn’t. While this may seem intuitive, this bottom-line concept isn’t always easy for administrators and district-level decision makers to fully embrace. After all, the classroom of old was largely comprised of a chalkboard, podium, teacher’s desk, bookshelves, and individual student desks. “Low impact” in nature, these environments did little to stoke engagement, collaboration, and academic success. They simply served as a passive backdrop for teaching and nothing more.

The Power of Space

Much like design in the workplace, the future of learning environments and their design depends greatly on the cultural changes within our education system.

Pedagogy has traditionally centered on a certain hierarchy, a “chalk and talk” approach to learning; in essence, a passive learning environment and experience for students. This is a far cry from the typical work environment in today’s companies, which relies on a series of interconnected experiences (both in-person and remotely), instant access to information, and technology to complete tasks and achieve success.

In order to effectively engage students and prepare them for future careers, schools have to provide an environment that has both a physiological and cognitive impact on learning. Form should follow function, and teaching and learning should shape the learning environment design.
So why spend so much attention on creating a high-impact space?

There is a growing body of research that highly correlates the physical learning environment and its design with improvements in student concentration, engagement, achievement and well-being.

Notable results from these studies include:

- Classroom design having a 25% impact, positive or negative, on a student’s progress over the course of an academic year. Major design criteria include flexible environments that encourage high levels of differentiated instruction and self-organized learning.

- Students outperforming their final grade expectations in new technology-enhanced spaces. Active learning environments were studied in comparison to passive (traditional) environments.

- Environments that support and encourage dynamic movement show more than 100% increase on student learning ability and attentiveness using international standard concentration tests.

- Significant increases in oxygen supply while seated in dynamic, posture correct chairs compared to deficient circulation when seated in rigid chairs.

- Gallup research today has noted 45% of students as disengaged and 70% of teachers as disengaged.
Enacting Real Change

Despite a misguided, popular belief, it’s not enough to purchase some modern-looking desks and several pieces of technology in hopes that they will be used to effectively infuse today’s 21st Century learner with the necessary knowledge and skills that he or she needs to succeed in today’s world.

A better approach is to carefully examine the current environment’s impact on the student.

This is something that very few school districts take the time to do, and it’s a critical step that shouldn’t be overlooked.

Because students spend an average of 14,000 hours in the classroom, the learning environment itself has a tangible impact on both student involvement and teacher effectiveness. The high-impact educational environment adds value to learning and acts as a teaching assistant across numerous learning activities. A study from the National Training Laboratories in 2000 found that only about 5 percent of the information delivered through lecture was retained. Compare that with retention rates at 50 percent for discussion group and 70 percent for practice by doing. Even higher, at 80 percent, was retention by students teaching others.

**LEARNING PYRAMID**

1. What types of learning environments enhance retention?
2. Is there a cost premium for enhanced learning environments?

In practice, the rapid growth of collaborative and self-organized learning spaces throughout the US education system is a testament to the veracity of this research. In many ways, quality design will serve as an influencer of future practice and not just responsive to existing teaching and learning methods.
Competitive Education as a Driving Force

American students are stagnating when it comes to achievement and success. As international students make impressive gains on tests that focus on critical thinking, problem solving and core subjects, like math and science, the performance of American students has many concerned about our ability to compete globally in the next generation. As part of a larger strategy to engage these students and give them the 21st century survival skills they need to fuel new innovation, high-impact environments create the “space” that fosters this type of learning.

A recent Washington Post article told the story of the Recovery School District in New Orleans, which recently became the first in the U.S. to be comprised completely of public charter schools – “a grand experiment in urban education for the nation,” the article cited, noting that to date, 42 states encourage charters as an alternative to conventional schools, and enrollment has been growing, particularly in cities.

“An all-charter district signals the dismantling of the central school bureaucracy and a shift of power to dozens of independent school operators, who will assume all the corresponding functions: the authority to hire and fire teachers and administrators, maintain buildings, run buses, and provide services to special-needs students.”

High-impact learning environments help tackle competitive education challenges within the U.S. school system itself. In an effort to be the education provider of choice, a district needs to consider how its learning environments stack up against other options students and parents have. When a charter school can open up down the street and take away 300 of your students overnight, that funding isn’t going to come back into your budget anytime soon. In order to become the education provider of choice - districts must be committed to student engagement and creating high-impact environments that support modern pedagogy and technology.
A New Generation of Learners

Whether we call them “digital natives”, Generation Y or Z, Millennials, or the Net Generation (just to name a few)- we can say that the student walking into today’s learning environments comes with a new set of experiences and expectations than generations past. Generations, as a general rule, are formed on the basis of common experiences within the membership. These shared experiences often lead to a set of common characteristics that broadly define the group.

Why is this important? The educational process for this generation can either engage and excite them or can be a source of extreme boredom and disengagement. By setting learning in a context that is enticing to these digital natives and provides increasing levels of engagement- the student adopts a pattern of life-long learning.
21st Century Survival Skills

In considering the outcomes of the educational process, it is important to keep focus on the skills that today’s students will need as they enter the workforce. As the U.S. economy begins to show signs of improvement, executives say they need a workforce fully equipped with skills beyond just the basics of reading, writing and arithmetic (the three Rs) in order to grow their businesses. Skills such as critical thinking and problem solving, communication, collaboration, and creativity and innovation (the four Cs) will become even more important to organizations in the future, according to a new survey conducted by American Management Association (AMA).

After interviewing hundreds of CEOs in business, non-profits and educational institutions Tony Wagner of Harvard University identified the top seven survival skills needed for the 21st century in his book The Global Achievement Gap. These skills are critical to worker success in modern companies that are growing more competitive and innovative.

Seven Survival Skills

1. Critical Thinking and Problem Solving
2. Collaboration Across Networks and Leading by Influence
3. Agility and Adaptability
4. Initiative and Entrepreneurship
5. Effective Oral and Written Communication
6. Accessing and Analyzing Information
7. Curiosity and Imagination

Quite simply, we need to expect all teachers to teach all students how to think and communicate effectively. They need to assess these skills and benchmark expectations to what the world will require of our high school graduates. And this needs to happen every day in every class and at all grade levels. If we do this in all of our schools, while also stimulating curiosity and imagination, then students will have the skills they need to get and keep a good job and be a contributing citizen, while our country will have a workforce that can continually produce innovations. An economy based on innovation will be more competitive and successful than any other in the 21st century.
The 5 Design Elements of a High-impact Learning Environment

So what does a high-impact learning environment look like?

High-impact learning environments center on the reality that the 21st Century knowledge worker will need extremely high agility and adaptability in order to succeed. They have to be able to assimilate new technologies, adopt new skill sets, and validate information that they are receiving. Sure you can look up bits and pieces of information online, but effectively sourcing, analyzing, and validating that data – then using it to collaborate with others – is an extremely important soft skill that not all students are acquiring at the K-12 level. And while the physical classroom setting doesn’t necessarily correct this problem, it does support the lifelong learner and his or her future needs.

A supportive, collaborative, high-impact learning environment includes the following critical elements:

- **Integrated Technology**: The integration of technology into the educational environment is more involved than placing computers in a classroom. Integrated technology becomes an integral part of the learning experience in a high-impact learning environment.

- **Learner Mobility**: Today’s learner is mobile. Formal and informal learning contexts are now prevalent as a result of pedagogy and technology.

- **Adaptability**: The learning facility use is likely to change as often as education changes, therefore the design of a space must allow owners many options of use.

- **Multiple Modalities**: A high-impact learning environment is designed so that differentiated instruction may take place with ease. This means creating spaces, configurations, and flexibility to allow for highly varied learning environments.

- **Dynamic Ergonomics**: Humans are made to move and an active learning environment stimulates cognitive development.
Integrated Technology

Why integrate technology?

In A Learning Approach Designed for the Demands and Opportunities of the Digital Age: Powerful, Relevant, Engaging, The Digital Media & Learning Research Hub defines connected learning as an educational approach designed for our ever-changing world. It makes learning relevant to all populations, the group states, to real life and real work, and to the realities of the digital age, where the demand for learning never stops.

Educational and consumer technology are both advancing at the speed of light – so much so that we really don’t know what types of devices, tools, and software institutions will be using just five years from now. This unpredictability has created major challenges for schools as they strive to develop learning environments around the teaching and learning tools that students will not only be using today, but also several years from now. This trend has also set the stage for technology to connect learners to one another and to information from the outside world. Connectivity makes learning highly visible, more experiential, and more meaningful for today’s digital natives.

We may not know what technology lies around the next corner, but what we do know is that the technology in question is probably going to be very personal, portable, and ubiquitous. It’s not going to look anything like the technology that was used 10-20+ years ago – when most of today’s classrooms were designed and constructed. We also know that the learning spaces themselves will have to reflect the use of portable technology, portable power technology, and the ability to “group” around these types of portable devices.

Put simply, teachers aren’t going to be projecting presentations up onto a giant white board at the front of the class in order to engage students at their individual levels. That last point is particularly important for schools to understand as individualized and personalized learning come to the forefront of the educational field. One pupil may be pacing at one level in high school algebra, for example, while another can learn at a faster pace using his or her own portable device. Curriculum will be written around this individuality and the software will be intelligent enough to identify “gaps” and then track students in a specific manner.
Learner Mobility

How does a school go about integrating technology from an interior perspective, particularly in terms of learner mobility? Where students used to sit at individual desks and occasionally congregate in groups at larger tables, today’s learning environments must blend formal learning contexts with informal options (sitting alone, working in an impromptu, ad-hoc group, etc.).

Connecting Formal and Informal Learning

For both the formal and informal learning environments to effectively engage students, these spaces must be supported by proper design. And because every space can serve as a learning space, schools must take into account both formal and informal teaching in order to effectively maximize both current and future square footage.

In other words, putting wheels on classroom furniture and hoping that it fills this need simply isn’t enough. The high-impact learning classroom has to factor in the idea that students learn best not in a sedentary, podium-facing environment, but in a dynamic atmosphere that both fosters and leverages mobility to the fullest extent. These learners will be moving throughout the space— in both formal and informal contexts— as part of their standard work patterns. Supporting these movements, and the natural flow and transitions they create, are critical to maximizing such opportunities.
Multiple Modalities

Used for decades, lecturing in front of the class is no longer considered the most effective teaching strategy for K-12 students. It is, in fact, effective primarily for auditory learners—approximately 12% of the student population. And while the method is still widely used, it is increasingly viewed as just one element within a larger multi-modal approach to education. The high-impact learning environment must support and effectively nurture learning in an era where various modalities (demonstrations, ad-hoc projects, collaborative conversations, and so forth) have displaced the traditional podium approach.

To support multiple modalities the classroom must be designed in a flexible manner that accommodates various modes of learning, including:

- Individual testing
- Working with partners
- Working on small teams
- Listening to lectures
- Watching demonstrations
- Working in various group or team sizes and/or configurations
- Working independently
- Forming ad-hoc teams to work on quick turnaround projects
- The list goes on…

Both teachers and students must be able to self-organize their respective spaces to match the specific activity, emphasis, or learning style that best suits the moment. Without this core capability, classrooms rob both students and teachers from experiencing a full range of modalities and consequently, failing to truly differentiate instruction to learners.
Adaptability

The high-impact learning environment is extremely adaptable and allows its occupants to change its use case each year as needed. Everything from the room’s size to its casework to its fixed-board systems should be reconsidered given the rapidly changing demands of classrooms today. In many learning environments today, for example, it’s not uncommon to find three walls of casework, a 25-foot white board, and rows of desks organized into columns on the floor. But what does this arrangement do for the teacher who wants to use differentiated learning and 21st Century classroom instruction techniques? It says, quite simply, “Go stand up at the front of the room and talk from the board.”

And when that same room needs to become a special technology or program lab the following year, what has to take place? The three walls of casework have to be ripped out, the white board removed, the floor patched or replaced, the wall repainted, and so on, simply to be able to use the space the way you need to. Such an inflexible space does very little to accommodate the needs of today’s learners and instructors. In fact, it hampers both. And where “multiple modality” addresses the day-to-day needs of the individual learner, adaptability concerns the year-to-year requirements of the very schools that are using the high-impact learning environment to educate today’s pupils in the most effective and efficient manner possible.

It’s important to note that as learning becomes more mobile and virtual in nature, schools don’t necessarily need to add an extra 5,000 square feet of physical space to accommodate their future growth. In fact, the high-impact learning space can be designed to accommodate more agile programming and can be easily utilized in different ways and across different modalities.
Dynamic Ergonomics

The final piece of the high-impact learning environment puzzle revolves around ergonomics, or the study of people’s efficiency within their working environments. One of the easiest of the five elements to tackle, the ergonomic factor centers on the student who spends 14,000 hours in the classroom and who needs access to equipment and furniture that does not negatively impact his or her physical health. Movement is a basic human requirement – just like breathing. The body and mind have both been shown to thrive in a climate of movement in numerous studies across the last 30 years. A rigid posture can be managed for a short period of time, but the research has shown over and over again that a static posture impairs a student’s oxygen supply and results in both mental and physical fatigue.

According to McKinley Health Center’s Posture and Study Habits Guide, students often sit in poorly designed seats and at awkward desk arrangements. They frequently use computers for extended periods. Prolonged sitting during these activities may cause muscles and other soft tissues to become stretched or shortened compared to normal. Muscles may be overworked or become constantly contracted. Blood and lymph flow may be constricted. Soft tissues may become inflamed. Nerves may even get irritated.

When addressing the ergonomic element of the high-impact learning environment, schools have to understand that they’re dealing with developing adolescents and not adults. And while many administrators and teachers remember the hard, rigid, plastic or wooden chairs that they were relegated to, studies have since shown that such furniture – when used over long periods of time – negatively impacts skeletal structures, circulatory systems, and respiratory systems.

To get the dynamic ergonomic conversation going, ask questions like: Why does every work surface in the space have to be 29 inches high? What if we put a stand-up table in there? What if we include desks that allow students to move between sitting and standing? How sedentary does the current design really encourage the students to be?

When these and other key points are taken into consideration, the classroom environment not only becomes more comfortable and inviting, but it also improves student wellness and motivation. This, in turn, results in higher achievement and improved knowledge retention.
Overcoming the Obstacles to Get to the Benefits

Few school districts would question the validity of the five key points made in this paper, but that doesn’t mean they are all running out to invest in high-impact learning environments. In most cases, funding appears to be one of the biggest barriers that administrators single out as keeping their schools from making the changes. Another challenge is the analysis paralysis that tends to go into any big decision that requires the input of numerous stakeholders. In other words, the lack of a clearly articulated vision prevents them from pushing full steam ahead with such initiatives – all the while their teachers and students are trying to operate effectively in aging, traditional classroom settings.

Instead, schools will spend millions of dollars to install and/or upgrade their wireless networks for students to use from their 45-pound ancient school desks, hoping that somehow the over-focus on technology will make up for the under-focus on the classroom environment. Districts will also switch from desktops to laptops to iPads without blinking, never realizing the huge impact that their inflexible learning environments are having on students. When schools spend millions of dollars on technology without creating spaces that allow that technology to be maximized, they not only miss out on most of the former’s benefits, but they also ignore the corpus of research and best practice signaling the need for high-impact learning environments.

When school districts do put the time and effort into developing high-impact learning environments, the benefits are great and the return on investment (ROI) is significant. Most importantly, districts gain reputations for having student-centric learning environments that produce knowledgeable pupils who are ready for college and/or the workforce. Instead of hemorrhaging students, the school becomes the educational provider of choice. It avoids the “dinosaur” label and effectively holds onto (and even increases) student population numbers during an era where competition for students is at an all-time high.

The high-impact learning environment helps schools maintain relevance, influence, and leadership in a way that other educational initiatives can’t touch. Districts can’t continue to wait and hope that this need will simply fade away because it isn’t going anywhere. In fact, with the infiltration of digital natives in today’s student populations, the need for the high-impact learning environment is expected to grow exponentially over the next decade. Isn’t it time your school or district stepped into the game?
“A Holistic, Multi-Level Analysis Identifying the Impact of Classroom Design on Pupil’s Learning”, 2012, Building & Environment Barrett, Zhang, Moffat, Kobbacy


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About the Author

Bill Latham, CEO, ALEP

Bill Latham is a passionate industry thought leader and education advocate with over 15 years of experience in creating High-impact Learning Environments. As a part of the leadership team of MeTEOR Education, he is guiding the company’s mission to inspire and support communities and their students in creating transformational learning experiences. He is an ardent proponent of broad-based reform in the pedagogy and focus of education in its preparation of the next generation of workers.