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“Meet George Jetson….”

Welcome to the STEM Issue!

Who knew a 1960s cartoon would someday mirror real life in 2019 and beyond? Well, a lot of scientists, engineers, mathematicians, and artists knew then that this was the future. They were just waiting for the rest of us to catch up. And catching up is what we’re doing now — by focusing on STEM, STEAM and STREAM education in our schools.

STEM and STEAM have been primary initiatives in the K12 education world for a little over a decade now, and it’s not slowing down. In fact, it seems as if the “movement” is only picking up traction. The U.S. Department of Commerce said, from 2008 to 2018, STEM jobs were expected to grow 17.0 percent compared to just 9.8 percent for non-STEM jobs. The growth expectations for 2019 and beyond are even more staggering — with the U.S. Bureau of Labor Statistics saying jobs in STEM fields will grow to more than 9 million by 2022.

But should this job/career growth be surprising to us? After all, almost everything we do in our everyday lives is based on all of the STEM and STEAM (also STREAM) disciplines. And in order to move forward in our society, there is a need to prepare a new crop of curious thinkers to move us to the Jetson-type of world we’re currently headed towards. Just how do we prepare our students for these types of careers? Some would say by: re-evaluating our approach in how we teach STEM subjects, looking at how we embrace Artificial Intelligence (AI) in the classroom and learning more about coding.

In our upcoming feature articles, educators and scientists will tackle each of these claims and give their take on how our schools are preparing students for a new reality.

In this issue of SEEN, we will also discuss the effects of STEM in sports and sports organizations/venues. This will be an exciting and ongoing series SEEN will explore as we learn more about how our favorite pastimes are more intertwined in STEM than we may think. Sports fan or educator (or if you’re both), you don’t want to miss this series!

STEM also touches our education facilities. The Spring/Summer months are great for discussions and planning for greener facilities that accelerate the health and technologies of our schools and school districts.

Finally, warm weather really does call for travel. We’re taking you on explorations around the Southeast region and beyond. Get your bags ready for fun and sun!

I want to wish you all a great close of the school year and a great, safe summer!

Best,
Deirdre Edwards
Editor-In-Chief
SEEN Magazine
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We all know that STEM plays a crucial role in our modern world, from the economy to our general well-being. It will continue to play a crucial role in our future economy as advancements in technology persists. STEM goes beyond writing codes and wearing lab coats. It has become the backbone of many industries including logistics, construction, manufacturing and healthcare. Science, technology, engineering and math related jobs currently account for over 70 percent of all jobs available in the United States of America. However, STEM skills shortage is an issue faced in most countries in the world. As a result, the average wage of STEM workers exceeds that of non-STEM workers. STEM education has long been thought to be the key to producing enough skilled workers to cater to the future demands of the industry, tackling the evident skills shortage.

In recognizing the STEM skills shortage faced today and the exponential growth trend of the STEM job market, increasing the STEM workforce continues to be a top concern for industry, government and academic leaders. To succeed in increasing the STEM workforce, a focus area has been to reduce the disparities in race, gender and socioeconomic backgrounds. Despite efforts made by academic institutions and organizations, racial, gender and socioeconomic disparities in STEM continues to persist in many parts of the
world. Women, Blacks and Latinx communities have always been underrepresented in STEM workforce as they are much less likely to be enrolled in a science or engineering degree program at their college.

Over the past few decades, more women have opted to enroll in STEM related degree programs in general. Thus, the percentage of women in STEM occupations has increased since the 1970s. However, they are still significantly underrepresented in engineering and computer related fields. Furthermore, the percentage of women in computer related fields has continued to decline since the 1990s despite the overall increase on women in STEM fields. There has also been less growth in STEM employment among younger women in the recent decades. So, there has been an increase in the number of women in the STEM workforce, but the growth has been relatively slow. Furthermore, although women generally earn significantly more bachelor's degrees than men, they are much less likely to opt for a STEM degree in comparison to men.

As with gender, disparities are also persistent in STEM degree attainment among various and ethnicities. Whites are leading in the number of degrees earned among all races overall. They account for most Bachelor and Associate degrees earned in the United States. Whites are followed by Latinos, Blacks, Asians and Native Americans accordingly in the percentage of degrees earned by race. While Asians earn the fourth highest number of degrees, they are most likely to earn STEM degrees, at around 50 percent, and most likely to pursue and persist in STEM careers. Furthermore, irrespective of gender, Asian and White STEM degree holders are more likely to work in STEM fields, in comparison to Blacks, Hispanics and Native Americans.

Regardless of gender and race, disparities in socioeconomic backgrounds are prevalent. While increasing access to STEM related fields generally leads to better career opportunities, studies have shown that some students struggle due to their socioeconomic background. Many students, especially those from lower socioeconomic backgrounds, tend to find the high-stake exams necessary for success in STEM education to be unnecessarily stressful and anxiety provoking. The high levels of stress have shown to negatively impact students’ performance, thus preventing them from thriving in STEM disciplines.

Researchers have found that when students from lower socioeconomic backgrounds are given the opportunity to emotionally regulate their worries, they tend to perform better in their exams. Thus, emotional regulation interventions are crucial to help reduce the rates of failure of lower-income students in STEM disciplines. While STEM knowledge is important for success, the ability of students to regulate their emotions is very important as well.

Despite the prevalence of these disparities, it is possible to reduce and eventually eliminate them with the right interventions. To increase the participation of students in STEM disciplines, the private sector can collaborate with K-12 schools and academic institutions to design and develop innovative programs and courses that will spark the interest of students. This will help encourage them to embark on STEM career paths. It is also important to emphasize increasing the gender and racial diversity and encouraging young women and girls to pursue STEM careers.

The outreach of STEM education can also be improved by introducing the concepts to kids and involving them at a younger age. For older students, additional effective STEM partnerships can be implemented such as internships, apprenticeships, mentoring and peer support.

As STEM education continues to evolve, it is important for schools to rethink and reinvent their approach. Some universities have incorporated new evidence-based approaches such as active learning and inclusive learning into their STEM courses. Active learning has shown to increase student engagement and results in deeper conceptual understanding and long-term retention of the knowledge. These factors contribute to an increase in students’ success and persistence in STEM fields. Evidence-based teaching has also proven to be effective in STEM education.

Schools generally tend to focus too much on memorization as opposed to problem solving when it comes to STEM education. This approach has shown to kill students’ interest in STEM topics early. Allowing students to solve real problems, learning by doing will spark their interest more. Schools can also consider giving students the opportunity to conduct science research projects at an early age. This will make sure that education is not restricted to a classroom or a textbook.

In addition to these disparities — gender, racial and socioeconomical, scores of students having undertaken STEM education are not prepared for the workforce. Thus, education institutions and companies are challenged to train an increasingly technical workforce to fill up the skills gap. To bridge the gap in STEM education, collaboration among academic institutions, and private and public organizations is key. The STEM education system will need to be reevaluated and redesigned along with the courses as required.

Deena Pierott is a Diversity Strategist and Social Entrepreneur. She founded a nationally recognized STEM+Arts program for underrepresented youth called iUrban Teen which has served over 6,000 youth. She is also a co-founder of the recently launched Black Women in STEM 2.0. She was also honored as a White House Champion of Change for Technology Inclusion under the Obama administration. She has been featured in numerous magazines and recently named Essence Magazines top 50 Black Female Founders in 2018. Learn more about iUrban Teen at www.iurbanteen.org
STEM has become a household word for most educators. It is the emphasis of Science, Technology, Engineering, and Math. But from a futurist's standpoint, what does that really mean and how will STEM education look in a futurist classroom?

One focus would be that STEM activities should be a blending of the subjects, as opposed to teaching each subject in isolation. A STEM activity would be a problem-solving activity where the student needs to discover the need for all four subjects to solve the problem. What better way to do this than by using the latest technology: Virtual and Augmented Reality.

Let's consider a quality STEM Activity using the latest technology and trends in education.

The beginning task is for the students to develop an understanding of the science behind the world's finest roller coasters. The first steps would be for the students to visit some of the world's best roller coasters in a virtual reality environment. One such environment is YouTube using a virtual reality headset. https://www.youtube.com/watch?v=bDoEYULinMU

A discussion would follow sharing what they saw, felt and heard while experiencing the virtual ride. The next step would be to research the science, specifically the physics associated with the creation of a roller coaster. The students are now ready to go into a virtual reality system such as Unity or CoSpaces. Using their understanding of the physics behind a roller coaster and their past experience of being on a virtual roller coaster, they can be tasked with the creation of a virtual roller coaster that conforms to the laws of physics and science. The students will also be very much involved with the aspects of mathematical understanding as they develop their coasters related to weight and gravity.

Once the virtual coaster engineering is complete, the students will be very anxious to share their unique roller coasters. The students can now share their creations in the virtual world, where other students can also test and critique them. The students can have a review and rework session to perfect this new and improved ride of the future.

The lesson is not yet complete. The students can go into their Makerspace area and have the students create an exact scale model replica of their roller coaster using a marble as their rider. Students will again be involved in all aspects of STEM.

Although STEM education has been thoroughly embraced by all, many educators thought that there may be something missing. STEAM education was born out of need to add the important arts to our focus areas. When considering our task, including the arts can be another step in our project. The students are designing the roller coaster. They can decorate the roller coaster. Finally, no ride is complete without its own soundtrack blaring into your ears the entire time. The students can create that sound track for their passengers.

STEAM education also includes an important digital age skill—creativity.

This is a fantastic example of a fun STEM/STEAM activity!

However, we should not miss an opportunity for our students to use their reading and writing skills. Let's add an "R" to our acronym and call it STREAM. It is easy to accommodate the literary skills in our project. Our students can now write about the issues surrounding the creation of their roller coasters. They can develop a creative advertisement for this new coaster of the future opening soon. They can also prepare an article for the newspaper to spur interest in their new arrival and why it will be the best coaster ever.

It is interesting to consider all the new and exciting projects one can include in a STEM environment. One can easily conclude that a STEM or STEAM or STREAM classroom is simply quality instruction incorporating available technology in a project-driven environment.

Dr. L. Robert Furman is an educator, principal, speaker, and published author. Furman currently serves as Principal at South Park Elementary Center and is the author of several books including: “Reading, Technology, and Digital Literacy”, “Are You Future Ready,” and “Engaging All Readers.” He is a contributing blogger for The Huffington Post and EdTech Review. Furman also hosts a well-known YouTube educational video blog called The Seditionists and educational podcast called the Council on the Future of Education. Further, he has been awarded the National School Board Association’s “20 To Watch” in technology education and a Pittsburgh Tribune Review News Maker of the Year.
THE FUTURE IS NOW
The Future Is Now
A Second Look at the Scientific Method

By Dr. Terry Talley

When we introduce the Scientific Method to our student, we have the highest intentions for these budding scientists to come away from the experience with a sense of what it is like to be a scientist. But, in reality are we just reinforcing the stereotype of the “mad scientist” in a dirty lab coat, with white hair flying straight back, and the black outline of soot around his safety goggles from an explosion in the lab? Is our disappointment with what comes back as “science fair projects” the product of our own making?

How prepared do your students feel, after memorizing the steps of the “Scientific Method,” learning the steps in isolation, and being told to go ask a question, do your research and design an experiment? From my initial experiences as a MS science teacher, in the library with my students, I can honestly tell you — they were not prepared. Research usually ended up with a search for a science fair demonstration book or website, and the one selected didn’t easily fit into the steps of the scientific method they had just memorized. It became obvious to me, I missed the mark when they would ask, “Do I write the question before the hypothesis — because I don’t even know what to ask?”

Then, I would send them off to do their “Science Fair Project” with a due date one month later. A few students would ask, “What is my hypothesis? How do I write the conclusion, when I don’t know what I changed in my experiment?” Some would bravely ask questions in the interim such as, “OK, I'm writing up my conclusion and I didn’t write a hypothesis like the Scientific Method says, so should I write one now?” My favorite, although most frustrating question would be, “My hypothesis was wrong, so I don’t know what to do. Do I need to start over? I don’t think I have enough time.”

With a sigh of relief, after the Science Fair and the projects are presented and graded, the Scientific Method poster was replaced with the Periodic Table of Elements poster or Newton’s Three Laws of Motion Poster and science lessons moved on. Having completed the “Scientific Method Unit” and we were ready to move on to the next unit in the Scope and Sequence.

Over the next several years I learned that I missed the point and I short-changed my students. By teaching the “Scientific Method” as a series of separate steps, in an insulated unit, I provided a very unclear, confusing, and unrealistic view into the methods of scientists.

The methods of scientists include both the skills and the knowledge used in their practice of explaining phenomenon. Scientists utilize a variety of methods depending on what they are investigating and trying to explain.

It is logical that they usually begin with a question, but sometimes they are well into their study before the question emerges. Depending on what they are studying, they may or may not be able to develop a hypothesis, because of a lack of controlled circumstances, variables or the environment.

The research conducted by scientists is in the body of scientific knowledge that is already understood. Scientific research includes examining what has already been discovered, experimented, or changed with the natural world. It is what is already known. Their research is an attempt to add their findings to this knowledge and to share their discovery with the world! Is it the same, is it different or is it new? The practices of scientists are about designing experiments and investigations that can prove or disprove their claims about the evidence they are examining.

Although relatively straightforward, I found that unless taught with clarity, and utilized often, my students would come away from their own investigations thinking science is something done by old men, with bad haircuts, who are in dangerous situations daily. If our goal as science teachers is to help our students understand the natural world around them and to begin to understand how it works as an amazing system, we need to understand the Practices and Methods of Scientists ourselves. By no longer teaching it as one method and in isolation, but by using the “Practices of Scientist” as our guide, there is a better chance that they will see the science in their everyday lives and in the world that they are living in.

Dr. Terry Talley, retired educator and author of The STEM Coaching Handbook, is the National STEM Manager for STEMscoops. Talley holds undergraduate and graduate degrees from the Mississippi University for Women and an Ed.D. in Curriculum, Instruction and Administration from the University of North Texas. She began her career as a secondary science teacher, later serving as a Science Teacher Specialist, Dean of Instruction, and eventually Supervisor for Science. Dr. Talley joined Rice University as the Program Manager for STEM Professional Development with Accelerate Learning and the National Institute for STEM Education. Prior to joining Rice, she was at the SRT-STEM Center as Program Director for the UTMB Office of Education Outreach in Galveston, TX.
Artificial Intelligence (AI) is an area of computer science that emphasizes the creation of intelligent machines that work and react like humans. - Techopedia

Whether you realize it or not, artificial intelligence (AI) is already shaping our world. Whenever you use Siri or Alexa, you are already communicating with digital assistance — a form of AI that is pegged as an "intelligent digital assistant." These AI assistants are designed to make your life easier.

Now, it is clear they are headed to the classroom as well. According to Artificial Intelligence Market in the US Education Sector 2017-2021, experts expect AI in education to grow by "47.50 percent during the period 2017-2021." Therefore, it is imperative to consider how AI will shape the future of the K-12 classroom.

Ease the Workload for Teachers

First, AI will help ease the workload for teachers significantly by performing automated grading. A bulk of the time is traditionally devoted to grading student work, but with AI, teachers will be able to pass this workload along. As AI continues to advance, it will be possible for AI to grade more than simple multiple choice pieces.

Additionally, AI will be used to communicate with students. For example, a Georgia Institute of Technology professor used a chatbox to message students about due dates and answer questions. The AI teaching assistant responded so clearly that students did not realize they were not communicating with a human being.

Focus on Individualized Learning

Next, AI will be able to focus on individualized learning. AI will take note of how individual students learn and where they struggle. By identifying a student's individual strengths and weaknesses, AI will be able to provide students with the tools they need for success. Plus, AI can provide this information to teachers and parents to help students get the help they need.

Identify Weaknesses in Classrooms

Also, AI will help improve classroom teaching by identifying weaknesses or gaps in teaching. For instance, some computer programming is already working on alerting teachers when a high percentage of students get the same question wrong. This information allows the teacher to review material. Also, if there are areas that are more difficult for a teacher, then supplemental AI teaching tools can be utilized.

Change the Role of Educators

Finally, while teachers will always be necessary and AI can never truly replace a human being, it is important to understand that AI may change the role of the teacher in the classroom. For example, teachers may move into a role that is more like a facilitator. As AI individualizes learning for each student, the teacher will be in the classroom to guide the student's learning through his or her use of AI tools.

Dr. Matthew Lynch is a writer, activist and former Dean of the School of Education, Psychology, & Interdisciplinary Studies at Virginia Union University. Currently he is the editor of The Edvocate (http://www.theedadvocate.org) and The Tech Edvocate (http://www.thetechedvocate.org). If you wish to get in contact with Dr. Lynch, please email him at advocatefored@gmail.com or tweet him @lynch39083
By Anjali Dighe

With the increasing impact of technology in nearly every sector of the global business environment, coding has become a necessary language and skillset in the digital age. It is important for kids — both boys and girls — to start learning the language of code at an early age so they begin thinking about problem solving in a more fluid manner that empowers them to work in team environments that encourages community learning and collaboration.

The majority of students today have access to smart phones, tablets, and/or laptops as part of their education. Putting our kids in control over the technology through coding allows them to understand problem solving, logic, sequencing skills, and cause and effect. Allowing them to express themselves in a creative manner through the creation of games, apps, and websites gives them the power to build using their incredible imagination all the while empowering them to understand the critical thinking skills of coding in a fun way. The earlier we introduce coding to children, the more comfortable they will become with computers and technology and the more successful they will become when presented with more challenging learning opportunities.

What is it that kids love doing? They love playing. They love playing games. Whether it is outside, a board game, a video game, or a game on a phone or a tablet, these students have a passion. That passion is gaming. Gaming helps students learn, it motivates students to solve problems, learn conceptually, and increase memory retention — all through adventure. So, let’s take that passion at an early age and turn it into a fun way of learning a skill.
What is it that kids love doing? They love playing. They love playing games. Whether it is outside, a board game, a video game, or a game on a phone or a tablet, these students have a passion.
So, where do we start? How do we integrate coding into school? Well, as a start, there is a program called Scratch — built for kids ages eight to 16. Scratch is a project of the Lifelong Kindergarten Group at the MIT Media Lab. You can use Scratch as part of your math class or technology class or even language arts class. From the math perspective, you can utilize Scratch to teach about the x and y coordinates and about angles and degrees. As part of technology class, you can start introducing a glossary of programming terminology like loops and conditionals. And language arts? Well, your students can create an interactive book report or an interactive story.

Another great way to introduce students to coding is by using Raspberry Pi; a low cost, credit card sized computer that you can plug into existing computer monitors at school and use a keyboard. One can program using Scratch in Raspberry Pi, learn a language like Python, create websites using HTML and CSS, build robots, and learn to make apps for Android devices. How do you find easy projects?

There are hundreds of free resources, lesson plans, tutorials and events that bring the power of coding into the K-12 classroom. Creating teams of students to work together on projects allows them to solve problems, create new projects, and use their creativity in a fun and safe environment that keeps school fun.

Anjali Dighe is Owner of Code Ninjas Charlotte and Chapel Hill. Code Ninjas provides students a unique resource to enhance problem solving, critical thinking, mathematical, and logic skills, while having fun creating and building games and learning how to code. These lifelong skills give our students a unique outlet to use screen time in a productive and useful manner.
While STEM programs get a ton of attention and accolades (and rightfully so!), STEAM programs are just as important. If your school, or school district, is not incorporating the “A” (Arts) in their STEM programs, here are just a couple of reasons why it is so important to have the arts as part of your curriculum:

1. Creativity — “Being able to think on your feet, approach tasks from different perspectives and think ‘outside of the box’ will distinguish your child from others. In an arts program, your child will be asked to recite a monologue in six different ways, create a painting that represents a memory, or compose a new rhythm to enhance a piece of music. If children have practice thinking creatively, it will come naturally to them now and in their future career.” – www.washingtonpost.com, “Top 10 Skills children learn from the arts”; Valerie Strauss, January 2013

2. Interdisciplinary Approach — “Students are able to view the unique advantages of each discipline. It teaches students that they’re not limited to one particular subject or must pick between a technical or artistic topic; their expertise can be formed through a combination of these. The equal representation of subjects promoted by STEAM makes it a truly well-rounded program that appeals to students’ evolving curiosity and range of interests.” - blog.kadenze.com, “5 Major Benefits of Integrating STEAM Education”; Hazel Romano, July 2018.

3. Girl Power! — “Since girls and women are underrepresented in the fields of science, technology, engineering and math, developing STEAM projects helps girls become familiar with these fields at an early age. Early exposure can increase their chances of exploring these fields further as they get older, and high-quality STEAM projects will still benefit boys as well so that all students are able to acquire these 21st century skills.” - education.cu-portland.edu, “The Benefits of Teaching STEAM Lessons”; The Room241 Team, July 2017.


5. Focus — “The ability to focus is a key skill developed through ensemble work. Keeping a balance between listening and contributing involves a great deal of concentration and focus. It requires each participant to not only think about their role, but how their role contributes to the big picture of what is being created. Recent research has shown that participation in the arts improves children’s abilities to concentrate and focus in other aspects of their lives.” – www.washingtonpost.com, “Top 10 Skills children learn from the arts”; Valerie Strauss, January 2013

Here are some other statistics about STEAM and its importance**:

• On average, students who study the arts for four years in high school score 98 points higher on the SATs compared to those who study the same for half a year or less.

• Students who took up music appreciation scored 61 points higher on the verbal section and 42 points higher on the math section.

• Of the elementary schools with arts, the most common subjects revolve around music at 94 percent and visual studies at 83 percent. Only three percent offer dance instruction while four percent provide theater arts.

• Training in the arts has been shown to improve creativity and innovation. Students learn to approach issues with a critical mind and a positive attitude towards problem solving. Exposure to the arts enhances communication skills, which are essential tools for collaboration. It develops flexibility and adaptability. The government recognizes these and, indeed, 48 states have adopted standards for art instructions.

• However, 51 percent of art teachers are unhappy about what they see as the decline in art education brought about by the shift in focus. The difficulty in measuring art’s contribution to academic performance has led to its under appreciation.

**Statistics from https://elearninginfographics.com/steam-not-just-stem-education-infographic/**

As you can see, the role STEAM plays in education is very vital to the future. The addition of arts curriculum needs, and deserves, heavy emphasis in the classroom and it is up to educators to spearhead this effort in 2019 and beyond.
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Explanations, Discourse, and Argumentation, Oh My!

By Terry Talley

In the scientific community, gathering and explaining evidence in light of current scientific knowledge is one of the practices of scientists and engineers. When we create those same settings in our STEM classrooms, amazing learning can take place! Nor longer are students the memorizers of facts and other peoples’ ideas, but are active participants in the creating of scientific explanations based on their observations and understandings of the world around them.

At an NSTA Conference in California, I had the opportunity to visit the La Brea Tar Pits in Los Angeles. What an amazing collection of fossil evidence of the animals that roamed that area during the Ice Age! Observing the painstaking care taken to remove every fossil from the asphalt, reconstructing the huge skeletons of the now extinct sloths and mammoths, and classifying all items found, brings to mind the real work of scientists.

The roles of the many scientists involved in uncovering the past of the ice age animals of La Brea are important to scientific community. As fossils are identified and classified, there are many clues being gathered as to the way they died, their diets, the predators who fed on them as they were trapped in the soft tar, as well as their adaptations. Clues into the environmental changes that occurred in that area of the continent are discussed based on the adaptations of the species as each layer of pit is separated out. The fossils are organized in such a way for scientists to make explanations about what each of these clues mean – based on the current scientific knowledge, theories about genetics and mutations, other fossils found elsewhere in the world, as well as the scientists’ background knowledge in their specialized fields.

Discourse among the many scientists associated with the Page Museum and the Natural History Museum of Los Angeles County occur to reach an agreement about what the fossils are really showing. Teams of scientists determine if the evidence is showing something that has not been explained before. Often times a new species or idea emerges and that is published for the scientific world to review. Scientific explanations are the ways scientists communicate with their peers and other scientists around the world.

Argumentation occurs when the evidence that is collected and the posed explanations are not the same explanations that other scientists draw from the evidence based on their background knowledge and experience. Often inferences and assumptions are drawn about evidence that cannot be based on direct observations. When scientists use inferences to make an explanation about a missing piece of evidence – it is often met with other interpretations and explanations from others in the scientific field.

Scientific argumentation is very different than the common arguments that occur socially. The Framework for K-12 Science Education takes a great deal of time to discuss the ways scientists form explanations from scientific evidence and use discourse and argumentation to reach an agreement on what the evidence means. The Framework states, that often these arguments raise more questions about what it could mean than provide answers.

When STEM teachers take the time to engage their students in creating explanations from evidence gathered from observations in their labs, students become engaged in the authentic practices of scientists. Rather than telling students what they will see and how it is related to what they are currently studying, teachers can create an environment of inquiry. When engaged in inquiry, students raise the questions or seek ways to answer questions posed by the teacher. As they begin to explain what they are observing and state the reasons for the explanation, they are taking the first steps towards scientific understanding!

In the book, How Students Learn Science in the Science Classroom, by the National Research Council (National Academies Press, 2005), the argument is given for changing how science is taught in the classrooms for the Next Generation of Science Students:

Simply telling students what scientists have discovered, for example, is not sufficient to support change in their existing preconceptions about important scientific phenomena. Similarly, simply asking students to follow the steps of the “scientific method” is not sufficient to help them develop the knowledge, skills, and attitudes that will enable them to understand what it means to “do science” and participate in a larger scientific community. And the general absence of metacognitive instruction in most of the science curricula we experienced meant that we were not helping in learning how to learn, or made capable of inquiry on our own and in groups. Often moreover, we are not supported in adopting as our own the questioning stance and search for both supporting and conflicting evidence that are the hallmarks of the scientific enterprise. (NRC 2005, p. 398.)

As STEM teachers who are nurturing the practices of scientists and engineers in our classrooms, it is important to first understand the difference in explanations, discussions, and argumentation. These are the tools of scientists in creating and adding to the body of knowledge about the world, known as Science. Authentic science education engages students in these practices on a regular basis.

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Embracing the Toy Store for STEM

By Mark Gerl

Here in the early 21st century we have a wealth of new materials we can use to teach and learn an amazing array of ideas.

While Edtech is a booming business, some of our greatest educational tools are hiding in the toy aisle of stores or the game section of retailers. STEM kits, STEAM toys, VR games, the list goes on and on, but bringing these great resources into the classroom is still the realm of the outliers, the pioneers and the vanguards. How do we make STEAM toys the norm for our classes?

At Fulton Academy of Science and Technology (FAST), there is an extra class called “Innovation Hour” specifically created for students to learn the engineering design process through project-based learning. This process requires students...
to problem-solve, plan project solutions, produce tangible designs and evaluate the outcome of their work.

**Here’s the process and how students become STEM/STEAM innovators:**

- Three days a week, a teacher presents a problem for students, which students study so they understand its impact as well as what limits there are to solving the problem.
- Students then brainstorm ideas that might help achieve the solution and plan their projects accordingly.
- During the planning stage, some ideas may prove too impossible to execute so students are guided to weed out these ideas so they can continue working on the ones that might work.
- Students then create, build, and prototype their ideas. With trial and error, students tweak their designs through the improving stage — evaluating the students’ creations as a viable solution to the original problem. Students learn quickly how to get closer to their goal during this class.

All of these components are the heart and soul of innovation.

The “Innovation Hour,” and all of the designs created during the class, are examples of how toys can transform into teaching tools. How do you make this initiative work in your school or district?

**Here are a few ways you can get started:**

- **Set a goal for students to tackle.**
  Even if their solution is impossible, the challenge is the driving force. Give them agency to approach the challenge in their own unique ways.

- **Hide the instructions.**
  The instructions explain one way to use the toy, but that’s not the only way it can be used. Be creative, be curious, and find more than one way to achieve a goal. The greatest inventors don’t follow instructions, they write their own.

- **Document EVERYTHING.**
  To quote Adam Savage “The difference between science and goofing around is writing it down.” Use pictures and videos, online word processors, pen and paper, whatever — but WRITE IT DOWN. Otherwise you’re just goofing around.

- **Have students present their findings.**
  A great design is only as good as the way you present it. This is when educators can incorporate cross-curricular learning into STEM. English Language Arts, math and science all come together when students document and then present their designs.

- **Encourage failure, as long as students are learning from every attempt.**
  No design is ever right the first time and even good ideas can be made better. There is no one right answer and there are thousands more wrong ones. Ensure students that they will fail, but they should embrace it because that’s part of the process.

It all begins with the first brave step, go to the toy store and see what looks fun!

*Mark Gerl is the Director of Innovation at the Fulton Academy for Science and Technology (FAST) in Fulton, Ga.*
As an engineering teacher, finding ways for my middle school students to effectively use technology, to make important scientific connections as outlined in the Next Generation Science Standards (NGSS), and to take ownership of their own learning, is what it’s all about.

Creating a classroom environment that emphasizes hands-on learning not only encourages students to be active participants during the learning process, but it helps instill a passion for science education within them that hopefully lasts well beyond their time in my class.

Below are six tips I have found valuable in engaging my students in meaningful hands-on learning.

**Modify Activities to Meet Student Interests**

The first thing I do when choosing a hands-on learning activity is to think about whether or not a 12- or 13-year-old will find the project interesting. This sometimes means modifying investigations to make them more appealing. For example, a few years ago when fidget spinners were all the rage, we reimagined a computer-aided design software project to one in which students designed their own personal fidget spinner. After ordering bearings and 3D printing their designs, students were able to take home and enjoy something they actually created.

In a robotics class, students were always snacking because it was right before lunch. The original investigation called for developing an automated assembly line that would pretend to cut packages. Instead, we made an automated assembly line that actually put toppings on cookies. The students went above and beyond to develop and program the assembly lines. Plus, they got to eat the cookies after.

**Collect Data During Projects**

While my students used to think it was just fun or cool to see things explode or fly, they didn’t always understand the purpose of some investigations — and the concepts being taught — unless data collection was involved.

For example, in a watermelon explosion activity involving rubber bands, students used the Vernier Go Direct® Acceleration Sensor to measure the actual acceleration of parts of the watermelon when it exploded. In another investigation, students created a solar oven and used the Vernier Go Direct Temperature Probe to monitor and record the increase of the temperature inside the oven to really grasp the intent of the project.

And, in a high-altitude balloon launch, students used a LabQuest® 2 data-collection device to collect altitude data (the balloon went 80,000 feet!) and temperature data (it was –64 degrees Fahrenheit!) When we tied that to the challenges NASA faces sending astronauts to the moon, the project became more than just a fun activity.

**Give Students Freedom to Make Mistakes**

Some students are afraid to get actively
The first thing I do when choosing a hands-on learning activity is to think about whether or not a 12- or 13-year-old will find the project interesting. This sometimes means modifying investigations to make them more appealing.
involved in projects because they are afraid to fail. For decades people have said failing is bad, so to dispel this, my students and I spend a few days at the beginning of every semester talking about “failing” and how it is perfectly fine as long as you learn from it.

The basis for engineering is designing, redesigning, and then redesigning even more. In my classroom, I have a 3D printed Yoda with the quote “The greatest teacher, failure is”—and Yoda could not be more correct. I encourage students to try things that might not work and often will let them continue on doing a project even if I realize it may end up being problematic. By building it and “failing,” students learn about what aspects should have been modified to work better.

**Give Students Freedom to Design**

Every semester, my students and I review the design process. While this review can get very repetitive for students who have been in engineering for multiple years, I try to add some creativity to the exercise with my second year students. Students design and create a positive message cut out of a cardboard template and then use a super hydrophobic product called Rainworks to put the messages around our school’s campus.

This project gives students the ability to come up with whatever message they want, review the design process, and spread a positive message to other students. Having some ownership in the project usually means students are more involved in the hands-on activity.

**Change the Classroom Setting**

Just like teachers, students can get stir crazy if they have to look at the same four classroom walls every day. So, any time it is a nice, low-wind day, I take my students outside to conduct a hands-on project. This includes testing rockets, drones, gliders, kites, hot air balloons and more.

Any time I tell my students we are going outside, their interest immediately goes up. I also like to use a drone to film and take pictures of the students in action to document our projects.

**Promote Quality Work**

I always like to take an opportunity to brag about my students and let them know their good work gets rewarded. I take pictures of some of the best work from each project and share it on all of our school’s engineering social media accounts. Our school also has televisions in our cafeteria that display projects students have completed for their peers to see. There are also many STEM meetings and conferences in which I invite my students to speak about the type of things they are learning.

As with all educators, it is important for science and STEM teachers to engage students in the learning process and support their academic growth. Implementing hands-on learning using strategies and tips such as the ones above helps to do just that while providing students with the opportunity to make meaningful, real-world scientific connections.

Tate Rector is an engineering teacher at Beebe Junior High School in Beebe, Arkansas.

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CURRICULUM

STEAMED

By Mac Bogert
The real problem of humanity is the following: we have paleolithic emotions; medieval institutions; and god-like technology.

E. O. Wilson

STEM

The Science, Technology, Engineering, and Math caucus still exists in Congress. It's relatively bi-partisan, founded in 2005 by Vernon Ehlers, a Republican, and Mark Udall, a Democrat.

The STEM movement, like home schooling, charter schools, NCLB and such, varies around the country. In some locales it's almost dogma, in others less so. Let's consider how we move forward in this brave new world.

Like antibiotics, the automobile, or heavier-than-air flight, the computer and the internet have changed how we operate. They are also changing how we think—maybe radically—especially those growing up after the invention of the pocket computer (we call them cell phones, but they're computers with a phone app).

I'm no Luddite (named after an anti-technology movement that destroyed machinery in the 18th century). I am blown away by access to all recorded knowledge at my thumb tips. I was a math major, and I love science and technology. I'm fascinated by engineering problems. And by theater, music, art and leadership. So how can we best approach the quantitative, analytical road to knowledge without jeopardizing that which makes us whole?

What for schools?

I'd like to suggest a couple of threads that are woven into this issue.

First, let's focus on outcomes and see curriculum as a tool but not as the tool for vibrant, lifelong learning. Are we seeking obedient workers, the goal of schools according to much of the traditional theory of public education? Or are we looking for learning that opens minds and hearts to possibilities and individual development? After all, Educare, the root word from which we've adopted education, is about bringing forth, not about putting into. If the opening minds model is more worthy, then curriculum can be less restrictive and instead focus on opportunities rather than on linear content.

Second, why do we so underestimate the capacity of our children? We group them artificially by age, give them little or no say about how their learning should progress or be measured, deliver content in a uniform stream as if they're recipients rather than officers of their own learning. If you have children, you already know that they pick up on technology much faster than adults.

Check a box: most students are a. overchallenged or b. bored. Rather than build a curriculum based on preconceptions from the previous generation, why not give them a menu and let them choose? Even let them help develop the menu. If we can provide them the opportunity to help design curriculum, we multiply their learning as well as ours. More on design later.

Third, each of us has powerful, intrinsic motivators that overshadow external drives like reward and punishment (e.g., grades and awards). This is based on science, not just common sense. Daniel H. Pink's Drive is rigorously researched and provides wide ranging case studies about intrinsic motivation. In a nutshell, Drive demonstrates that we all have three powerful motivators. Like Maslow's hierarchy, these are demonstrable and common to all of us. We are all driven by the need to direct our own lives, learn and create new things, and do better by ourselves and our world. So any leader (or curriculum) that can open up the environment to tap into these will always outperform those that don't.

Consilience

The desire for self-direction, new ideas, and contribution don't need to be fanned or encouraged. We can easily build on STEM to create a more global, inclusive universe of learning. The basis for this is the idea of consilience, promoted by the same fellow who I quoted at the top of this piece, E. O. Wilson.

Consilience was a movement in the 19th century (I know that's a while ago, but it's either a good idea or not, like dessert, no matter when it first appeared). Literally, “jump together,” consilience opens the door to combining scientific insights and data across disciplines to expand understanding—the physics folks
The desire for self-direction, new ideas, and contribution don’t need to be fanned or encouraged. We can easily build on STEM to create a more global, inclusive universe of learning.

Talking with (and listening to) the biology bunch and the chemistry crew. Wilson also encouraged sharing across the social sciences as well. Though separate streams of investigation bear fruit, sharing insights and perceptions across those streams magnifies learning and improves results.

Where I see problems with STEM is when it’s restrictive. Like home schooling, if we can use the practice to expand rather than limit, we all win. So let’s consider STEAM (the A is for art), which builds enrichment and insight as well as knowledge.

A new acronym (omg!)

We know from experience as well as from the research of people like Howard Gardner (Frames of Mind), that there are strong possibilities for connection among the various human intelligences. The classic example is how musical/rhythmic intelligence can transfer to improving math achievement. All data I’ve discovered indicate a powerful correlation between arts education (including the graphic as well as the performing arts) and cognitive as well as social development.

In addition to the A in STEAM, I propose adding E for Emotional Intelligence (EQ).

In my current work with tall children (adults), we focus on three threads: learning, language, and leadership. Though most of my participants are aware of EQ, few of them realize the correlation between developing the skills of emotional competence and improved relationships and performance. And perhaps 10% of these supervisors and executives have had any study and application of EQ. What a startling vacuum!

What good is math without communication skills? What good is technological know-how without understanding different learning styles and dealing with conflict? These skills are not an add-on. They develop as we change classroom methodology—by building in more collaboration, coaching, grouping not by age but by interest, mixing of individual and team learning. By sharing awareness of what it takes to work together through transforming conflict (differences) and building alignment (congruence), we create a sense of a learning community.

Finally, I suggest adding D to complete STEAMED. The D represents Design.

The idea of obedient workers took weed-like root in public education during a time of rapid industrialization. It was mind-numbing then and it’s more so now. Even if you see school as mere training-for-work, we no longer have a need for a mass of algorithmic workers—people who repeat the same process over and over and over again. Like a Greek vision of hell.

We need agile, creative, emotionally and intellectually vibrant people capable of using technology rather than of being used by it. People possessed of a healthy skepticism, a sense of possibility and connection. Able to help design new fields of study, new insights, practices, and institutions to deal with an increasingly diverse and often ambiguous world.

For you auditory learners and travelers, you can listen to a podcast on this topic at http://learningchaos1243.audello.com/podcast/1/

Mac Bogert is president of AzaLearning, providing coaching and facilitation services focused on leadership, language and learning. He also helped found Matrix Classroom, a site for exploring alternative approaches to learning for schools, corporations and government agencies. In addition, Bogert is the author of “Learning Chaos: How Disorder Can Save Education.” He lives in Annapolis, Maryland.
PROFILE

Great Leaps: Transforming Literacy

Fighting the National Reading Crisis

Today's teachers are often faced with students who have a wide variety of challenges. Be it because of dyslexia, ADHD, a learning disability or coming from an at-risk household, many students fall further and further behind. Behaviors deteriorate and any motivation that they started the school year off with evaporates. Teachers are then expected to teach with insufficient resources and interventions that in practice, just don't work. This is why Great Leaps Reading was created.

Great Leaps was developed out of necessity. Kenneth Campbell was contacted by a Florida school, determined to correct poor reading scores with limited resources available. Mr. Campbell used the practices developed over his 30-year teaching career to create a solution to increase reading scores through providing a positive and motivating academic experience.

Great Leaps, Born Out of Necessity

At the time, there were few options available. There was no computer lab available that they could monitor students at and hope they learn. So, Great Leaps utilized paraprofessionals, school bus drivers, lunchroom staff and community volunteers to implement a simple one-on-one program for struggling students. Through three daily, one-minute lessons in phonics, sight phrases, and stories, Great Leaps worked within the limit of the students' short attention span. Because of this, each student missed less than 15 minutes of class time!

In fact, principal Hackmyer, of North Marion Middle School in Citra, Florida, said that "One of the amazing factors of Great Leaps is the results are so quick and dramatic. The students are shocked by their progress and this became self-reinforcing. Students asked to skip field trips and assemblies so they wouldn't miss doing Great Leaps." Nothing short of a miracle considering these middle school students were known for having disciplinary issues and a general disdain for school.

What Contributes to Great Leaps Success?

• The short, 15 minutes of individualized instruction
• Students achieve success reaching goals while working through highly-motivated lessons
• 20 plus years of testing

Great Leaps makes the words on the page become living language with age-appropriate stories in conversational English. Working with a Great Leaps instructor, many students for the first time in their life received attention, praise and positive reinforcement. Most importantly, this experience shifted their negative outlook towards school and learning to positive! Julie C., a teacher from an alternative school in Somerset, Kentucky, stated "I have never before found such an effective tool as your Great Leaps Reading. I am presently using it with eight middle and high school students in an alternative school. The students enjoy it so much they ask every day when I will be coming to get them." When have you ever heard struggling students express that kind of motivation?

Great Leaps begins with lessons that are relatively simple. The students accomplish goals quickly providing them a sense of victory and confidence needed to progress into more challenging lessons. Once students have reached the independent reading level, Mr. Campbell's goal, the students' improved fluency and comprehension naturally generalizes to success in the rest of their academics reducing the at-risk students' dropout rates and disciplinary referrals.

Great Leaps students now have a pathway towards a much brighter future.

Leading a New Era

The team at Great Leaps says it like this, "Our past success was born out of necessity and a desire to be the change we knew the world needed. Our present success is founded on positive data, sound research and a relentless passion for bringing children to their potential."

Recently, Great Leaps Reading has evolved into the digital age. While retaining the power of one-on-one instruction, Great Leaps Digital provides improved accountability features and progress monitoring for administrators and instructors. Great Leaps Digital is also averaging an increase in reading fluency of nearly two years per semester with students.

A Little About Great Leaps

Since its official founding 1995, Great Leaps has made an immeasurable impact on correcting the bleak course of students' lives. This was done by offering reading, fundamental math, and early language growth programs, all developed from the frontlines of teaching with a “student first” approach. These research/evidence-based programs have been proven to be effective with a wide range of students, from kindergarteners to 12th graders in districts across the country. Great Leaps has touched over one-half a million students' lives in all 50 states and over 40 countries!

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Pictured: Devonte and his mother Carolynn celebrate after working through the Great Leaps Digital Reading Intervention and making his first A/B Honor Roll. You can see his transformation from frustration to fluency yourself at GreatLeapsEDU on YouTube.

Visit www.greatleaps.com
How STEAM Education Benefits Students at a Young Age

By Katie Lopez originally posted on GettingSmart.com

Children need to explore and to discover. This is how you innovate; you fail your way to your answer. "Scientists fail all the time; we just brand it differently. We call it 'data', said Ainissa Ramirez.

Students at every age should be encouraged to think deeply so that they have the chance to become the innovators, educators, and leaders who can solve the most pressing challenges facing our future. STEAM (Science, Technology, Engineering, Art & Math) inspires students to think more broadly and to solve problems with a hands-on approach. By introducing students to STEAM at a young age, it cultivates progress from project-based learning through collaborative exploration, to problem-based learning which focuses on real-world problems, and ultimately to place-based learning where students learn by doing.

I (and my school) have developed some practices and partnerships that have been helpful for facilitating this growth through STEAM across age groups (including young learners), and they’ve taken some creative shapes.

Designing a Powerful STEAM Program

At the Village School, we believe our role as educators is to inspire students to actively discover and persevere. We work to build a curriculum that is forward-thinking and not resting on conventional tradition from the past. With STEAM integrated into everyday learning, students will be able to enter a variety of different fields with confidence and experience in nontraditional thinking. This starts as early as preschool—for example, like in typical preschool craft projects, where students are actively applying crucial innovation and engineering tactics all while introducing them to processes like questioning and intuitive creativity. This approach helps create a new type of educational culture where kids from the earliest ages are encouraged to take risks and try out their ideas.
major role in the visual art classroom. Projects are a great way to involve students with hands-on learning and connect identity, style, and creativity within any topic.

One lesson, in particular, that I enjoy teaching is the study of an artist named Alexis Arnold. Arnold uses science to crystallize library books (and other ready-made materials), permanently immortalizing classic literature. Another collaboration I’ve developed is with the chemistry teacher to teach proper safety procedures with the chemicals, and the study of the chemical change through super saturated solutions. I also join with the English Department to align with their literature unit on the Holocaust (the study of the Nazis and how books were burned to erase history). In this way, students explore how art, science, and literature can all interconnect with one another to form a bigger, broader understanding of how what they learn separately in all of their classes come together to form the whole student learning experience.

Furthermore, in visual art, critique is a very important tool, which can also be a great way to develop communication and collaboration skills. Students must first observe a work of art and know how to recognize important context clues and technical mistakes and come to a conclusion after analyzing. Students at any grade level have the ability to ask questions of each other, about the artwork they “read”, the features they observe, and the conclusions they draw from their artwork or art history research, and in doing so they can learn how to accept criticism from peers, collaborate with others, and more importantly to give credit to others when credit is due. They also learn to negotiate and explain their own needs, to discern what others need and view things from others’ perspectives, reaching mutually beneficial resolutions.

Ways to Enhance STEAM Programs
Our school has developed several programs for encouraging cross-curricular STEAM learning. A few of those include our open house for STEAM Day, our collaboration with MIT, and our Creative Tech Club.

Every year on National STEAM Day, Village School hosts an open house for the community to come participate in activities and see our Pre-K2 through high school-level student’s STEAM-inspired projects. This year our kindergartners created the “Vehicles of the Future” and our elementary students created 3D story maps and then coded a bot to travel through their stories. The goal of this interactive day is to invite the community to partake in our hands-on program and showcase our student’s diligence and innovative ideas at all ages.

Additionally, we enhance our STEAM program in ways that grant our globally-minded students the opportunities to collaborate not only in the community, but throughout the world. Our program offers a unique collaboration with The Massachusetts Institute of Technology (MIT) which includes a series of in-school challenges that focus on the juncture between the five STEAM disciplines, including bioengineering, robotics, and computer coding. This provides our students with opportunities to learn directly from researchers at one of the world’s leading STEAM institutions.

Students also have the opportunity to further collaborate with MIT in the Creative Tech Club. In this club, students turn everyday objects into touch pads and combine them with Internet technologies to create art and solve engineering challenges. The club encourages students to think of themselves as makers and agents of change, and reaffirms the “Maker’s Mindset,” that everyone is creative, inventive, and imaginative.

Given the importance of creativity and innovation for the future, it’s important to ensure that the arts provide students opportunities to use their knowledge and skills in ways that are practical and applicable to the real world, at all ages. Every child isn’t inclined to grow up to become a scientist, engineer, or designer, but it’s important every child grows up knowing how to think like one. With STEAM education, schools need to make sure students are ready for many of the challenges they will face, and to create an environment where “Every Student Succeeds” is not just an aspiration.

Katie Lopez is the Visual Art Coordinator at The Village School in Houston, TX, where STEAM has been the center of their curriculum since opening in 1966. This article is a reprint from GettingSmart.com
As educators who teach writing, we’ve all heard the moans and groans from our students. They don’t want to write because they dislike it and feel self-conscious. They’ve stored years’ worth of negative feelings and experiences about writing, and all that baggage travels with them into our classrooms, dragging them down and souring their dispositions before we’ve even gotten started.

How do we change these attitudes and instill confidence in our students? How can we give them the push they need to give writing a chance, setting the stage to allow themselves to flourish? Here are five quick tips to start using in your classroom today.

1. **Provide Autonomy with Every Writing Assignment**

While there are certainly times when we want to direct and guide our students towards or away from certain subjects depending on the units we teach, there’s always room for at least some choice. I know that I wouldn’t want to write about a topic I didn’t like, and I love writing. Therefore, imagine how constricting it is for our reluctant writers to be saddled with prompts in which they have no interest. Why not let the students pick their topics?

With every assignment, I either provide at least five writing prompts or allow students to have complete choice over their topics. For example, though everyone will write a descriptive essay and (hopefully) strive to meet the same learning objectives, students have free reign on subject matter. While this inevitably means I’ll end up reading a dozen or more descriptive essays on football games, letting students choose their focus unlocks their ability to find something about which they can express passion.

2. **Give Students Access to Resources**

As much as I hope that students hang on my every word during class and take meticulous notes, I’m a realist who knows this isn’t true of most of my struggling writers. Their notes will contain gaps, and/or they may fail to remember important pieces of information to unlock the puzzle of what comprises, for example, a compare/contrast essay. Therefore, I use my institution's learning management system to post supplementary resources such as rubrics and example papers so they have help at home when they’re stuck. I remind students to check this for assistance, as reinforcing the assignment’s requirements and providing models of my expectations increases the likelihood that they will have the confidence to complete the assignment.
3 Explain that Rough Drafts Can Be Really Rough

How many times have you seen a student pause in her writing after composing a half page only to crumple it up? “I messed up,” the student will say upon seeing my pained expression, and she’ll start the whole process over…

A rough draft doesn’t need to be perfect; it just needs to be done. When I model writing to students, I inevitably write sentences that need work. Sometimes I pause and rethink what I wanted to write, revising then and there, while other times I explain that it’s OK to make mistakes or have unfinished or inarticulate thoughts, as I can return to the draft later. I want students to avoid the blank page syndrome; when they’re intent on perfection, they often freeze, unable to get past the bump. My advice is to drive right through it. If their words are on the page and their ideas are out in the open, however inexpertly, they have accomplished something. Granted, this rough, rough draft is not what I tell them to bring to their peer review session, as a completely unpolished draft will fail to elicit enough specific feedback, but finishing this early draft will reinforce that they can do it.

4 Frame your Feedback before Handing Back Papers

Criticism can be tough for students to handle even when it’s constructive and delivered with the best of intentions. Since many of our students have negative perceptions of themselves as writers, they’re extremely sensitive and worried that their writing is wrong. We want our comments to help our students; otherwise, we wouldn’t spend all those hours writing them. How can we help our students understand that we aren’t trying to rip them to shreds?

Besides streamlining my written comments to focus on areas for improvement, versus simply correction, I also orally remind my students that I’m not judging them as writers or as people; my comments are meant to help them grow, and I’m giving them each specific advice on how they can do so. I tell them that my written words, in conjunction with their own, are to be seen as a conversation about their writing. I have found this method extremely effective, and many of my students have commented on my helpful feedback in their evaluations.

5 Build in Second Chances

While no one wants to add to our already towering stacks of grading, working with reluctant writers means that essays should never stop after the first drafts; students need to receive feedback and actually act upon it to improve their writing. Most of us already provide class time for peer review sessions or writers’ workshops; here, students receive helpful suggestions for revision, and they are encouraged to make changes before submitting their creations to the mercy of our red (or green or purple) pens. But what about after that?

I won’t let students submit every essay multiple times; I might as well handcuff myself to my desk. However, I require all students to go through another round of revision for one essay of their choice and grade it again. Not only does it provide a second chance, but it encourages them to really respond to the feedback I’ve already given. Since they know in advance that they’ll have this second chance, it takes away some of the fear and risk involved in submitting an essay in the first place.

Some of our students may never learn to love writing, but a few tweaks in our instruction can at least foster higher confidence and tolerance for it.

Cassandra O’Sullivan Sachar is an assistant professor of writing at Bloomsburg University.
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This upcoming year, our entire focus will be on America’s learners and the resources they will need for success in the global world of tomorrow.

HERE’S WHAT’S NEXT

Volume 21 Issue 2
Fall/Winter 2019

Back to School
STEM
Curriculum and Instruction
Facility Management
Professional Development
Imagine your dream car, loaded with every bell and whistle you’ve ever imagined. Years of work by a lot of bright people have gone into its design, and countless dollars have been spent to supply it with each newfangled thingamajig. But there it sits in the street, going absolutely nowhere. No matter how fabulous the vehicle is, it’s nothing without you.

Just as great cars need a driver, every great classroom needs a teacher. Autonomous vehicles may be able to replace human drivers, but artificial intelligence can never adequately replace a teacher, despite some proposals to the contrary. The notion of teachers being essential is not a novel one, yet increasingly, teachers have had to fight to assert their own value. It’s worth reminding ourselves how important teachers are, particularly in the dynamic field of science education.

As a longtime editor with a publisher of K–6 educational materials, I think about the importance of teachers often. As proud as my team is of the science resources we develop, we rely on teachers to decide how to use them and to bring their own ideas and creativity to bear on student learning. All the books, tablets, kits, and apps in the world amount to nothing more than a parked car without a teacher turning the key and leading students on a journey.

During science time, teachers motivate, engage, monitor, and reteach. They help address student misconceptions and foster participation. They involve parents and the community, make cross-curricular connections, obtain materials, supervise work for safety, and help turn struggles into growth. Best of all, teachers can promote a fascination with and love of science by sharing their own excitement as they model asking questions and making discoveries.

Students are instinctively curious about the world around them. Given the chance, kids naturally become captivated by clouds, roller coasters, frogs, mirrors, and icebergs. They love taking charge as engineers to collaboratively design a new device, build a structure, or solve a community problem. Students just need the chance. Their teacher is the one who can allow them to explore the limitless universe all around them, finding science everywhere: from the light we see, to the devices we depend on, the food we eat, and even the ground we walk on.

Barriers to Teaching Science

Unfortunately, science is often squeezed out of the curriculum in elementary schools. On one of my school visits, the teacher asked the class, “Remember when we did science?” and was referring to several weeks prior. Imagine what discoveries those young children will miss out on. Their early academic years will have failed to prepare them for later science coursework or STEM careers, and worse, failed to nurture their curiosity for the natural and designed world around them.

So what barriers exist to teaching science, particularly in elementary school, where one teacher often teaches the full curriculum? For many, the reality is that teaching language arts and math consumes most of the school day, often motivated by accountability measures for schools and districts. However, instead of surrendering to this mandate, teachers can find ways to blend scientific literacy with traditional literacy instruction. In fact, professional scientists and engineers spend a great deal of their time reading, writing, listening, and communicating. They analyze data and apply other math skills to solve problems. So one way elementary teachers can overcome the science barrier is by integrating science into ELA and math time. Ideally, we should also see students conducting hands-on investigations and completing design challenges, but even reading about and discussing science ideas would be a good entry point in some classrooms.

Another barrier to science instruction is that many elementary teachers entered the profession because they have a passion for teaching reading. This, of course, is essential. We absolutely must
As a longtime editor with a publisher of K–6 educational materials, I think about the importance of teachers often. As proud as my team is of the science resources we develop, we rely on teachers to decide how to use them and to bring their own ideas and creativity to bear on student learning.

teach children to read. But kids need science, too. Those same teachers with expertise in reading instruction may avoid teaching science because they lack confidence in the subject matter. When they grew up, perhaps their own teachers seemed to have all the answers, but times have changed. Teachers don’t have to be the sage on the stage—they can be the guide on the side. Once a reluctant teacher realizes that she is primarily there to develop in students the ability to discover things for themselves, the fear of getting the science wrong is diminished. And with the right instructional tools, including content-area reading resources, she may find that she has all the necessary background information after all.

Other teachers may be reluctant to teach science, or to branch out beyond the book, because they fear it requires expensive, sophisticated equipment.
Luckily, this is simply not the case. At the elementary level, a majority of hands-on investigations can be performed with commonplace items: water and salt, seeds and soil, flashlights and shoeboxes, magnets and paper clips. Yes, it may get messy and it may get noisy, but here again, teachers play a pivotal role. They manage the mayhem and ensure student discourse is constructive. They help explain to parents and administrators why science time may look and sound (or even smell) a little different from other parts of the school day.

Science may also be seen as difficult to assess, or the district may not assess it at certain grades, so it is not taught. Yet increasingly, tools are being designed—at all grades—to help teachers evaluate more than a student’s ability to recall facts, but also to demonstrate an understanding of concepts and an ability to engage in the practices of science and engineering.

The Art of Teaching Science

Thinking back to my college methods coursework, I remember a discussion about whether teaching is a science or an art. Is it a structured endeavor that can be mapped out and replicated by any reasonably competent adult? Or does it require a creative, talented brain with the ability to find original ways to lead children on their path of discovery?

I will contend that teaching is indeed the latter, and this art form is needed nowhere more than it is in science. When we take the leap of teaching science, we take on the challenge of helping students ask the right questions, pursue answers, and construct explanations. We support behaviors and habits of mind like curiosity, critical thinking, teamwork, and perseverance. We differentiate our instruction to meet the needs of each learner. We help students see how what they’re learning is relevant
and meaningful to their own lives by connecting it to their local area, their culture, and their personal experiences. We ensure that all of our students have equitable access to science education.

**The Fourth Dimension**

The Next Generation Science Standards have been a sweeping force of change in science education, having now been adopted or closely replicated in a majority of the states. The vision for these standards focuses on the integration of three dimensions: Disciplinary Core Ideas (the content), Science and Engineering Practices (how scientists and engineers engage in their work), and Crosscutting Concepts (ways of thinking that span multiple disciplines). In this framework, all three areas are essential and equally valued. But one might think of these dimensions as that dream car parked in the street. They still need a teacher: the essential fourth dimension of science education.

Are you a science teacher? Perhaps you should be. If you’re not, consider the barriers you face and how you can break them down. Your classroom is the car and your students are its unique, wonderful features. They need you to chart a course, take the wheel, and drive.

Doug Tepper is the Executive Editor—Science at Learning A-Z, overseeing publishing efforts for Science A-Z. He holds a BA in Elementary Education and an MA in Teaching and Teacher Education from the University of Arizona in Tucson, and taught upper elementary school for a decade. He has worked as an editor with Learning A-Z since 2006, contributing to the launch of Science A-Z in 2008 and its ongoing development since. Other members of the Science A-Z team carry advanced degrees in sciences and have extensive publishing experience. The product offers thousands of resources for students and teachers, and is now used in about 70,000 classrooms across the U.S. and in many other countries. In 2018, Science A-Z was awarded the SIIA CODiE Award for Best Science Instructional Solution. Doug attributes his passion for science to being raised by parents who encouraged boundless curiosity and a deep appreciation for nature.
LITERACY EMPOWERS LIMITLESS POSSIBILITIES

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Why is it that despite decades of calls for change, some things never seem to change significantly? Years of appeal for tax reform, a balanced budget, or gun control, for example, have led to little substantial change in the status quo for each of these problematic issues. And despite decades of calling for reform in science education in K–12 classrooms, science is essentially being taught the same way today as it was 50 years ago.

I can speak first-hand to the stagnation of science education in K–8 classrooms. I have more than 50 years of professional experience in education-related fields, first as a science teacher and then in educational publishing. During this time, despite constant calls for reform, I have observed only minor changes in science instruction. The results I have witnessed show very little game-changing impact.

Efforts to improve science education in the U.S. seem to come and go. In the 1960s and early 1970s, as a result of government funding, many innovative “alphabet” science programs hit the market: AAAS, PSSC, ISCS, BSCS, IPS, and ESCP, to name a few. All were designed to move science teaching away from the traditional textbook, informational-based science education paradigm. The aim was to achieve a more hands-on approach to science, one where students learned by doing rather than by being told, in what I often referred to as a “minds-on and hands-on” approach to science.

In the 1980s, the world saw
some rather significant advances in technology: in communication, with the first cell phone; in medicine, with the first artificial heart; in genetics, with the genome project; in space science, with the launch of the first space shuttle; and of course, the development of personal computers.

These tech advancements fueled a push in the 1990s for more rigorous science and math standards, with the hope of developing and preparing K–12 students for science and math-related careers. If the United States were to remain a leader in the increasingly global economy and interconnected world, it was more important than ever to develop high performing K–12 math and science students to meet the needs of our future work force.

During this time and throughout the following decade, the acronym STEM (Science, Technology, Engineering, and Math) became popularized. (This acronym was later expanded to STEAM, in order to draw attention to the lack of arts teaching in schools.) In 2009, President Obama introduced an initiative to improve U.S. performance in science and math and to prepare 100,000 new STEM teachers.

As a result, attention was drawn to U.S. students’ poor performance in internationally administered tests such as PISA (Program for International Student Assessment). In the 2012 PISA assessment, 15-year-old U.S. students scored below 22 countries in science and below 29 countries in math. In 2015, U.S. students were ranked below 24 other countries in science and below 38 countries in math. These alarming results only increased to demand for improved math and science education. With PISA administered every three years, we will see the next results for the 2018 assessment in December, 2019. If the U.S. has not significantly closed the gap, we must continue questioning what it will take to drive real change.

So, what makes it so hard to achieve better results in student performance and change the way we teach science in K–12 classrooms? I believe it is a combination of many factors. Here are a few:

- High-stakes tests and other assessments that do not actually
Today, as in the past several decades, we continue to hear that science education, and education in general, has to change. We need to develop school age children into critical and creative thinkers, problem solvers, collaborators, and better communicators.

Assess what educational reform is calling for. Accountability forces teachers to teach to the test.
- A push for better reading scores (the U.S. lags internationally in this area, as well) have led to less time devoted to teaching science, especially in elementary schools.
- With improved job opportunities in other career fields for both men and women and with minimal gains in teacher pay, fewer top performing high school graduates pursue teaching careers in college. The shortage of good teachers is particularly acute in the areas of science and math.
- Budgetary, facility, and time constraints along with safety concerns are obstacles to providing experiential science activities in the classroom.
- Lack of sufficient and relevant preservice teacher preparation is an obstacle to improving science instruction in K–12 classrooms.

Some of these factors have also led to the arts being relegated to an increasingly lower status in elementary through high school classrooms.

Arguably, there are two key domains of learning: the knowledge domain and the skill domain. The knowledge domain includes important topics that give us an understanding of the world around us and how things work. The skill domain uses skills to advance understanding and to analyze, evaluate, think critically and creatively, and communicate effectively. When teaching science (or any discipline), we need a balance of these two domains: using knowledge and understanding to discover new things, working collaboratively, and communicating our findings to others.

Today, as we have over the past several decades, we continue to hear that science education and education in general have to change. We need to develop children into critical and creative thinkers, problem solvers, collaborators, and better communicators. In addition to fulfilling academic needs, schools are also being called upon to address the social and emotional needs of the children they serve. Twenty-first century workers require different skills than those of past centuries, and schools need to respond. It is a tall order. We have learned that change does not come easily. If we are to bring about impactful change, today's technology will probably have a big role to play.

At Learning A-Z, we have worked to create a Science A-Z product that recognizes the different domains of science learning. Science A-Z provides one-stop resources to help teachers meet the instructional needs of their students in both the knowledge domain and the process-skill domain of science. These resources help develop knowledge by building science literacy through a vast collection of books, articles, and videos, while at the same time giving students the opportunity to apply their knowledge with hands-on activities, debates, project-based learning units, science simulations, and much more. We've also aligned these products with Next Generation Science Standards and the goals of STEM/STEAM.

When I was teaching science 50 years ago, having such resources readily accessible from a single source was unthinkable for teachers.

If we are to create change in science education, along with improved student performance and interest in science, technology will have to play an important role. But we also have to do more to attract top-notch teachers to teach science in the nation's schools—and we have to do more to stimulate student interest in science and the arts. Good teachers will lead the way.
Incorporating Science Into Whole-School Project-Based Learning

By Ann Wallenmeyer

Springfield Public Schools’ motto is “Engaging, Relevant, and Personal.” Our district serves 25,000 students in five high schools, nine middle schools, one intermediate school, and 36 elementary schools. About five years ago, the Learning Support Department began writing curriculum in project-based learning units to better meet this motto. The goal was to create units that were relevant to students’ lives, asking them to solve real-world problems.

Students were engaged at the beginning of the unit with a phenomenon that would generate questions and curiosity, and allowed choice throughout the unit including the culminating event, so each student could personalize their own learning. When it came time to review and rewrite elementary science, the decision was made to integrate science, social studies, and health. Our hope was that by integrating the content as well as incorporating more labs and engineering activities, teachers would be able to address each subject in depth.

The scale of this project was daunting at first. Groups of grade-level teachers that would be willing to work for a year at developing units needed to be found; a plan for training 600 teachers on implementing the units needed to be created; and supplies needed to be purchased for 28 PBL units. The first step in the process was to connect standards into clumps that would require students to apply content knowledge to relevant, real-world situations. Through the clumping process, engaging entry events and culminating events that provided personal choice and expression of students’ learning were identified. For example, a third grade unit was created called Brain Freeze. This unit connected science concepts (changes caused by heating and cooling, states of matter, and engineering) with health concepts (essential nutrients and reading food labels) through a culminating project in which students designed a healthy frozen dessert and a container to keep it from melting.

The next step was to bring in grade-level groups of teachers to help write the messy middle of the PBL unit. This included the texts, videos, activities, labs, benchmarks, formative assessments, and mini lessons that would be needed to support student learning through the unit. With each layer of the concept explored, students were asked to reflect on how their learning might influence their final product or solution. As you can imagine, there is not one program or text that can support the messy middle completely. Resources have been collected from several vetted sources, including Reading A-Z and Science A-Z. The most useful resources are those that can be differentiated, are flexible in their implementation, and feature concept-focused information.

Science A-Z provided outstanding leveled content text complete with labs teaching scientific investigative processes and integrating engineering practices.

The lab that we used in Brain Freeze had students investigating how long
it took ice to melt in cups made from different materials. Students then were asked to engineer their own “cooler” to keep the ice from melting based on what they learned from their investigation. Reading A-Z has provided differentiated text for teachers to use during reader’s workshops and during whole group lessons. Two of the titles that were utilized in Brain Freeze were How to Read a Nutrition Label and Kid Inventors. As PBL units were implemented, teachers found that reading about the content and writing about the content could be embedded during literacy time providing an opportunity for labs and activities to happen during PBL units.

Feedback from principals and district administrators indicates that more science learning opportunities have been happening since the implementation of the PBL units. Lab materials are being used and Facebook and Twitter posts are providing evidence that students are engaged in the scientific process. Personally, I have heard more talk about the implementation of elementary science and seen more labs being completed than at any other time in the last 16 years. It appears that the integration of content into PBL units has helped increase science implementation. The PBL units remain living documents that will be improved with each implementation. This 2nd year of implementation brings revisions of units and the creation of standards-based assessments. One area that our curriculum guide revision teams have been tasked to focus on is providing menus of entry events, culminating events, and messy middle activities. Feedback from teachers shows that they appreciate having choice in how they frame the PBL unit, just as students like to have a choice in how they apply their learning. The most important feedback from the students is the smiles and excitement as they share their solution or project with each other and with adults. Our Integrated PBL Unit culminating events are helping students learn to solve problems and also to learn from their mistakes.

Ann Wallenmeyer is the Science Curriculum Facilitator with Springfield Public Schools. She has worked in the field of science education for 25 years, working with K–12 Science Curriculum for Springfield Public Schools since 2002. Ann received her Bachelor of Science Degree from Southwest Baptist University in Bolivar, Missouri and her Masters in Secondary Education with an emphasis in Biology from Missouri State University in Springfield, Missouri. Some of her current projects are revising 6–12 science curriculums to align with the new Science Missouri Learning Standards, implementing 3-Dimensional Learning in science classrooms, and integrating real-world science experiences.
I like to tease my oldest daughter that her first word was “Why?” (even though it wasn’t) because in her toddler years, she said this word so often I was convinced she was on an automatic loop. At times, I’m sure it was just a flippant response to something I’d asked her to do. But more often than not, her questions were actually sparked by her curiosity and her eagerness to learn about the world: Why is there a rainbow? Why is the moon out in the daytime? Why is the sky blue?

Anyone living or working with young children can relate. Kids are curious by nature. The scientific method is practically innate in toddlers. Take for example a child who observes something new in nature. First, they start by questioning it (Why? How? When?). Next, they often look to an adult for an explanation (a.k.a., collecting background information). Then, they take that observation and information and form their very own hypothesis (i.e., I think it’s because..., doesn’t matter what my Mom says, etc.)

So if Science is so interesting at a young age, wouldn’t every student’s favorite subject be Science? Science and STEM classes would seemingly be the most prevalent and popular in schools, especially at the secondary level. And by the same logic, wouldn’t every teacher love teaching Science? The answer, as most educators will probably agree, is no.

A study by Amgen Foundation and Change the Equation found that while teenagers are interested in science subject material, such as biology,
chemistry and physics, students don’t actually enjoy taking these classes in school. Even more alarming is evidence (Krapp and Prenzel, 2011) suggesting that students who have a high cognitive potential for science do not go on to pursue careers as scientists or engineers. The reason they don’t pursue these careers? They lost their interest during school, because it was no longer fun or appealing.

STEM jobs are reported to experience the highest growth over the next 11 years and STEM occupations pay nearly double the average wage of a non-STEM occupation. However, despite the high salary range and the prediction that science and engineering jobs will be ubiquitous in the workplace, students are choosing different paths because they just aren’t interested in taking these classes anymore.

As educators, we have a significant task in front of us. One hand, we have to prepare our students with science content, skills and strategies to be successful in the classroom and 21st century. On the other, we have to ensure that learning about science is FUN. Without fun, students lose interest in the subject. Without interest, teachers struggle to engage students and find it challenging to help students meet the requirements necessary for STEM careers. As I see it, making science fun is more critical than ever. It’s time to engage our budding scientists and engineers and sustain their interest throughout their school years.

Non-educators may make light of the notion of making science fun. How difficult can it be? As a former elementary school teacher, and now in my professional development role at Learning A-Z, I can honestly say: it’s very difficult!

With high standards for reading and math, teachers struggle to work in science time during the week. They are continuously fighting the clock. When they do find time, it’s completed in urgent haste. Many are lucky if they can squeeze in one or two lessons a week. Furthermore, many elementary teachers don’t have science degrees and don’t feel as confident teaching these concepts as they may with other subject areas. As students progress through grade levels, topics become more and more complex and science instruction is no longer fun for them. At some point during the elementary school or middle school years, we start to lose a student’s interest and curiosity—and science becomes boring.

But teachers are relentless fighters. I have witnessed this firsthand in my workshops, particularly in our science workshops. Teachers crave professional learning that is purposeful and productive. One of the most common responses to our professional development workshops is that teachers want more training. They want more time to learn strategies, methods, and resources to use for science instruction. With more preparation and more time, we can still make science fun! Teachers walk away from professional development excited to teach. When teachers are excited, students are excited and learning becomes fun.

While the concept of making science fun certainly isn’t new, I believe the urgency is real. As we prepare for a future that could have self-driving cars and robot assistants, we need students interested in science and engineering. Ensuring that our teachers are equipped with time and resources will make a difference. However, I believe the biggest impact will be made through training. To be effective, training must be continuous, collaborative, and hands-on.

When we invest in our teachers, we invest in our students. When teachers are well-trained, this training ultimately engages our students. Science and the curious questions it answers become a lifelong fascination for students, sparking their imagination and fueling a thriving economy.

Finally, teachers need training that is hands-on. Teachers need time to play with the “why and how” through activities. They need to have fun learning from the process, and take their real-life experiences back to the classroom. I’ve been through training that only allows time for browsing lessons, and training that allows time for teachers to actually DO the lessons—the impact of the latter is immense.

Now remember that little girl who asked “Why?” repeatedly as a toddler? Fortunately, she continues to be just as curious and eager to learn as an 11-year-old. Science is her favorite subject. She’s still asking why, but now I’m not the one being asked—now she asks the internet, the library, and her teachers.
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Educators play an important role in teaching children about nutritious and balanced diets. The Dairy Alliance is proud to offer classroom tools that help students of all ages learn the benefits of incorporating wholesome milk, cheese and yogurt into their diets. Our online Teacher Resources library includes school activities and science-based lesson plans, coloring sheets, games, fun facts and other helpful information to make learning about nutrition exciting. A healthy body makes for a healthy mind!

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» Free lessons, state-specific activities and worksheets, colorful posters, infographics and fun, interactive games.

» “Healthy Farming, Healthy You,” “Farm to Table,” “Bones Under Construction,” “Virtual Dairy Farm Tour” and other lessons show students how milk is collected, processed and brought fresh to schools every day.

» “Meet Our Dairy Farmers” videos introduce students to life on local dairy farms.

Visit our website for additional educational resources at thedairyalliance.com
HEALTH AND WELLNESS
Science. Technology. Engineering. Mathematics. These academic concepts, otherwise known as STEM, are nothing new to the sports world. In fact, STEM, especially in today’s world, actually drives sports. If you don’t know the correlation of STEM and sports, here are just some basic parallels to think about:

Football and STEM – “Thanks to science, technology, engineering and math, today’s helmets are formulated to reduce the possibility of concussion. Accelerometers built into chin straps can measure the force and direction of impact and help identify head injuries during play.” [https://www.chevronstemzone.com/football/](https://www.chevronstemzone.com/football/)

Basketball and STEM – “Every interaction you have with a basketball is affected by gravity. Gravity is the fundamental force of attraction between objects. Therefore, no matter if you are passing, dribbling, shooting, or dunking, the gravitational force of the Earth is attracting the basketball down to the court floor.” [https://basketballstem.weebly.com/basketball-science.html](https://basketballstem.weebly.com/basketball-science.html)

Baseball and STEM – “When you watch Major League Baseball, you’re seeing STEM in action. The science of aerodynamics is in every pitch. Engineering is part of every bat, ball, glove and helmet. And the math of statistics can inform a team’s strategy.” [https://www.kidscoop.com/this-week-in-kid-scoop/stem-of-baseball/](https://www.kidscoop.com/this-week-in-kid-scoop/stem-of-baseball/)

You get the idea – STEM principles are in every facet of sports. After all, there is a reason why you have dedicated disciplines like sports medicine, awesome sports trainers and pit crews at sporting events, and elaborate training facilities with the best technology. Nothing new here.

However, what is always new and changing are widely incorporating STEM education as a priority for students of the game. Let’s take a look at what some of our beloved sport organizations and venues are doing in STEM/STEAM education.

**Mercedes-Benz Stadium - Atlanta, GA**
Located in the heart of Atlanta, Georgia, Mercedes-Benz Stadium is the new home of the Atlanta Falcons (NFL) and Atlanta United FC (Soccer). The stadium is the first professional sports stadium to achieve LEED Platinum in the U.S. and is considered to be the most sustainable sports venue in the world. In addition to being an environmentally-conscious stadium, the venue boasts a state-of-the-art fan experience, world-class...
technology and video displays, one of the nation's premiere art collections curated by Savannah College of Art and Design (SCAD, and a great STEM/STEAM program to boot. Here's what Dawn Brown, Tour Operations Manager at Mercedes-Benz Stadium, has to say about STEM and STEAM education at the venue.

**SEEN:** It seems that more and more sports organizations/venues are focused on developing robust STEM/STEAM curriculum. What was the initial reason for Mercedes-Benz Stadium (MBS) developing a STEM program?

**MB Stadium:** From the beginning, Mercedes-Benz Stadium was designed to reimagine the stadium experience, whether it is for the biggest sporting events in the world, a concert, corporate event or a student ready to learn. Mercedes-Benz Stadium is proud to offer a non-traditional setting for students to learn outside of the classroom, in a fun and engaging environment. Hosting students in our stadium and being able to showcase all of the innovation as it relates to technology, sustainability, engineering and architectural elements that makes Mercedes-Benz Stadium a living classroom. MBS offers endless educational opportunities that we have built into a robust curriculum giving students real-life examples of how a STEAM career can take shape.

**SEEN:** For those who don't know, what would you say is the direct correlation of STEM disciplines to football and soccer (Atlanta Falcons and Atlanta United)?

**MB Stadium:** There are so many ways that we can correlate STEM to students visiting Mercedes-Benz Stadium.

- The science behind an athlete's physical preparation, nutrition required for maximum performance and ways an athlete recovers after a game.
- The cutting-edge technology in Mercedes-Benz Stadium or the technology that players are wearing to analyze their performance.
- The engineering behind Mercedes-Benz Stadium is second to none. The retractable roof design with the halo-video board along with the stadium's transparent ETFE façade creates has created a one-of-a-kind engineering marvel.
- Math and Science are innate parts of sports when it comes to stats, figures and data. Being able to analyze data real time allows for coaches and staff to adjust on and off the field becoming increasingly more important in today's sports.

**SEEN:** What makes Mercedes Benz's STEM/STEAM program different from others?

**MB Stadium:** Mercedes-Benz Stadium was built and designed as a catalyst for growth and transformation to the city of Atlanta and our new STEAM tours are a part of that. We have built a curriculum to show students how they can become the next great inventor, creator, or engineer through fun, interactive tours and activations using our stadium as a backdrop. We are continuously innovating our program with the most current STEAM disciplines to our visiting students.

**SEEN:** Has Mercedes-Benz found a way to incorporate STEAM (A=Art) into its program as well?

**MB Stadium:** Mercedes-Benz Stadium partnered with the Savannah College of Art and Design (SCAD), to curate a collection of energetic artwork in all mediums throughout the facility. With over 200 pieces of art from 55 different artists, students will be able to experience art throughout the building.

**SEEN:** What perspective should a student, or anyone, take away from your program?

**MB Stadium:** We want people to walk away inspired. Once they leave the stadium, it is our hope that we have shown them that you can learn anywhere if you look beyond the surface. These tours are designed to get students engaged with the elements of STEAM outside their classroom in a fun and interesting environment.

**SEEN:** What new opportunities are you looking to implement in the program this year?

**MB Stadium:** One of the things that we, as an organization, strive to do is continually innovate. This year we have created a more interactive environment and really began specializing our tours based on the topics of STEAM and the areas where we can showcase the unique features of the stadium, such as sustainability or our art program.

**SEEN:** Final thoughts: where do you see STEM education going in the next five years?

**MB Stadium:** STEAM is one of the foundations of education and hopefully through our fun and interactive tours we can get more students interested in STEAM. Using a facility such as Mercedes-Benz stadium as a learning tool should have an impact on students and hopefully propel more programs and opportunities like this for students in the future.

**NASCAR Hall of Fame - Charlotte, NC**

The NASCAR Hall of Fame in uptown Charlotte, North Carolina is an interactive, entertainment facility honoring the history and heritage of NASCAR.

The venue, owned by the City of Charlotte, is designed to entertain and educate everyone with the facility’s artifacts, hands-on exhibits, and a 278-person cutting-edge theater. The venue’s goal is to honor those in NASCAR – from pit crew members to drivers to team owners – who have impacted the sport. Here's how Eliza Russell, Education Manager at the NASCAR Hall of Fame, says they are currently making an impact on STEM/STEAM education:

**SEEN:** It seems more and more sports organizations are focused on developing a robust STEM/STEAM curriculum. NASCAR Hall of Fame has had a STEM program in place for the past four years. What was the initial reason for developing a STEM program?

**NASCAR HOF:** The NASCAR Hall of Fame mission is to celebrate and honor the sport of NASCAR. As part of the mission, educating and connecting new generations to NASCAR by sparking and motivating discovery through the science, technology, math and engineering of NASCAR past, present and future. As the national educational learning community in K-12 has been working to build the STEM pipeline and provide opportunities and have students learn more about how these disciplines interconnect to careers, the education program for the NASCAR Hall of Fame has been developed to meet the needs of both the school districts, teachers and corporation to highlight STEM in Action beyond the classroom walls. NASCAR provides an exceptional platform for students to learn about STEM in a real-world application. From engineering of cars and tracks to applied science and math to calculate speed and fuel mileage to the design and artistry of race cars to even the informational reading of data,
charts and rules of competition, all the key disciplines of STEM are connected. STEM is about the interconnection of all the disciplines working in concert vs. the teaching of the individual elements. This is the foundation for the education program at the NASCAR Hall of Fame for both students and teachers alike.

**SEEN:** For those who don’t know, what is the direct correlation of STEM to NASCAR?

**NASCAR HOF:** STEM is Science and Math as seen through engineering solutions by utilizing tools and technology to help advance the sport. In other words, STEM is NASCAR. Such as an engineer in NASCAR may be a person examining the electrical systems, the chassis or even the shape of the track. A scientist could be a chemist and in NASCAR it could be the individuals examining the make up of the tire and different components used for a particular track or a race condition or they might be a person utilizing carbon fiber to build stronger parts or body of the car which is lighter. Technology is everything from the air wrench to removing a tire, the pressure of the nitrogen that might need to vary, to the tools used to monitor speed or, or inspecting a car to ensure it meets the standards guidelines, or the lead engineer utilizing the ECU from the engine of the car to monitor how a particular engine performed in a race. Math is involved from the design and fabrication of a car, forming how fast a crew needs to pit a car or what the banking or angle of a track should be to impact the force on the car for speed.

**SEEN:** What makes NASCAR Hall of Fame’s STEM program different from others?

**NASCAR HOF:** NASCAR Hall of Fame’s programs focuses on an education teaching philosophy based on the engagement of students through questioning for discovery. Creative thinking and critical thinking are essential tools that working professionals use every day in their careers. Our programs are designed to have students solve problems based on what they have learned in school, what they experience in their personal lives and where it applies in racing. Our staff ask probing questions to answer questions or point a student in a direction vs. providing specific how-to instructions. Such as if they are building a car, student can think about how the wheels move by referring to their own bike or that an axel moves the wheels vs. the wheels turning on their own as they are bolted to the car. By engaging students to discover and answer their own questions or providing their own solutions, they are engaged and amazed by what they know or can experiment to find answers. STEM is about creative and critical thinking vs. following what has already been done before. NASCAR Hall of Fame, by using the real world of NASCAR inspires students to look for the new ways of thinking outside the box which is what the sport is based on.

**SEEN:** Has NASCAR found a way to incorporate STEAM (A = Art) into its program as well?

**NASCAR HOF:** NASCAR Hall of Fame has incorporated art into the programs through multiple aspects including both field trips for school and after-school programs for clubs, scouts or after-school care programs. Art is a critical component for NASCAR. Each of the cars is rolling art and the design of programs, hero cards or driver cards which are handed out or even the tractor-trailers that travel across the country each week are art in action. The student has opportunities to create their brands and logos, design their cars and make trophies or hero cars. Students also learn how to draw, sketch and use graphic design to illustrate their cars. Cars are great for students to explore art; the fundamental of shapes are key to car design.

**SEEN:** What are some of the career paths, someone with a STEM background, could aspire to in the NASCAR organization?

**NASCAR HOF:** NASCAR has a vast array of STEM careers from very traditional — engineers (mechanical, electrical, civil, area and more — to graphic designers to mechanics, welders, fabricators at the race shops to engine builder, mechanists and designers at the engine shops to track designers, road crew, and much more at the tracks. But, NASCAR itself through its R&D and competition staff and directors are moving the sports careers further into new STEM career directions such as technicians and officials that inspect cars with laser or monitor speeding violations through computer technology. STEM even translates into the graphic and social media aspects through new racing games or simulator testing to exploring social media advances to take the fan into the race experience.

**SEEN:** Final thoughts: where do you see STEM education going in the next five years?

**NASCAR HOF:** The combining of STEM to the real-world application or what is known as PBL — problem or project-based learning — over the next five years as the fundamental for learning vs. being for select students or schools. Students are having the opportunity to apply standards of learning to what does this mean to me in my life when I am five or when I am 50. Integrated learning can be where informational reading, communication and STEM can be viewed as part of a whole discipline.

**SEEN** will continue to explore the impact of STEM/STEAM education programs throughout the year as we talk with various major sports organizations, affiliates, and athletes. Look to www.seenmagazine.us for more interviews and information.
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Introduction by Deirdre Edwards

As you know, we've been discussing the great correlation of STEM in sports and how the principles of STEM are being used in our major sports organizations and sports venues. It truly is phenomenal to see how relatable our core academic subjects directly play into our favorite pastimes, and always has!

And while we have focused on traditional, physical sports, there is another sport to be considered when it comes to STEM: E-Sports. Now, I know there are many who may argue that playing video games is hardly a sport (see op-ed below), but there is an actual definition of “e-sports” that could refute your claim.

E-Sport is defined by Oxford Dictionaries as: “a multiplayer video game played competitively for spectators, typically by professional gamers.”

There are many elements of this definition that mirror what we traditionally know as sports. The words and phrases of “multiplayer” and “played competitively for spectators” also applies to physical sports. Also, the amount of money poured into e-sports rivals traditional sports organizations and has increased every year — with 2019 revenues slated to surpass the $1 billion mark according to CNN (https://www.cnn.com/2018/08/27/us/esports-what-is-video-game-professional-league-madden-trnd/index.html).

Gamers can also, like traditional athletes, have huge paydays and some are backed by traditional, professional sports leagues for e-sports’ contribution to their leagues. There are even full college scholarships given for video gamers to compete in e-sports. Not bad if your student loves Fortnite and Madden NFL.

So, just how much emphasis should we put on e-sports as an actual sport? Some say e-sports is ready for the Olympics, other sports traditionalists largely disagree with the entire concept of e-sports. Below, we have an opinion-editorial (OP-ED) in which a sports traditionalist tackles the subject. Let us know what you think.

E-SPORTS
What’s All the Hype?

OP-ED: WILL E-SPORTS BE IN THE 2024 OLYMPICS? SURELY NOT!

By Mike May

When are the leaders in the sports and fitness industry, sports governing bodies, and the leadership of the U.S. Olympic Committee and U.S. colleges/universities going to put a stop to e-sports being considered a sport? Yes, this is a big deal. This issue of e-sports being considered a sport started a few years ago. It must stop. It’s just not right.

A few years ago, U.S. colleges started awarding athletic scholarships to e-sports competitors. One of the first schools to grant financial aid for gamers was Robert Morris University in Chicago, Illinois. Now, e-sports are being considered for Olympic competition, beginning in 2024! And, many U.S. colleges and universities are creating e-sports teams and awarding athletic scholarships to members of those teams. That is unacceptable.

E-sports are not a sport. E-sports contribute to young children, teenagers, and adults not being physically active and playing sports. E-sports have hijacked the name sports. And the powers-that-be in sports need to get it under control.

“In support of PHIT America’s stand against e-sports, I agree that any agenda to add e-sports as an Olympic Game category is a trend that will damage missions invested in increasing physical activity of U.S. children,” said Michelle Metzler, athletic director, Berean Christian School (West Palm Beach, Florida).

Metzler adds, “The scope of the major sports and fitness organizations and governing bodies should be focused on reversing the current decline of participation in youth sports. Seeking revenue by classifying gaming as an e-sport is a deceitful strategy which will ultimately lead to sweeping levels of profound inactivity.” Metzler goes on to say, “We need to rebuild and boost physical education. Campaigns should be empowering children to adopt healthy lifestyles with a strong foundation in fitness, recreational level sports graduating to intramural and interscholastic sports. The long-term benefits are in true physical activity — not the misrepresentation in a scheme of e-sports.”

“We do not recognize e-sports as a sport and don't expect to change our stance on the issue,” said Wayne Ryan, Assistant Executive Director, West Virginia Secondary School Activities Commission (Parkersburg, West Virginia).

According the Wikipedia, the definition of sport is as follows: “Sport or sports includes all forms of competitive physical activity or games which, through casual or organized participation, aim to use, maintain or improve physical ability and skills while providing enjoyment to participants, and in some cases, entertainment for spectators.”

E-sports don't match that description or definition of sport.

The power structure in the world of sports should not give into the pressure of giving electronic games any kind of official recognition of being labeled a sport just because it’s expected to exceed $1.5 billion.
in global revenue with a fanbase of 600 million users by 2020.

An interview on Fox Business and an article in “Fortune” magazine clearly show that one of the motivating factors for including e-sports into the Olympics is money. Clearly the International Olympic Committee and the U.S. Olympic Committee are looking for more viewers and additional TV revenue.

While this short-term thinking may be good for an organization’s profit and loss statement, it sends a negative message about the concept of playing sports. Recent sports participation statistics are a concern. According to the Physical Activity Council, the number of U.S. children who are actually physically active in team sports is declining. In the past five years, team sports ‘play occasions’ (practices and actual games) have declined by 19 percent, or five billion play occasions, in the U.S. And American children are ranked in fitness 47th out of 50 countries in the world, based on a study by the British Journal of Sports Medicine. Not surprisingly, only seven percent of U.S. children (age six-17) are active to physical activity standards, as established by the Centers for Disease Control and Prevention (CDC).

The Olympics and leading sports companies are chasing top, high-performance athletes who spend most of the money in sports. The Olympics and top sports companies are not investing in the “grassroots” programming and the delivery mechanism for physical activity — that being, physical education classes in our schools.

There are organizations and governing bodies which proclaim that they are going to create baseball players or basketball players, but they don’t really care that there are fewer and fewer physically active kids overall. We have generations of children who will never play any sport because they don’t know how to throw, catch, skip, run, jump or even have the balance to stand on one leg.

Sadly, the only thing that many of today’s children know how to move is their fingers, as it relates to cell phones and tablets. This behavior trend is deadly for children and the future of the sports and fitness industry.

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Question: What is the one thing which schools can provide to all students in all schools in all states in the U.S. each day which will make them smarter and healthier? Answer: Give them daily P.E. at school. That’s it. It’s that simple. Really.

The academic benefits of physical activity breaks for students — whether it’s physical education, recess or short physical activity breaks — are abundantly clear and in numerous supply. While the benefits of exercise are well publicized, rarely do we hear about the negative side effects of physical inactivity.

“We are the most sedentary generation ever on Earth,” states Dr. John Ratey, an associate clinical professor of psychiatry at Harvard Medical School. Rates of physical inactivity in the U.S. are bad and getting worse, unless there’s a commitment to change, according to Ratey. The national figures on physical activity indicate that two-thirds of U.S. children are not active to healthy standards and 48 percent of all high schools in the U.S. have no physical education (P.E.). If implemented, daily P.E. classes in our schools will help reverse physical inactivity rates in the U.S., which currently exceed 82 million people.

Leaders in education in the U.S. say the academic benefits of physical activity during the school day are crystal clear and cannot be questioned.

“It’s just as important as math. It’s just as important as social studies,” said Dr. Julian Reed, Associate Professor of Health Sciences, Furman University (Greenville, South Carolina), who has conducted studies on the power of P.E. “The kids that get P.E. daily are outperforming the kids that don’t have P.E.”
Leaders in education in the U.S. say the academic benefits of physical activity during the school day are crystal clear and cannot be questioned.

“Exercise wakes the brain up and prepares it to be in its best learning situation,” stated Chad Fenwick, Advisor for Physical Education, K-12 (Los Angeles, California).

“The best behaviors and the best academic outcomes are when they come back in from physical education,” stated Dave Spurlock, Director of P.E., Charleston (South Carolina) City Schools. “Movement can change the whole dynamic of education.”

“Exercise is the miracle drug because it (positively) affects every part of our bodies,” said Dr. Janice Key, medical director, MUSC Health-University Medical Center (Charleston, South Carolina).

Currently, many schools in the U.S. provide the bare minimum of P.E. to their students but students also know the positive effects of P.E. They say “It opens up your mind, and “It helps me focus more (in the classroom).”

There are findings that clearly show that higher fitness levels help generate higher academic scores. Isn’t that the overall objective of going to school — learning what is taught in the classroom and getting higher test scores? If so, implementing daily P.E. will help deliver the desired academic results.

Founded in January 2013, PHIT America is a non-profit campaign focused on overcoming the severe ramifications of the ‘Inactivity Pandemic’ through four strategic approaches: education, supporting school-based activity programs, a national event, and advocating – which will get America’s youth, more active, fit and healthy. Look for newly released PHIT America documentaries—Creating Healthier and Smarter Kids: The Power of P.E. Viewers will hear comments about the importance of physical activity from a medical doctor, school leaders, classroom teachers, P.E. professionals, parents and students.
Build Your Legacy

How leading with compassion, empathy and community supports teacher development

By Allison Violette, Ed. D.

“The things you do for yourself are gone when you are gone, but the things you do for others remain as your legacy.”

-Kalu Ndukwe Kalu

The legacy of an education leader spans far beyond good test scores or improving student outcomes. Most of an administrator’s legacy is a lasting impact on teachers.

We all know teachers deserve better – better learning opportunities, support to follow passion projects and recognition for the great experiences they’re already creating for their students.

How can you lead teachers as an administrator or district leader and leave a legacy of support? Lead with compassion, empathy and community. Here are some ways to get started:
Listen. Be present in the moment.
A compassionate leader listens to the needs of teachers and builds relationships with them. Teachers deserve to be heard. While this may seem like a daunting task, and you’re probably thinking through the improbability of talking to every teacher every day, start small. As a school leader, spend 10 minutes each day learning something new about one person. Walking the school each morning was one of the best ways for me to do this. I made mental notes or sometimes jotted sticky notes so I was sure to check in on individuals, both personally and professionally. As a district leader, put yourself where the teachers are. Find events or opportunities at schools that showcase teacher work. Get to know these teachers and make genuine connections. You’ll likely learn something about yourself in the process, too.

Identify strengths, not weaknesses, and use those strengths to fuel your team.
When you build relationships with your teachers, you uncover strengths you may not know have existed. Empower teachers to harness these strengths and leadership skills to provide quality learning opportunities for others. Demonstrate a willingness to participate and collaborate with other educators in the learning process. Teachers deserve leadership opportunities. Give them freedom and safe spaces to try new things. Invite them to lead professional development (PD) sessions or to plan a community event they’re passionate about. As a district leader, model this for your own team and highlight their strengths as they support teachers.

Show empathy.
You don’t have to know all of the answers as an education leader. You sometimes won’t even know all of the right questions to ask. We’re all life-long learners. Being vulnerable and showing the educators around you that you’re willing to learn with them is powerful. The role of a leader is not to be the expert but to be the facilitator for teachers, and to learn alongside them. Teachers deserve your vulnerability. Be human. Show them they’re not isolated.

Be open to shifting your mindset.
Showing support looks different for every teacher. It’s ok to break traditional practices and strive for what will make a long-term impact on your teachers. At the district level, I had the privilege to work with advisory groups comprised of teachers from around the district, often organized by subject level or grade level. Through video calls and in-person focus groups, we created a feedback loop where curriculum specialists and I were able to hear ideas and pain points, then directly shift our plan to fit teachers’ needs. Some of the best ideas and most impactful PD initiatives came out of these groups because we were open to change. Shifting your mindset often means taking risks. Teachers deserve a change.

Build a community.
When I reflect upon my time in the classroom, what helped me grow most as an educator was the people around me. I had a solid community that challenged me to become a better teacher. Forming community is easier said than done, but you’d be surprised at the organic communities that have already formed within a school or district office. Learning is social, so provide teachers with the flexibility to network with one another and develop new skills. Encourage teachers to go beyond the school walls virtually to connect as well. As a school or district leader, encourage formal and informal learning experiences through social media or online platforms. Model the Community of Practice you want for your school or district: intentional, purposeful, inviting and impactful. Teachers deserve a strong network of support.

Being a school or district-level administrator can be difficult. Trust me, I’ve been there. It may seem like it’s always up to you to fix any problems that arise. But I’m here to remind you of the impact you can make. Leave a legacy at not just your school or district, but on education as a whole. Because teachers, and ultimately students, deserve the best we can give them.

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For all entering students, the curriculum sequence begins with skills-development courses, designed to address the key areas of writing, reading, communication and study skills. Self-management, as well as the development of self-understanding and self-advocacy, are also important parts of this first-semester curriculum. Initial courses are offered at non-credit and credit levels. This allows students to be placed in classes where they are able to succeed, from the start. Due to our rigorous academic standards, more than 50% of incoming students begin in non-credit courses, with most moving into credit courses after one or two semesters.

Student Life

Landmark College has clubs, sports, activities, and events including theater productions, coffeehouse performances, open mic nights, and dance parties, to name a few. Whatever your interests, you’re likely to find others who share them. And whether you love history, art, sports, or nature, our Putney location gives you the chance to pursue your passion. Our campus shuttle services make it easy to get to area shops, ski resorts, and other nearby sites.

The Strauch Family Student Center is the heart of student life at Landmark College. Whether you want to grab a bite to eat at the Fireside Cafe, buy Landmark College gear at the Bookstore, meet up with friends, or get your game on in the Game Room, the Student Center is the place to do it. There are also several resources located in the Student Center including Health Services, Counseling Services, and Student Affairs. Student mailboxes are also located in the Student Center.

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Now accepting applications.
Earlier this year, some students complained that the way I taught new vocabulary words was overly rigid and scaffolded. “It’s too easy and it takes too long,” one said plainly. I didn’t want to listen. I had created this vocabulary routine over the span of many years and was convinced that it helped students internalize new words. But when I stepped back to consider what my students were telling me, I knew that they were right. Rethinking my lessons gave me an opportunity to create a more efficient vocabulary routine that encouraged students to be independent learners. But to get there, I had to be willing to learn and grow, too.

As a teacher, I know that the best learning happens when I create detailed, thoughtful plans but leave enough space for my students to guide their own learning. And when my plans don’t go as planned, I know that the best (and hardest) way forward is to think critically about what I could have done differently to lead to a better outcome.

Too often, though, I forget this when it comes to my own learning. Let’s be honest: “professional development” gets a bad rap — for a good reason. We hear “PD” and conjure images of endless meetings, PowerPoint slides crammed with so-tiny-as-to-be-practically-illegible fonts, out-of-touch lecturers and nary a connection to our own, actual, daily practice with kids in sight.

But it doesn’t have to be that way. Professional development is just learning. It can happen in a staff meeting, but it can — and should — also happen on our own. Just like we want our students to become independent learners who know how to ask questions and find answers, we, too, should drive our own learning.

What I’ve come to realize is that
As a teacher, I know that the best learning happens when I create detailed, thoughtful plans but leave enough space for my students to guide their own learning.

professional development should fit into my life. No one is noting how many hours I spend searching for resources online or tallying up the number of books or articles I read. There is no award for “Most Dedicated Professional Learner.” There’s just me, getting better at my craft.

What I’ve found is that my own professional development often follows the same steps that I use when planning curricula.

For starters, I almost always begin with a good text. This mirrors the way I plan my curriculum: when I want my students to learn something new, I always start by thinking about what they should read. It might be a compelling article that will grab their attention or a novel that will bring the experiences of historical figures to life. It might be a poem or a song or a play. When I find that perfect text, my lesson plans begin to unfold and take shape.

So I start from text with my own learning, too. Grounding my learning in a book or article helps me establish a vocabulary for whatever change I’m considering in my practice.

Last week, I started reading Cornelius Minor’s book, “We Got This: Equity, Access, and the Quest to be Who Our Students Need Us to Be.” I read the book whenever I found time: five minutes while my students were reading their choice books in class, 10 minutes while I cooked dinner. I made it work for me.

Reading the first chapter, my mind was on fire with all of the connections to my own class. I dog-earred pages, tweeted out a quote that resonated with me, and told my colleague in our weekly meeting, “You’ve gotta borrow this book when I’m done; you’ll love it.”

That, too, mirrors my curriculum planning process. After I choose the right text for my students, I think about how I want them to interact — both with the text and with
When we remember that professional development should fit into our lives, we can decide exactly how we want to learn.

each other. For me, learning is collaborative. When students “talk to the text” by annotating, then talk to each other, they deepen their understanding. In the most productive conversations, they uncover new questions they didn’t know they had and create new meanings by synthesizing their ideas.

My co-teacher and I were on a slow-moving train together last week, so I pulled my copy of “We Got This” out of my bag and flipped to a page that had knocked me over. “Look at this,” I told him. “I think it could help us figure out what’s going wrong in the afternoon class.” He bent over the book, swaying back and forth as the train shuttled along, and we talked about how we might use Minor’s ideas to move forward.

My professional development doesn’t always happen on trains. I’ve been working to curate my own personal professional learning feed on Twitter, where so many great educators go to share ideas. Recently, some of my most useful professional learning has happened during impromptu conversations with colleagues over lunch or in the copy room.

When we remember that professional development should fit into our lives, we can decide exactly how we want to learn. The professional development we design for ourselves is guaranteed to be personalized, relevant and engaging. We just have to remind ourselves that we are already experts in creating and facilitating powerful learning experiences — and use those skills to design transformative professional learning for ourselves.

Sydney Chaffee, the 2017 National Teacher of the Year and a National Board Certified Teacher, has a passion for helping diverse learners grow through authentic, relevant, interdisciplinary curricula. Chaffee, who currently teaches ninth grade Humanities at Codman Academy Charter Public School, earned her B.A. from Sarah Lawrence in 2005 and her M.Ed. from Lesley University in 2007. Chaffee lives in Massachusetts with her husband, Matt; daughter, Zoe; and many, many books.
I've observed two contrary facts about educators:

1. Few people have the amount of influence that educators have. Most of you handle that responsibility with extraordinary performance.

2. Few educators get the honor that they deserve. Your greatness comes in unseen, thankless moments. Most of your best moments are kept secret.

For 30 years, my family and I have worked alongside you, the teacher. We have watched what you do—and who you are—when no one is looking.

You don't work for accolades or attention, but I believe you deserve to be honored. I'd like to share a few stories of the greatness we see in you...

You sacrifice time, sleep, and money to benefit the students.

Gretchen called early one morning. Her tired voice was evidence that instead of sleeping, she spent the night proofing and finalizing the student newspaper. Gretchen was determined to submit the order to us before the deadline so students would receive the newspaper on time. This newspaper, by the way, was extra-curricular, which meant being the Newspaper Adviser was not part of her paid responsibilities. Additionally, the student paper was not paid for by the school. She was hustling to find publishing funds from various sources. I'm certain, she was one of those “various sources.” Gretchen, we honor you!

Gretchen is not the only one. We see many of you spending personal money on supplies, giving up your free time, sacrificing in countless ways. We honor you!

You pursue excellence and train others to do the same.

Jennifer has been the student newspaper adviser for 83 editions—over 8 years. Her students are guided to deliver excellence in every aspect of journalism operation. By now, Jennifer's reputation is established, and some people might be tempted to coast. She isn't. Weeks ago, Jennifer called us and spent over three hours on the phone with our tech support learning advanced photo editing. She wanted the publication to look great, but she also wanted to be empowered to teach others. Now Jen and the students can use these advanced editing skills. Jennifer, we honor you!

Many of you are like Jennifer. You live and breathe the ideals of growth, advancement, and excellence. We honor you!

I don't have enough space to share all that we've observed. But there are so many others that deserve honor...

Childs, you consistently ensure the work is done right and on time. You don't leave the outcome to chance, and you're always willing to put in the effort required.

Gary, you are a supportive and encouraging Principal. Liz was terrified when she took over the literary magazine. With your help, she teaches with confidence.

Bill, you are faithful. For 18 years, we've watched you serve. Year after year, you help students discover and showcase their talents. I have enough memories to go on for pages, but not enough pages to honor you properly.

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The Need for Test Prep

Standardized college admissions tests like the SAT and ACT have exploded in popularity in recent years. The class of 2018 saw over 2 million students take the SAT, with nearly as many taking the ACT, a 30% increase over the previous 10 years. To date, some states have also been requiring the ACT or SAT to meet graduation requirements or use them as a replacement for statewide tests. States vary in their usage of college admissions tests. For example, Mississippi requires the ACT specifically, while Tennessee requires one of either the ACT or SAT. The heightened importance of the tests has led to schools having increased interest in test preparation.

The College Board, creator of the SAT, had long claimed that schoolwork was all that was needed to do well on the test. More recently, however, a College Board study showed that students who took practice tests showed 100+ point improvements on their scores. With the test makers themselves now stressing the importance of preparation, schools are searching for ways to deliver prep to their students. Schools have a variety of options for how they can address the increasing importance of college entrance exams.

In-School Preparation

The best way to get serious about test prep is to have dedicated study time for it. Whether it is an in-school class, after-school elective, or tutoring, direct experience with the tests is the best way to raise scores. Offering ACT/SAT classes as part of the school day allows a school to create a course that best suits its schedule and curriculum. This approach allows for schools to run a long-term program over the semester or a short-term program that lasts a few weeks, or maybe even just over a weekend. Of course, any successful program requires that schools have access to test-specific materials, such as books, drills, and quizzes.

Integrated Curriculum

A dedicated course for preparation can be difficult for many schools to implement. The school day is packed as it is, and there often isn’t room to add new courses. Some schools instead opt to integrate test prep into the school’s existing class day.

Both the SAT and ACT are strongly grounded in standard high-school curriculum, and both align to the Common Core State Standards as well as most other state standards. One of the main differences between these tests and a normal math and English class is format. Adjusting to the question types and the timing of college admissions tests can be difficult for students—even those who are otherwise comfortable with the content itself. That’s why direct experience with real test material is crucial to improving performance.

SAT and ACT reading questions, for example, ask students to read a given text for main ideas and details. Teachers can write questions in test format about the texts they’re discussing in class. SAT and ACT math questions notoriously can contain some tricky math concepts, but such concepts make up a small percentage of the overall test. Most questions deal with fundamental concepts such as basic algebraic manipulation or modeling based on word problems. Virtually any mathematical topic covered can be connected to test material.

Practice Tests & Data Analysis

The cornerstone of any preparation is practice. Practice can take many forms—drills, homework, quizzes—but any serious test prep must include full-length practice tests. A school-wide practice test can tell administrators what score ranges students are currently getting. A closer analysis can break down the results by question type, state standard, or any demographic category a school is interested in tracking.

It is also essential to prepare students for the test-taking environment. One of the biggest obstacles that students face is sitting for three hours to take a single test—a high-stakes one at that. Preparing students for a real testing atmosphere will improve a student’s concentration and, ultimately, their performance.

Takeaway — What Can Be Done

Schools can help students with test prep by using a variety of resources to effectively integrate content and strategies into existing curricula, running a standalone prep course, and/or administering practice tests. By bringing SAT/ACT prep into the classroom, schools can significantly help students increase college options.

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“MRA’s graduating class ACT composite average eclipsed the 24-point threshold following the first year of implementing the ACT prep program offered by A-List. Since then our graduating class average has been above 24. We had not attained this level of success once in the previous 10 years.”

-Greg Self, Principal
Madison Ridgeland Academy (MS)
COMPETENCY BASED EDUCATION

Daniel Joseph of Competency Based Education Solutions

CBE Solutions provides support for districts seeking to develop learning systems that are the foundation of student achievement and increased teacher and instructional capacities. We help build organizational readiness and capacity to aid districts in their transformation to a personalized/competency-based learning system by training and coaching all levels of the organization on how to implement rigorous, transparent and viable systems of learning and instruction. Working with district leadership, staff and specialists in the building of learning progressions that foster rigor, relevance and engagement, as well as with teachers and students in the development of learning through feedback and targeted personalized instruction. Utilizing the CBE framework, we also support the development of CTE pathways that are aligned to industry standards, college and career readiness standards as well as the common core expectations for all students. These course progressions will ensure all students graduate with the technical, vocational and core academic skills necessary for success in any post-secondary setting.

Daniel Joseph is the Founder and President of Competency Based Education Solutions and is part of 2Revolutions’ Talent Cloud.

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(207) 310-1399

STRATEGIC PLANNING

Angela Stewart of Stewart Educational Solutions

After working as a high school principal, district school improvement specialist and district assessment director, Angela Stewart founded Stewart Educational Consulting in 2013 with an emphasis on strategic planning. Strategic planning projects are not one and done efforts. Methodologies must be personalized to the school districts’ history, objectives/goals, and capacity. A well-designed plan is a living document; successful planning depends on the engagement by district and school level leadership. This practice cannot be relegated to consultants alone. Through thought-provoking questions, candid discussions, a rigorous look at data and challenging conventional thinking, a district can assure the development of results-driven initiatives.

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A Well-Rounded Classroom

Every teacher juggles multiple agendas: teaching the standards, encouraging critical thinking, and getting their students up to speed. All these things - while challenging each and every student to perform their best. The list goes on, and the challenge is to fit it all in.

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Used by over two million students across the nation, our supplemental curriculum integrates cross-curricular content and encourages students to encounter material in new and surprising ways. After all, isn't that the way the real world works?

With Mentoring Minds, districts get results and, in classrooms, students launch the lifelong journey of learning. Our curriculum provides students with an eye toward a future beyond the test.

Founded by an Educator - with You in Mind

As an educator and parent, Michael Lujan was in the thick of it. State standards were getting tougher, kids were falling behind, and teachers were scrambling to reach them. Out of necessity, teachers focused more and more on the test and less on the values that bring us to school in the first place. Curiosity, creativity, and critical thinking all took a backseat.

Knowing there was no quick fix, Michael set to work, not only to equip students to excel on the state standards, but to return to the heart of education—by teaching kids how to learn and by developing critical thinkers for life.

As an educator, he knew the tools for his vision didn't yet exist, so he decided to build them himself. It began with a simple flip chart for elementary teachers. Now, sixteen years later, and many classroom success stories later, there's an entire catalog of K-12 instructional support tools.

We're on Your Team

True to our original mission, all of our products are created by educators for educators. Each member of our development team has impacted classrooms as a teacher or an administrator, and has been recognized as a leader among their peers.

Best of all, our classroom resources are flexible. For many schools, technology in the classroom is no longer optional - it is the standard for orienting students to 21st-century careers. However, many classrooms aren't there yet. That's why our resources here at Mentoring Minds are in print and online. These different platforms allow teachers to choose how students access content and differentiate for individuals as well.

As you dive into lesson planning, we're right there with you. Your feedback is a vital part of our collaborative curriculum development process driven by students’ needs and evolving state standards.

There's a Bigger Picture

We're dedicated to success in the classroom, but we understand that it's often driven by factors on the outside—a healthy breakfast, a visionary administration, a supportive community. So...our mission doesn't end in the classroom.

As an active part of the community, Mentoring Minds partners with Feeding America's BackPack Program – a program designed to send hungry kids home with a backpack full of food each weekend. We also proudly sponsor the National Distinguished Principal Award Program to honor the groundbreaking administrators who are rethinking education leadership. We also invest in adult literacy and career development. After all, learning doesn't end at the bell or even at graduation—let's teach our kids by example!
2019 Conference Planner

April 2019

CoSN Annual Conference:
April 1–4, 2019 in Portland, OR

AERA Annual Meeting
(American Educational Research Association):
April 5–9, 2018 in Toronto, Canada

ASU + GSV Summit:
April 8–10, 2019 in San Diego, CA

ISN National Conference on Educational Innovation:
April 10–12 in Wisconsin Dells, WI

NSTA National Conference
(National Science Teachers Association):
April 11–14, 2019 in St. Louis, MO

Transforming Your School Climate:
April 20 in Kansas, KS

NCEA Convention & Expo
(National Catholic Educational Association):
April 23–25, 2019 in Chicago, IL

May 2019

NAFSA Annual Conference & Expo (NAFSA: Association of International Educators):
May 26–31, 2019 in Washington, DC

June 2019

Southeast Conference on Positive Behavior Interventions and Support:
June 3–5, 2019 in Savannah, GA

HelloEarlyLitCon:
June 7–8, 2019 in Raleigh, NC

SC ASA – 2019 Innovative Ideas Institute:
June 16–19, 2019 in Myrtle Beach, SC

Innovative Schools Summit – Atlanta:
June 19–22, 2019 in Atlanta, GA

ISTE:
June 23–26, 2019 in Philadelphia, PA

National PTA Convention & Expo (National PTA):
June 20–23, 2019 in Columbus, OH

ALA Annual Conference
(American Library Association):
June 20–23, 2019 in Columbus, OH

ISTE:
June 23–26, 2019 in Philadelphia, PA

NEA Expo
(National Education Association):
June 28–July 2, 2019 in Houston, TX

National Charter Schools Conference (National Alliance for Public Charter Schools):
June 30–July 3, 2019 in Austin, TX

July 2019

School Climate and Culture Forum:
July 9–12, 2019 in Las Vegas, NV

July 18–20, 2019 in Boston, MA

BbWORLD:
July 23–25, 2019 in Austin, TX

September 2019

HelloLitCon:
September 13–14, 2019 in Atlanta, GA

October 2019

ILA Annual Conference
(International Literacy Association):
October 10–October 13, 2019 in New Orleans, LA

NAESP Pre-K – 8 Principals Conference (National Association of Elementary School Principals):
July 10–12, 2019 in Spokane, WA

SREB Making Schools Work Conference:
July 10–13, 2019 in Baltimore, MD

School Nutrition Association Annual National Conference
(School Nutrition Association):
July 14–16, 2019 in St. Louis, MO

New Tech Annual Conference:
July 15–19, 2019 in Orlando, FL

July 18–20, 2019 in Boston, MA

BbWORLD:
July 23–25, 2019 in Austin, TX

September 2019

HelloLitCon:
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(International Literacy Association):
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SECURITY
School Violence Prevention: What You Can Do
More than 219,000 students have experienced gun violence at school since the 1999 Columbine tragedy according to The Washington Post. While a report by the Institute for Education Sciences (IES) found that bullying rates, gang affiliation and instances of student victimization have decreased in recent years, the Center for Homeland Defense and Security (CHDS) notes a steep rise in gun violence. The CHDS reports that in 2018 alone, there were 97 gun-related incidents on a school campus that lead to 56 deaths and 109 injuries.

The events that took place at Columbine, Sandy Hook and Marjory Stoneman Douglas are forever etched in memories. For Birmingham, Alabama’s Samford University Orlean Beeson School of Education faculty and administration, these events and others raised the question: “What can we do to protect and prevent within our local districts?”

In early 2018, discussions surrounding a curriculum devoted to school violence prevention began and the new B.A.D.G.E. Preventing School Violence Conference series was a result of those discussions. Over a five-year span, the series — led by co-developer Dr. Jonathan Doll — will examine five areas (B.A.D.G.E.) where advocates and educators can become agents of change in school violence prevention. These five areas are:

- **Behavior, Applying Behavioral Skills**
- **Attitudes, Reforming Attitudes**
- **Delinquency, Reaching All Groups**
- **Growth Mindset and Gradual Release**
- **Elevating Excellence, Sustainability**

Doll, a consultant and author of “Ending School Shootings: School and District Tools for Prevention and Action,” says, “Throughout the development process, we were strategic in designing a conference that it could be replicated in a variety of different cities and venues,” said Doll.

According to Doll, communities should be forming and providing environments

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that are supportive of students at risk of violence and therefore establishing settings that are less conducive to potential incidents occurring.

“Our focus is not to teach schools how to stop an active shooter or create an emergency readiness plan. Those skills are very important, but our goal is to empower school districts to prevent these catastrophic events through early identification and intervention,” said Monique Gardner Conard, Samford University's Orlean Beeson School of Education assistant dean.

The emphasis on school violence prevention has everything to do with the first tenet of B.A.D.G.E – behavior: educator behavior, family behavior, institutional behavior and student behavior. Different behaviors often lead towards violent actions and often times support could be offered to shift said behavior and prevent school violence. With learned proactive discipline techniques and restorative-type interventions, educators, parents, and advocates can begin developing an action plan for implementation within their school.

“School violence is not something new,” said Doll. “It spans many forms, including bullying, abuse, threatening, fights, gang violence, weapon use, cyber acts of intimidation or threatening, other forms of hate-speech, and even to devastating acts of violence that involve law enforcement and the justice system. However, we believe that with the right supports, solutions can be found and practiced.”

So, what are the solutions? Collaboration, inclusivity and restoration, where possible, are the three most prudent solutions that can foster a more supportive environment in schools according to Doll. He also believes that social emotional learning is key. It is recognized that schools often face challenges in implementing these preventative solutions.

Doll also advocates that in order to provide the preventative solutions listed above, schools must first have a well-established system for identifying students in need of support. Additionally, there must be an increase in the level of empathy for students who are emotionally-hurting.

“Empathy does not mean that punishment and alternative educational settings are avoided,” said Doll. “It means to provide services and supports for every at-risk student while not ignoring any threats to safety.”

“Recognizing trigger behaviors and addressing them before the occurrence of violence is key,” adds Witherspoon. “Hurt students, hurt students; therefore, we believe addressing behaviors and building supports is the first step to school violence prevention. But this is a gradual process and a shift that will take time.”

Witherspoon says she believes early identification and prevention is the answer, “We all want to take every measure possible to ensure that classrooms and schools are safe and hosting conferences that promote healthy dialog, discourse, awareness and professional learning is part of reaching a solution.”

The B.A.D.G.E Conference: Preventing School Violence is coordinated under the leadership of David Finn, Orlean Beeson School of Education professor and Tarsha Bluiett, Orlean Beeson School of Education associate professor and M.S.E. in Elementary Education director.

RESPONSE TIME IS CRITICAL

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By Bruce Canal

Students do more than learn when they’re at school. They make friends. They socialize. They develop, they change, and they grow. The many hours that students spend in school are some of the most formative of their lives, and it is important to provide them with a safe environment to navigate the transition from childhood to adulthood.

Unfortunately, that isn't always the case. The reality is that there are those in the world who would do us harm, and far, far too often they select soft targets—our schools—as their target. This creates a unique and difficult challenge: how can we protect our kids and their schools without turning them into spaces that feel more like prisons than education centers? Is it possible to turn a school into a fortress, keeping out the bad things, without sacrificing the environment that makes it feel like a school?

The answer is yes. Modern technological advancements have laid the groundwork for security innovations that are both highly effective and relatively unobtrusive. By studying and understanding areas of interest, implementing better perimeter controls, limiting points of entry, and utilizing high-quality camera systems, schools can assert more control over who may enter and exit the building and verify the identities of those who do so.

Limiting Access via Controlled Entry

One of the most critical issues that schools must address is ease of entry. It is simply too easy for unauthorized individuals to enter a school. Back and side entrances are often unsecured. Students and teachers stepping outside for “just a minute” frequently prop open doors. Even a locked door might be opened from the inside to allow a friend to enter without scrutiny from the main entrance. Both students and staff are often guilty of holding open a door!

Obviously, this is a problem. Multiple entryways create multiple
paths for a potential intruder to gain entrance to the building, and, unfortunately, this is a vulnerability that many have exploited. By gaining entrance through a side door, intruders avoid the scrutiny that comes with passing through the main entryway—doors adjacent to the main administrative office in most schools—and instead gain immediate access to the interior of the building.

In order to prevent this type of unauthorized intrusion, it is critical for schools to restrict access to a single point of entry—an idea that will require some amount of buy-in from both students and faculty. No more allowing side doors to be propped open. No more back door entry for late arrivals. Establishing a single point of entry is perhaps the most important step toward improving school security. Requiring all would-be entrants to use a single entrance not only allows you to effectively control who enters and exits the building, it also creates an area of interest upon which to focus additional security measures—a major improvement over the distributed security necessary to secure multiple entry points. Staff must be firm when they vet visitors requesting entry: “Who are you? Who do you wish to see? What is your business here today and does the person you wish to visit know you are coming?”

Once you have consolidated to a single point of entry, securing that entryway is essential. If you’ve ever watched a police or prison drama (or seen Braveheart), you may have heard the term “sally port.” This refers to a secure entrance with two sets of doors that can be locked independently, and is a common feature in both medieval fortresses and modern police stations and prisons—which is to say, it’s an idea with quite a bit of staying power. By using a sally port, schools can require visitors to enter through the administration office, providing an added measure of access control and preventing entrances from being left unsecured.

Door stations are a typical addition to a modern sally port, and generally feature tamper-proof audio/visual intercoms to allow communication with someone on the inside—in this case, likely an administrative staff member. In order to gain entry, the person on the inside must release an electric strike to unlock the door and allow them to enter. Once inside the office, all visitors must now be prepared to justify their presence in the school—and to be captured on video doing so. By deploying high-quality cameras throughout the entry point, schools can now better identify intruders, track unusual behavior, and establish documentation of exactly who has walked through the door.

**Areas of Interest and Appropriate Security Measures**

Ultimately, this is what ties everything together. An Area of Interest (AoI) methodology considers the type of school you have, potential incident areas, the security risks associated with each, and the security objectives associated with each. Identifying areas prone to bullying, drug activity, or other hazards shouldn’t be difficult—and by limiting access to a single point of entry, you’ve already established the most important area of interest.

Here, it’s important to understand your objectives. Not everything is a worst-case scenario, and there are a wide range of potential hazards that a school might face. Trespassing, loitering, bullying, assault, parental custody concerns, break-ins, kidnapping, car accidents, and even sexual predators are all valid concerns in the immediate vicinity of a school. Surveillance may be able to help deter some of these things from happening. It may also be able to help identify both victims and perpetrators. Depending on the specific solution you choose, it may even be able to do more.

Today’s surveillance capabilities go far beyond what was possible even just a few years ago. We are no longer forced to rely on human recognition—many of today’s cameras come equipped with embedded video analytics, offering real-time incident detection that can help identify and even prevent potential threats. Smart motion detection, loitering algorithms, glass break detection, and even aggressive behavior detection are just a few of the things that are possible today, and each can be programmed to immediately alert law enforcement or other authorities when necessary. Some solutions that involve video analytics, intrusion systems and glass break may also include pre-recorded statements via a speaker system for after-hours announcements to deter potential criminal activity both inside and outside the building. Deciding what capabilities are necessary and where they should be deployed can put the finishing touches on a comprehensive security solution.

**Simple Solutions. Modern Methodologies.**

Though the technology behind door stations, audio/video analytics, and tamper-proof intercoms may feel high-tech, the ideas supported by these modern innovations are, at their core, very simple. By implementing common-sense measures like restricting access to the building through a single, closely monitored entryway, we can put schools in the best possible position to protect the students within.

*Bruce Canal is Business Development Manager, Education, Axis Communications, Inc.*
Video Security
Delivering a Curb-to-Core Line of Defense

By Courtney Pederson
Not long ago, security concerns for most schools involved student conflicts, vandalism, theft and liability — now the foremost concern is life safety.

Domestic terrorism has become a major motivator for improving the security of school districts in the US. Increasing outbreaks of active shooter and other security incidents in recent years have prompted parents, administrators and law enforcement to take a hard look at improving campus safety.

According to EveryTown Research, since 2013 there have been more than 300 school shootings in the US — an average of about one per week. A recent article published by Campus Safety Magazine states that nearly all US schools now have planned responses in the event of a school shooting. In 2016, the US Department of Education found nearly 90 percent of public schools had a written plan for responding to school shootings and 70 percent of those schools had drilled students on the plan. This is for good reason: shootings are among the deadliest types of emergencies a school could face.

One of the best ways to mitigate this risk is to deploy policies, procedures and technologies that keep unauthorized visitors from gaining access to a campus in the first place. Video security, access control and a wide range of integrated open platform security technologies are combining to create an efficient and effective first line of defense for education facilities and save valuable time during an emergency event.

Seeing the Layers

Security professionals agree that physical security can be thought of in layers, with the perimeter being the first line of defense. Schools must detect and prevent unwanted intruders from entering their secure space. For example, a trend that is happening more and more in schools is the creation of entry vestibules — a single, controlled access point that prevents visitors from moving past that point without authorization. This approach creates a control point where a visitor comes into the vestibule, is visually verified via cameras, or speaks with someone at the front desk who greets and identifies the visitor, and then is either allowed or denied access into the controlled area.

Connecticut Calamity Ushered Change

Following the 2012 tragedy in Newtown, Connecticut-based Advanced Security Technologies worked with several of its manufacturer and technology partners to donate products and labor to install a new video security system for the school district. The Advanced Security Technologies team and its partners were able to outfit the entire district with protection layers: at least 30 cameras at each school, doors with electronic access control, intercoms and intrusion detection systems.

Tom Marino, Director of Operations and Integrated Systems Architect, Advanced Security Technologies, has worked with many school districts around the region to design and install security systems. He is an advocate of the comprehensive layered approach to security.

“We can't anticipate all possible events, but an effective strategy ultimately boils down to time. If we can save time in an emergency, we can save lives,” said Marino. “Even just five seconds could make all the difference between life and death.”

Three Components of School Security

Marino stresses that there are essentially three components to an effective security program: the organization’s safety and security policies and procedures, trained personnel to enforce the policies and procedures, and technology tools to help the personnel execute the policies and procedures.

“You can mitigate the damage in an emergency event by slowing down the assailant and providing a quicker response,” said Marino. “Combining the use of policies, people, and technology can make a very real difference in the outcome of these events.”

While each school faces its own set of challenges, video surveillance and the open platform partner community have come together to provide flexibility, reliability and leading technology for meeting those requirements.

Video surveillance, integrated systems and new ways, of thinking about security are helping districts provide more secure learning environments and reduce emergency response time.

NY District Deploys Mobile Video for First Responders

“Unfortunately, what happened at Sandy Hook could happen anywhere, and our district wanted to be as proactive as possible,” said the director of IT for a school district in New York. Several years ago, this school district began planning an upgrade for its schools’ existing access control and wanted to deploy a new video security system at the same time.

From the beginning, the safety committee insisted that the district work with local emergency responders, including the police and fire
departments, and local homeland security officials.

The committee wanted to work with anyone involved with incident response, to ensure the ability to give needed access to see what is going on, live or recorded.

Provided with a map-based interface to the district’s video management software, officers can quickly navigate campus buildings and click on logically-named camera locations.

This capability would save valuable response time in the event of an emergency. The school’s video intercom system is integrated with the video management system, so administrators can control access into the building. They can view video of the person at a door, communicate with two-way audio, and release the door. Streaming real-time video from the cameras has been made available at the police department, fire department and in police mobile units. In the event of an emergency any dispatch center, car or fire authorities that have computer access can see what is happening to evaluate optimal actions.

**Texas Border District Upgrades to IP Video**

“Sandy Hook had a huge effect on our district. It brought into sharp focus the fact that we need to do everything we can to ensure the safety of our children, teachers and parents. With new cameras and the Milestone software, [intruders] can’t just sneak into a side or back door anymore. We can keep track of everyone and have a visual log of who goes in and out,” said the Security Management Coordinator at Mission CISD. The Mission Consolidated Independent School District (CISD) in Texas serves almost 16,000 students in four high schools, four junior high schools, 14 elementary schools, two special needs schools, and includes administrative offices and several other departments.

After years of evaluating IP camera management software systems, the district created a command center manned by two certified technicians. The technicians each have seven monitors and oversee maintaining the cameras and ensuring the servers are fully operational. Some of the camera features include motion detection, day/night functionality, vandal-resistant housings and remote focus/zoom.

Each campus has a dedicated server, with multiple servers in select locations. Their security solution provides perimeter protection around each campus, and cameras are deployed at various points of entry in school gymnasiums, cafeterias, libraries, hallways and playgrounds.

For more Security related articles and companies visit our website and click on the **School Safety Guide**

seenmagazine.us
Rural District Improves Security with New Integrated System

Since its founding in 1959, the Sands Consolidated Independent School District (SCISD) in Ackerly, Texas, operated without a security system. There were no cameras to monitor the flow of its 256 students, 44 teachers and others as they entered and exited the buildings, and there was no access control system to secure school doors. The recent elevation of school violence has all changed that.

Located in a rural area, the campus is about 20 minutes away from any law enforcement response, so the district wanted to implement an integrated access control and video surveillance system to keep the main campus and neighboring school gymnasium secure.

A local solutions provider helped design and install a multifaceted network-based system which included 36 security cameras and nine access control reader/controllers integrated with Milestone video management software (VMS). The cameras cover all areas around the school buildings, bus transportation, gym parking and the football field, and enable administrators to maintain extensive coverage of the cafeteria and all doorways, hallways, entryways and common areas. All cameras record on motion detection only, as configured in the VMS to allow for recorded video storage of at least 30 days.

The district also integrated their voice-over-IP telephony solution into the security system so when an individual hits the intercom key at the front entrance door station, the person appears in the video interface displayed on the screen of an administrator, who can verify and authorize entry. This protocol keeps school personnel from getting locked out and ensures that only approved visitors are let in.

An access control system has also been configured to unlock and lock the main door for an hour at the beginning and end of the school day, so parents can drop off and pick up their children without waiting to be buzzed in, since Sands staff are present in the entry areas.

Deploy, Plan and Prepare

It is important to stress that schools should not depend on physical security technology alone to ensure occupant safety. Schools need trained personnel in place who know the procedures and can guide everyone to safety during an emergency.

It is highly recommended that school administrators work with local law enforcement, security consultants, systems integrators, manufacturers and other available experts to assure their systems and procedures are based on best practices and that the technology involved is deployed to its fullest potential. Having a successful security strategy in place means making sure that all physical aspects of a security system — cameras, remote and mobile monitoring applications, access control systems, networks, intercoms, emergency exits, perimeter sensors, lighting and all other safety aids — are installed properly and fully functional.

Within the layers of a security plan, the total solution is only as strong as the weakest point.

Courtney Pederson is Communications Manager at Americas, Milestone Systems.

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5% Discount for SEEN Readers
55 YEARS
By Anisa Heming

Every school is an investment in the future. Schools have the unique opportunity to nurture young minds and support a stable, sustainable future for the world around us in a multitude of ways. For students, green schools present an opportunity to learn how to lead healthier and more sustainable lives now and in the future.

How do you get sustainability in your school to stick? The Whole School Sustainability framework, a resource from the Center for Green Schools, can help guide you. Within this framework, there are “the three pillars of a green school” — which measures success in sustainability and helps to make these efforts stick.

The three pillars were first introduced when the U.S. Department of Education launched the ED-Green Ribbon Schools award program in 2011. Since then, over 60 organizations have adopted the basic measurement framework that they present:
• Reduced environmental impact
• Increased health and well-being
• Increased environmental and sustainability literacy for all graduates

Having measurable metrics for success helps green schools understand their sustainability impact on a global and individual scale.

Environmental Impact
To have less of an environmental impact, green schools can focus on reducing energy and water use, fossil fuels used for transportation, waste headed to landfills and more. Here’s what we know about how these actions affect humans and the Earth:
• Using less energy in buildings means less demand on power plants. Power plants emit carbon when generating energy.
• Using less water in buildings means less energy used to treat and transport water, as well as less aquifer depletion and more protection for freshwater habitats.
Environmental and Sustainability Literacy

A more sustainable future begins with teaching students and staff about the environment, thus giving them the tools needed to solve global challenges both now and in the future. Education that supports this type of literacy includes both curriculum and instructional practices that are interdisciplinary, place-based and rooted in the context that uniquely surrounds each student. Here’s what we know about the impacts of environmental and sustainability literacy:

- Increasing students’ environmental knowledge while also employing instructional practices that focus on interdisciplinary and place-based problem solving can influence behavior change toward sustainability.
- Developing civic engagement knowledge and skills can help students know how to address sustainability issues in their communities.
- Utilizing environment and sustainability subjects to develop STEM content knowledge and thinking helps students prepare for the 21st century technology-driven economy.

What Comes Next?

- Train school staff: Pursue your Green Classroom Professional Certificate
- Bring it into every classroom: Incorporate sustainability curriculum
- Commit to measuring your impact: Track and measure sustainability progress in school buildings through LEED certification and Arc’s online performance platform

No matter where your school is on its journey to becoming greener, consider these three pillars to understand your impact and plan for the future. Every school plays a huge role in nurturing a more equipped, efficient and sustainable future.

Visit centerforgreenschools.org to learn more. Anisa Heming is the director of the Center for Green Schools at the U.S. Green Building Council (USGBC).

Health and Well-Being

Paying attention to health in schools has an impact on student wellness and learning. To increase student and teacher wellness, green schools can create clean indoor environments, provide access to good nutrition, and promote physical activity in school. Here’s what we know about how these actions affect the health and wellness of school populations:

- Circulating clean air that is rid of harmful amounts of CO2, volatile organic compounds (VOCs), particulates, and humidity improves student learning and overall health.
- Providing meals with whole grains, fruits, and vegetables to students has a positive impact on not only health, but also on their ability to learn.
- Increasing physical activity time in schools reduces obesity rates in students and promotes positive lifelong healthy habits.
By Anisa Heming

At the heart of every school is the desire to help students thrive. This desire requires support from teachers, faculty members, families, communities and even school buildings.

A green school is about more than curriculum, more than programming and more than bricks and mortar. It’s a school that not only sets students up for success, but also supports global sustainability. A green school begins with the future in mind, designing a learning experience that will prepare students to lead their communities toward a healthier and cleaner future.

We can all get on board with supporting our students, but not everyone may know where to start when it comes to building a culture of sustainability in their school. This eight-step checklist can help anyone who interacts with a school — from students and teachers to parents and administrators — to foster a greener school community.

1. Gather Your Team
   Get started by gathering people interested in the cause and form a team. Successful green schools have green teams that help inspire and implement sustainable practices. The best part is that anyone can be involved! Look for advocates in teachers, administrators, custodians, parents, community volunteers and most importantly students. Local sustainability professionals and technical experts are also a resource and can help you form a mission and set reasonable goals.

2. Find Your Starting Point
   Greening your school requires an understanding of how things currently operate. For example, if you want to implement a recycling or composting program, you first need to know what kind of waste your school is producing and how it’s being handled. Same goes for energy. If you want to implement energy saving strategies, you first need to know how much energy is being used and how the systems operate. This benchmarking process can also be an incredible learning opportunity for students.
Many education and environmental organizations have auditing tools and standards-aligned lessons for students to analyze and benchmark sustainability at their school. You can find examples on Learning Lab, the Center for Green Schools’ curriculum platform.

3. Use Tracking Tools

Once you’ve established your school’s baseline sustainability metrics — like energy, water, waste, or others — invest in tools to track progress toward improvement. For energy and water, consider using ENERGY STAR Portfolio Manager, a tool from the U.S. Environmental Protection Agency that is free to use. To benchmark multiple sustainability metrics across your school or school district — including energy, water, waste, transportation and air quality — you can also use Arc, a platform that tracks and scores building performance so you understand where you fall relative to your neighbors and to global averages.

The LEED for Schools Rating System, which can be used for new schools or already-operating ones, is a third-party rating system that recognizes excellence in sustainability performance. It’s great to have a goal in mind for the work of your green team, and LEED certification can be a goalpost to strive for. It addresses aspects of school operations like waste management, energy performance, air quality monitoring, responsible grounds keeping and more.

4. Behavior Change Leads to Culture Change

Whether your school is undergoing major renovations or smaller updates, changes in behavior will ultimately improve energy efficiency and the health of those in your school. By educating all members of the school community, and setting clear expectations for how behavior should change, your school has a greater chance of creating an environmentally responsible culture.

Support that change by directing educators to certificate programs that equip pre-K12 educators and school staff with the knowledge to identify what supports or impedes healthy, resource efficient and sustainable learning spaces. To help teachers lead culture change for their students, host professional development events that show how the natural environment can become an outdoor classroom and where the school building can serve as an example of how to put learning into action.

5. Point People in the Right Direction

The best school buildings are designed with teaching in mind, and one of the best ways to foster a green school community is to engage with the building.

At Rosa Parks Elementary School in Lexington, Kentucky, an energy efficiency pilot program led to a community-wide conservation movement. During the first year of the pilot, a fourth-grade class set a goal of $10,000 in energy savings. The students did energy walkthroughs; teachers held class using only daylight; facilities staff de-lamped one bulb per classroom and changed set-points of mechanical equipment. At the end of the year, the school was shocked to find out that they had saved $50,000 — five times their goal.

Since then, the school has only improved its energy efficiency efforts. Parents, teachers, community organizations, and volunteers also formed a sustainability committee to report and make new recommendations to the school’s decision-makers.

6. Find a Different Perspective

Partner with more unexpected experts on the ground to achieve your school’s sustainability objectives. The men and women of your custodial staff know your facility inside and out and are often great resources for ideas on efficiency and green school operations. Short web trainings on working with maintenance and custodial staff are available from the Center for Green Schools, and the companion guide found in the first module has a list of questions you can ask to learn more about current efforts and brainstorm improvements.

7. Put Kids in Charge

Placing students at the center of a sustainability program is critical to the program’s long-term success and the cultivation of a generation of sustainability leaders. Students have an endless supply of energy, ideas and enthusiasm; and successful schools harness this invaluable, renewable resource.

In schools that are ahead of the sustainability curve, students are regularly engaged in leading projects and initiatives that speak to environmental principles and practices. They research and develop new solutions and collaborate with appropriate faculty and staff, and they are granted the authority to implement their ideas. As students develop an understanding of their role and responsibility in the sustainability of their school, they also learn their role and responsibility as citizens of their community and the earth.

8. See What Works

Look into local programs that support green schools and provide on-the-ground support — and sometimes prizes and rewards! For instance, the National Wildlife Federation runs EcoSchools, a guided action-based program for schools to follow alongside other schools. If you’re looking for other programs and guides to follow alongside, there are also many web trainings for school staff to get moving on their own.

The mission of schools is to educate young people and prepare them to lead a better future, so any effort to make a school more sustainable has to be rooted in student learning and engagement to be successful. There are many ways to bring sustainability into the classroom, from standards-aligned lessons from Learning Lab, to wilderness exploration with a local non-profit, to civic action projects with groups like Earth Force and Climate Generation.

At the end of the day, don’t be afraid to do something that may seem different, and let students know they have a voice. It’s their education, their health, and they are ultimately our sources of inspiration.

Anisa Heming is the director of the Center for Green Schools at the U.S. Green Building Council (USGBC). In this role, she provides strategic direction to USGBC’s work in schools and coordinates an organization-wide team to promote environmental sustainability, health and wellness, and sustainability literacy in school systems around the world.
STUDENT TRAVEL
Visit The Bechtler!

By Lauren Houston
A shimmering 18-foot-tall Firebird sculpture greets visitors to The Bechtler Museum of Modern Art. Its reflective mirrors, glass and specks of color move with the surroundings: traffic, trees, buildings and pedestrians. The phoenix-like piece by French-American artist Niki de Saint Phalle offers a playful introduction to the one-of-a-kind collection waiting inside the museum. The building itself is only the second in this country designed by the Swiss architect Mario Botta. Botta is considered one of the world’s foremost architects whose career spans a variety of building types. He has only accepted two commissions in the United States: the San Francisco Museum of Modern Art and the Bechtler Museum of Modern Art. Intimate in scale, delightfully arresting in its spaces and vistas and simple and elegant in its materials, the Bechtler is a jewel of a museum. The museum building is a square terra cotta tile-covered box with a cantilevered fourth-floor gallery hanging over a plaza with a column in the middle. An interior atrium creates a light-filled space inside.

The Bechtler opened its doors on January 2, 2010 and is one of several cultural facilities on Charlotte’s South Tryon Street corridor, including the Knight Theater, the Harvey B. Gantt Center for African-American Arts + Culture, and the Mint Museum Uptown.

Whimsy and seriousness blend together in the Firebird, just as the way scale and intimacy mingle in the Bechtler collection. Included are more than 1,600 works by some of the most important and influential artists of the mid-20th century, from Expressionism to Pop art. Artists represented include Miró, Giacometti, Picasso, Calder, Hepworth, Nicholson, Warhol, Tinguely, Ernst, Le Corbusier, Chillida and many others. Only a handful of these artworks have been on public view in the United States. The collection is unusually uplifting, accessible and thought provoking for museumgoers. Until 2010, the collection was privately held by the Bechtler family of Switzerland. You might be wondering who are the Bechtlers and why is the museum named after this family? Bechtler is the last name of the Swiss family who formed a substantial modern art collection over a 70-year
period in Europe. Andreas Bechtler inherited a portion of the collection from his parents, Hans and Bessie Bechtler, and generously committed it to the city of Charlotte. Many of the artists were close friends of the Bechtlers. Some of the most important and fascinating works were gifts to the family by the artists themselves.

The museum would not exist without the extraordinary generosity of art patron Andreas Bechtler. Inspired by his parents, Andreas made his remarkable collection available for all to engage – whether for solace and reflection, inspiration and surprise or for challenge and self-discovery. These works and their many stories reward scores of visitors to the Bechtler. It is our hope that visitors will come to form their own relationship with this remarkable art and the influential artists who created it.

The Bechtler Museum’s mission is to share the joy and excellence of the collection so everyone can be inspired, informed and have their cultural and intellectual life enhanced. From special members-only events, Jazz at the Bechtler, School Tours, Family Days, Modernism + Film, Guest Lectures and a commitment to making the museum accessible and inclusive to those with disabilities, the Bechtler is more than a museum – it is the cultural heart of Charlotte, North Carolina.

The Bechtler opened its doors on January 2, 2010 and is one of several cultural facilities on Charlotte’s South Tryon Street corridor, including the Knight Theater, the Harvey B. Gantt Center for African-American Arts + Culture, and the Mint Museum Uptown. As the Bechtler nears its 10th anniversary on January 2, 2020, the museum is gearing up for what is soon to be an international exhibition featuring Nomadic Murals: Tapestries of the Modern Era, an exploration and presentation of tapestries and rugs designed by artists usually associated with painting, sculpture, and architecture. Examples of the more familiar media will be installed alongside the textiles. On view April 5 through December 1, 2019.

The Bechtler is open Monday, Wednesday, Thursday, Friday and Saturday, 10 a.m.-5 p.m.; Sundays, noon-5 p.m.; closed Tuesdays and major holidays including New Year’s Day, Thanksgiving Day and Christmas Day. Admission is $9 for adults; $7 for seniors, college students (with school ID) and educators; $5 for youth (11 to 18) and free for children (up to 10) and active-duty, retired military personnel, National Guard, Reserve and their families.

**Tours**

The Bechtler Museum of Modern Art is a welcoming institution where teachers and students learn about modern art and the personal stories behind the artwork. The museum offers engaging and interactive school tours that are designed to foster students inquires, develop critical and creative thinking skills, make connections to other areas of curriculum, and help create a visual language that promotes better reading and writing skills.

Offering guided and self-guided school tours, the Bechtler’s guided tours are led by specially trained docents and last 45-60 minutes. A minimum of 10 students is required for a guided tour.
Savannah, Georgia’s oldest city, is a charming Southern escape, where quirkiness materializes through art, period architecture houses and trendy boutiques, where ghost stories are set under a veil of Spanish moss, and local cuisine comes straight from the coast. As artsy and eclectic as it is steeped in history and lore, Savannah strikes the perfect balance between hip urban living and sweet Southern charm as one of America’s friendliest and most beautiful cities.

What to Do

Whether you’re a nature lover or history buff, Savannah has something for you. Tour 22 beautiful park-like squares—lush and green all year long, stroll along River Street and take a trip to Savannah’s beach, Tybee Island. The heart and soul of downtown Savannah is verdant Forsyth Park. This 30-acre urban oasis has hosted outdoor concerts and spontaneous gourmet gatherings since 1840.

Don’t forget to explore the city’s numerous museums, galleries and boutiques during your stay. Each

Lauren Houston is the Marketing and Public Engagement Manager at the Bechtler Museum.

Looking to get away? Checkout our Spring and Summer Travel Guide featuring articles travel tips and destinations. Visit our website and click on the The Great Escape!

Coastal Charm

Savannah

Savannah, Georgia, offers an escape to enjoy the ocean’s breezes and the beach. Savannah is known as the ‘Holy City’ due to its Spanish and French influences. This city is a blend of art, history and culture. Savannah is known as the ‘City of Chippewa’ and as the ‘City of Palms.’

Photo Courtesy of Wendy Yang

Admission is $2 per student, chaperone or parent. After-school tours also are charged $2 per student. To book a tour, contact the Education Department at 704.353.9218 or email education@bechtler.org at least 30 days in advance for all guided tours.

Lauren Houston is the Marketing and Public Engagement Manager at the Bechtler Museum.
Making the Most of Your North Carolina Zoo School Field Trip

Are you in the know? About educational field trips at the North Carolina Zoo that is. The Zoo offers a variety of educational activities for school and homeschool groups. To start, did you know that North Carolina teachers can bring their students to the Zoo for free, early September to early June? Out-of-state schools receive a discount on their admission. Please make sure to register on our website (www.NCZoo.org) 15 days in advance of your group’s visit.

Want to learn about habitats, lifecycles, or plant adaptations while at the Zoo? Checkout one of our free Inquiry Packs. These backpacks include all the supplies and materials you need to complete a fun educational activity with your class during your visit to the zoo. We have activities for both Africa and North America. These activities are designed to meet the North Carolina Essential Standards for grades K-5. Checkout an Inquiry Pack at our guest services offices in North America and the Africa plazas.

Want to add even more education and fun to your field trip? Sign-up for an Edventures at the Zoo program. These 30-45 minute programs give you a more in-depth look at some of the wildlife that calls the North Carolina Zoo home and what makes them special. We offer five different programs – Kitera Explorations: A Wild Look at Chimpanzees, Trekking through a Tropical Forest, Watani Wonders: All about Elephants and Rhinos, and Our Rocky Coast. Each program is $60 and is designed for up to 30 students. We also offer Zoo to you Edventures where we bring a program to your school. Please check the website to learn more about the program.

While at the Zoo don’t forget to let your students the kids they are. One of the best places to do this is Kidzone, our nature play space. Kidzone is designed for children 2 to 10 years old to explore nature in their own way. School groups are invited to spend time in Kidzone, but due to space limitations, we do limit the number of groups in the space at one time. We also recommend planning at least 30 minutes into your schedule for Kidzone so your students can immerse themselves into the experience. Don’t have that much time then just stop in to meet one of our Animal Ambassadors. We offer animal encounters weekly Wednesday through Sunday in Kidzone, April through October. These encounters are weather dependent. Please check the sign in front of Kidzone for times. You don’t have to be a kid to participate!

Can’t make it to the Zoo? We understand and haven’t forgotten about you. Check out our distance learning events in the free Living with Nature Series designed for middle school and high schools. We offer four events each year. Events focus on topics like Green Practices, the Zoo’s conservation work, and animal biology and behavior. Each event is designed to be interactive with the opportunity to test your knowledge in polls, ask our experts questions, as well as an activity to keep your students engaged with the program.

The North Carolina Zoo is here to make your next group trip fun and educational! So don’t forget to check out our wide range of educational programming for schools, homeschools, preschools, and a variety of different groups before your next visit. To learn more about all of our educational offerings visit https://www.nczoo.org/education.

Looking for something special this summer for your child?

Sign your children (grades 1-6) up for a WILD adventure! North Carolina Zoo Camp is a way for kids to learn about animals and our natural environment in an outdoor setting. Zoo camp offers a one-day or week-long experience for students entering grades 1 - 6. Whether we meet a baby alligator, learn how to communicate like chimpanzees, or hang out with a vampire bat keeper, our camps are guaranteed to be a blast. Each week is a different theme so there’s always new animals to learn about!

In addition the North Carolina Zoo is proud to offer Camp KidZu! These day camps are specifically designed for rising 3rd-8th graders with high functioning autism. The camps offer social, educational, and recreational activities in a structured, but fun environment. All KidZu registration is through email at: zoo.camps@nczoo.org.

All North Carolina Zoo Summer Camps run from 9 am – 4 pm, rain or shine. Day camps are $60 and week-long camps are $250. We do offer discounts if you register for 3+ camps at the same time or if you are a North Carolina Zoo Society member. To learn more about our camps or to register visit www.nczoo.org/camps.

Make sure your child joins us for a wild summer experience they’ll never forget!
One-of-a-kind birthday parties, ZooSnooze overnights, hands-on summer camps and Scout programs at the North Carolina Zoo create lasting memories.

www.NCZoo.org/education
336.879.7718

North Carolina Zoo.org
Discover Us in Asheboro
The Fredericksburg region, consisting of the city of Fredericksburg, Spotsylvania County and Stafford County, is conveniently located between Richmond and Washington, D.C. and offers a rich history with a multitude of opportunities for students to interact with the historical events and remarkable people who helped form our country. Here are some Fredericksburg’s museums and tourist’s favorite attractions:

**The Hugh Mercer Apothecary Shop**
An eighteenth-century building was restored to house the Hugh Mercer Apothecary Shop, a museum of medicine, pharmacy, and military and political affairs. Dr. Mercer served the citizens of Fredericksburg with medicines and treatments of the time – leeches, lancets, snakeroot, and crab claws made up just some of his remedies.

**The Rising Sun Tavern**
Tavern wenches and indentured servants will entertain students with a lively interpretation of 18th century tavern life. You’ll learn how class and gender dictatedlodgings and meals, what difficulty the Stamp Act presented, and how to not "bite off more than you can chew."

**Mary Washington House**
Your visit to the home of Mrs. Washington, purchased for her by son George, takes you back to a time when social customs were much different from today.

**Ferry Farm**
You will walk the grounds where George Washington grew up and explore the recently built replica house through hands-on activities.

**Kenmore**
This beautiful home was the plantation home where George Washington's sister lived with her husband, Fielding Lewis, and their children. Learn about the differences and similarities between life in colonial times and life today.

**Fredericksburg Area Museum**
The Fredericksburg Area Museum (FAM) offers educational programs conducted in the museum's galleries, schools and libraries. FAM's programs cover the history of our region including the Virginia Indians, 18th-century life, the American Civil War, Civil Rights, the importance of the Rappahannock River to our community, and archaeology.

**James Monroe Museum**
The James Monroe Museum offers both on-site and supplemental online educational opportunities for teachers, classroom students, and homeschoolers. On-site programs include grade level appropriate educational tours of our extensive collection, which reflects both James Monroe and early America.

**Fredericksburg & Spotsylvania National Military Park**
All field trips to the park are free and may be customized to meet the needs of each group. Classes typically spend 90 minutes at each site, and often combine visits to multiple locations in the same day. Rangers strive to provide interactive, on-the-ground experiences for all students.

**Fredericksburg Battlefield**
Students may explore multiple sites on this battlefield with a park ranger, including the Sunken Road, battle-damaged Innis House, Marye's Heights, and the National Cemetery. Some programs include marching and drilling with wooden muskets or cannon-firing demonstrations.
Chatham Manor
This large house was built in 1771 and visited by George Washington and Abraham Lincoln.
Learn about the slaves and soldiers who were at this plantation before, during, and after the Civil War.

Chancellorsville Battlefield
Visit the site where Confederate General “Stonewall” Jackson was wounded and learn stories of this battle from a park ranger. Learn about Lee’s Greatest Victory and the daring maneuvers that are still studied by the military today.

Spotsylvania County Museum
The Spotsylvania County Museum provides a comprehensive history of Spotsylvania from 1722. The Museum works with the teacher to assemble special programs on the County’s diverse history which includes allowing students to experience hands-on activities utilizing artifacts for the museum’s collections.

White Oak Civil War Museum
The Stafford County side of the Rappahannock River was home to 140,000 soldiers following the Battle of Fredericksburg. Most of the items in the museum, representing both Union and Confederate troops, were discarded or lost by troops camping or fighting in the area. Students will be amazed by the replicas of soldiers’ huts used as temporary housing during the winter months.

Gari Melchers Home & Studio at Belmont
Students have the opportunity to explore this unique 18th century estate, tour stunning art galleries, visit the restored gardens and explore the property’s trails. Belmont is a unique and enriching destination for classes, art clubs, and homeschoolers, day cares and scouting groups. Customized field trips for all ages are also available.

Shannon Air Museum and Virginia Aeronautical Aviation Society Headquarters
The Shannon Air Museum houses one of the rarest collections of vintage aircraft in the world, including planes from World War I and World War II. Discover famous aviators, view historic artifacts and learn about the founding of one of the first major airlines.

At the River’s Edge Environmental Education Program
ATRE provides students with interactive, outdoor science and history education opportunities. Their goal is to give teachers and students a safe, fun, hands-on experience that will inspire respect and stewardship for the Rappahannock and its watershed.

John J. Wright Educational & Cultural Center Museum
Journey through the social context of African American education in Spotsylvania, its transformation through successful integration, and the closure of the historic John J. Wright Middle School. The museum is located inside the original school’s library. Key topics include segregation, African American culture, local history and integration.

Walk 40 historic blocks with George Washington, drink with A. Smith Bowman, discover America’s past at a Civil War battlefield and enjoy off-Broadway talent at Riverside Dinner Theater. The perfect tour, right off the beaten path. visitfred.com
Kentucky Kingdom and Hurricane Bay is a 63-acre theme park in Louisville, Kentucky with more than 70 rides and attractions, including six thrilling roller coasters, lots of thrill rides and family classics, and a large selection of children's rides. Kentucky Kingdom will also feature a NEW roller coaster this year, Kentucky Flyer. The Hurricane Bay water park boasts two wave pools, two rivers, two children's activity pools, a water coaster, and oodles of water slides. Whether you have a need for speed or prefer drifting peacefully along the lazy river, Kentucky Kingdom has something for everyone. Relax in the shade as you watch one of our entertaining shows and browse our retail shops for the perfect souvenir. And what would a trip to a theme park be without some amazing eats? You can choose from our flatbread pizza, delicious burgers (including a black bean burger for vegetarians), tacos and nachos, hand-dipped ice cream, and dozens of other treats.

To top off all this fun, we’ve got some special offers for school groups.

EDUCATION IN MOTION

What better way to learn about Newton’s laws than to live them while riding a world-class roller coaster? After all, an education in motion stays in motion - and sticks with you!

An Education in Motion field trip to Kentucky Kingdom will engage your students with STEM-focused activities in a unique setting, giving them an unforgettable experience that brings science to life. Our website offers downloadable workbooks with math, science, and art lessons for every grade level, all based on the rides and attractions at the park. All workbook activities are teacher-approved and cover many of the Next Generations Science Standards topics.

If you’re looking for a way to reward your students for a great school year, look no farther! Education in Motion covers all the bases: it’s fun, educational, and affordable. Ticket prices start as low as $19.95 and vary according to group size and date.

SCHOOL DAYS

Kentucky Kingdom is open exclusively on certain days in May for school groups who reserve their spot in advance. In 2019, these dates are May 16, 17, 23, and 24. The cost of a ticket is only $19.95 per person and every tenth ticket is free!

On School Days, Kentucky Kingdom is open from 9:00 a.m. until 4:00 p.m. and select attractions in Hurricane Bay are open from 11:00 a.m. until 3:00 p.m.

SECOND DAY FREE FOR SCHOOLS OUTSIDE KENTUCKY

Schools outside of Kentucky can take advantage of our special offer for out-of-state groups: two days at the park for the price of one! After your first day’s visit, you are entitled to return for free on the following day and you receive free soft drinks on both days - an unbeatable value! Ticket prices start as low as $19.95 and vary according to group size and date.

Visit our website for more information or to make reservations: http://www.kentuckykingdom.com/groups/education-in-motion/schooldays@kentuckykingdom.com
SUMMER FUN TO FIT EVERYONE

Take charge of your summer fun with a vacation that’s perfect for you in Sevierville, Tennessee.
From outdoor adventures to theme parks and amusements — even shopping trips — sometimes it’s hard to choose how you want to spend your summer vacation. It can be even harder to find a destination that pleases everyone traveling with you. But never fear, Sevierville, Tennessee is here with perfect summer break ideas to help you get the most fun out of the season.

Outdoor Adventure
Have an active summer vacation this year and pack your itinerary with memory building outdoor adventures. Take the family on one of a dozen zipline excursions. Daredevils love The Goliath, a 400-foot-high zipline at Foxfire Mountain Adventures. Or choose closer-to-the-Parkway options like Adventure Park at Five Oaks and Adventure Works Climb. Zip. Swing., both of which offer zip line and ropes challenge course options. In Sevierville you can also go ATVing, play low impact paintball, tour Forbidden Caverns and hike in Great Smoky Mountains National Park – a free national park that is also America’s most visited.

Family Fun
Spring Break is family time and one family favorite is Sevierville’s Wilderness at the Smokies Water Park Resort. There you can weatherproof your vacation in their massive indoor and outdoor waterparks filled with big waterslides, a wave pool, surf simulator and plenty of play areas for even the littlest kids. This summer you can also enjoy family friendly attractions like Tennessee Smokies Baseball, where the home team just happen to be the AA affiliates of the Chicago Cubs. Explore Rainforest Adventures Discovery Zoo, zip around NASCAR SpeedPark’s eight go kart tracks, and brush up on your ninja warrior skills at Sevier Air Trampoline and Ninja Warrior Park.

World-wide entertainment icon Dolly Parton hails from Sevierville, Tennessee and her hometown has honored her with a bronze statue in the middle of the historic downtown district. Stop for a photo-op with the bronze beauty before making the quick trip to her nearby Dollywood theme park.

Make it a Reunion
With a little planning and coordination, it’s easy to turn your summer vacation into a family reunion. Plan to meet up with grandparents and extended family for some incredible time together in Sevierville. Book a luxurious log cabin big enough for everyone and take advantage of cozy fireplaces, hot tubs and game rooms. Then plan activities all ages will enjoy – from historic museums and discovery zoos to go kart tracks and shopping. Sevierville is only a few hours away from major metro areas including Atlanta, Charlotte, Nashville, and Cincinnati and offers convenient interstate access from I-40, I-81, I-75 and I-26.

For more information about everything there is to see and do in Sevierville this summer, go online to VisitSevierville.com.

Dollywood
Dollywood is at the head of the class when it comes to fun, interactive learning in a beautiful outdoor setting.

FREE STUDENT LUNCH TEACHER SEASON PASS STUDENT TICKET

*Exclusive school field trip pricing available. Dolly provides a FREE LUNCH to all students visiting on a weekday field trip. Plus, book at least 2 weeks in advance & receive 1 FREE student admission and 1 FREE teacher season pass with every 15 paid admissions!

Visit Dollywood.com/SchoolFieldTrips or call 1-888-428-6789 to learn more.
What better way to learn about science and enjoy the summer than with hands-on labs and summer camp activities in a beautiful outdoor setting! That’s what Guided Discoveries’ Astrocamp provides kids during the warm months – a chance to learn more about science and enjoy a traditional summer camp experience.

As experts in outdoor science schools and educational adventure summer camps, we here at Astrocamp make a positive difference in the lives of children through unique opportunities of discovery. Our beautiful outdoor locations, combined with hands on labs, field activities, adventure and traditional summer camp fun, enrich and inspire the lives of young people. Our programs allow kids to build life skills for a productive future.

Our summer camp program in Virginia provides an experience of a lifetime for boys and girls, ages 8-14. Astrocamp Virginia is the finest sleep away science adventure camp.

Just two hours north of Raleigh, North Carolina, our beautiful 406-acre camp is found on the edge of the Staunton River surrounded by groves of oak, crepe myrtle, and walnut trees. While at AstroCamp Virginia, campers and counselors are housed in comfortable, climate-controlled cabins with bunk beds. Cabins typically house six-to-eight campers and two-to-three counselors. All of our high-quality, delicious meals are served buffet style in our dining hall.

AstroCamp is home to a state-of-the-art observatory and labs that were custom built to meet and exceed the learning needs of campers with all different learning styles. Our eight labs provide campers with a safe environment where learning is a hands-on experience.

Space exploration, physical and earth science, memories, friendships, and FUN are in store at our exciting one-week sessions. From the time of Sunday check-in, the packed week begins as kids get to know one another and bond before Monday’s core activities. When the sun rises on Monday, the core activities (3D Printing, Robotics, Drones, etc.) and electives (Go-Karting, Space Art, and Dungeons & Dragons) begin – rotating throughout the week for everyone to try.

Rest and relaxation is also part of our summer camp experience. We build in time for siestas and recreational activities to break up the day. At night, there may be a lake or pool party, campfires, theater or campouts to unwind and mingle with others.

Astrocamp Culture: Standards, Instructors And Counselors

We have fun and make sure learning science is just as fun with qualified instructors leading the way in core activities. AstroCamp takes pride in hiring the highest quality staff and undergoes an extensive American Camp Association (ACA) accreditation process every five years. The accreditation requires we adhere to more than 250 standards ranging from safety to program design.

All of the AstroCamp instructors are required to have at least a Bachelors Degree, and it is not uncommon for our instructors to have a Masters Degree or PhD.

Our instructors come to AstroCamp from all over the United States and occasionally from overseas. Safety is one of our primary goals therefore all instructors are required to have first aid, CPR-PR, and Waterfront Lifeguard certifications as well as comprehensive on-site training.

All cabin counselors are current university students with a background working with children. Applicants go through a rigorous hiring process including multiple interviews, a background check, and drug testing. Many cabin counselors were even campers themselves!

Counselors go through a rigorous 8-day training program prior to any campers arriving at camp. They are trained in team-building, group-leading, child development, safety, and being sensitive to individual campers needs and life experiences. Counselors complete training with the tools and knowledge to support campers through common camp challenges such as homesickness, trying new things, and friendship building.

Preparing For Camp

We provide all the information you need to get ready for camp – from checklists to fees to housing to flight information. We want to make sure you’re well-informed about our process beforehand and also any needs your camper may have during the course of the week.

Please visit https://astrocampsummerva.org/parent-guide/ to find all the information you need to enroll your camper this year.
ASTROCAMP VIRGINIA

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www.astrocampschoolva.org
Who doesn’t want a reason to visit the beautiful Florida Keys? With convenient flights to Key West, Miami and Fort Lauderdale, the History of Diving Museum is a short scenic drive away, located in Islamorada (MM83). Divers and land-lovers alike are amazed by one of the world’s largest collections of diving equipment. Exhibits span over 4,000 years of “man’s quest to explore under the sea”. The displays tell an international story that highlights both male and female pioneers, as well as those who broke through racial and ethnic barriers to descend to the ocean floor. The Museum begins with early breath-hold diving and extends through the development of diving bells, diving machines, hard hats, scuba and technical diving. It includes focused areas like the unique south Florida connection to recreational diving, underwater photography, marine biology and treasure diving. Also highlighted are areas such as Military Divers and Adaptive Diving for those with disabilities. Along with core artifacts, there is a Featured Exhibit room which hosts special interest exhibits for a limited time.

Over 17,000 visitors from all over the world and all 50 states pass through the doors annually for self-guided tours and scavenger hunts. The Museum is open daily from 10am to 5pm and, as an added value to the community and travelers, hosts a FREE Immerse Yourself! Presentation at 7pm on the third Wednesday of every month. HDM also holds unique Dive Into History weekend events throughout the year that include historical presentations and family fun activities. In addition, with scheduling and advanced notice, HDM offers extended hours and guided tours as well as Museum in Motion programs to complement the mission, artifacts and Featured Exhibits. The programs are available on-site or off-site to present to schools, universities, community groups and organizations. It is our way to enhance the Educational Outreach component which compliments STEM and STEAM programs as well as engage the public.

Planning a trip to the Florida Keys this summer? Dive in to explore our new Featured Exhibit, opening June 2nd. It is a collaboration between NOAA, the Florida Keys National Marine Sanctuary, Biscayne National Park and Diving with a Purpose (DWP) and reflects the research and marine survey projects worked on during a 15 year partnership. Over the course of that time HDM has hosted several presentations highlighting the progress. In addition, new discoveries have been the focus of documentaries and numerous media reports, most notably “The Guerrero Slave Ship Project”. Celebrating the 15th anniversary makes this a perfect time to gather a collection encompassing the full scope of projects to share with the public, inspiring others to get involved and showing the value of mentoring and citizen science.

The upcoming Featured Exhibit celebrates DWP’s partnering with Sanctuary organizations to further their mission. They are a community-focused nonprofit organization dedicated to the conservation and protection of submerged heritage resources by providing education, training, certification and field experience to adults and youth in the fields of maritime archaeology and ocean conservation. A special focus of DWP is the protection, documentation, and interpretation of African slave trade shipwrecks and the maritime history and culture of African-Americans who formed a core. 15 Year
HISTORY OF DIVING MUSEUM
4,000 YEARS OF MAN’S QUEST TO EXPLORE UNDER THE SEA

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Odyssey: Restoring our Oceans, Preserving our Heritage will be open from June 2nd to December 31st. Our focus with this exhibit is to grow diversity in the diving community and create a traveling exhibit that will be offered to other Museums and non-profits after leaving HDM.

The History of Diving Museum is a 501(c)(3) non-profit that opened in 2005. It has been awarded consistent Trip Advisor “Certificate of Excellence” Awards and listed in their “Hall of Fame” for the past five years and was honored as the 2019 Readers Choice Award for the “Best Cultural Experience” in the United States and Canada by Sport Diver and Scuba Diving Magazines. The last Featured Exhibit Dive Into Art (January 2019 to April 2019) was a collaboration with the Art Guild of the Purple Isles to show current works by local artist and over 200 pieces made by local students. Also included was the history of early creative forerunners who began sketching scenes underwater inside a diving bell, used a diving suit in the late 1800s to paint underwater and a free-diver whose pieces were used for the cover of Skin Diving Magazine, then continues on to scuba ventures and new projects. The exhibit has been well received by the public and was given a GEM Award by the Monroe County School Board recognizing the creative way to bridge visual arts with history. HDM and the Art Guild are in discussions to do another art project opening in January 2020 that will focus on repurposed marine debris.

Visit DivingMuseum.org/education-tours to find out more about tours, field trips and events or email: programs@divingmuseum.org.
STUDENT TRAVEL

Troy University’s Rosa Parks Museum preserves Parks’ lasting legacy

On Dec. 1, 1955, the act of one courageous woman sparked a movement that brought change not only to the city of Montgomery, Alabama but throughout the United States. Rosa Parks, often referred to as the mother of the Civil Rights Movement, refused to relinquish her seat on a Montgomery city bus to a white male. Her subsequent arrest at the intersection of Montgomery and Lee streets in downtown Montgomery led to the 382-day boycott of Montgomery buses by African Americans.

Today, Troy University’s Rosa Parks Museum stands on the spot of Mrs. Parks’ arrest. Located on the University’s Montgomery Campus, the Museum opened on Dec. 1, 2000, with the mission of preserving and interpreting the story and lasting legacy of Mrs. Parks and the Montgomery Bus Boycott for future generations.

Constructed on the site of the former Empire Theater, the Museum has become a major landmark in the revitalization of downtown Montgomery and features a permanent exhibit chronicling Rosa Parks’ arrest and the subsequent bus boycott, a children’s wing called the “Cleveland Avenue Time Machine,” an exhibit hall, archives, an auditorium, a gift shop and a conference room.

Visitors enter the museum through the Charles Cahn Baum and Family Atrium, dedicated April 22, 2017, which is home to an information desk, a bust and display of various illustrations of Mrs. Parks, and a life-size bronze sculpture of Mrs. Parks seated on a bus bench created for the Museum by renowned sculptor Erik Blome of Chicago.

The permanent, interpretive exhibit features six distinct areas that tell the story of Rosa Parks’ arrest and the accomplishments of the men and women involved in the 1955 Montgomery Bus Boycott. Artifacts include a restored 1955 station wagon, a replica of the public bus on which Mrs. Parks was sitting on the day of her arrest and original historic documents of that era.

Known as the “Cleveland Avenue Time Machine,” the children’s wing features a 20-minute virtual trip through time on a replica of the Cleveland Avenue bus where Mrs. Parks was arrested. Using special lighting, seven-projector video, audio and fog effects, the “Time Machine” takes visitors back in time, covering historical events through the Jim Crow Era up to the modern day Civil Rights movement.

In addition, the Museum regularly hosts traveling exhibits in its gallery, which is free to visitors during normal business hours. The traveling exhibits along with special programming such as a summer day camp for children, community forums and an annual Juneteenth celebration offer thought-provoking links between past and present human rights issues.

The museum is located at 252 Montgomery Street in Montgomery, and its hours are Monday through Friday, 9 a.m. to 5 p.m. and Saturdays 9 a.m. to 3 p.m. Admission is $5.50 for children under 12 and $7.50 for visitors 12 and up. Tours of both the Museum and the Children’s wing are $14 for adults and $10 for children. For information, contact the Museum at 334-241-8615 or visit the website at troy.edu/rosaparks.

Learn about the woman who became a movement.

More than sixty years ago, Rosa Parks’ simple act of bravery became an important symbol of the Civil Rights Movement. Today, you can step back in time and experience the sights and sounds that forever changed our country. Troy University’s Rosa Parks Museum is a state-of-the-art, interactive facility that honors one of America’s most beloved women. Visit today and learn all about this freedom warrior firsthand.

For ticket information and hours, visit troy.edu/rosaparks or call 334-241-8615.

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THERE’S A FINE LINE BETWEEN SINGING OUR PRAISES AND SCREAMING OUR PRAISES.

From exhilarating zip line tours to hands-on history lessons, Red Mountain Park is proof that you can have fun and learn something at the same time. In fact, we’ve got lots of undiscovered, authentic educational opportunities that will not only spark insightful, intelligent conversation, but have you screaming for more. Right here in Birmingham.

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As if the unseasonably warm temperatures, budding trees, and blooming flowers weren’t enough, a sure sign that spring is coming is the start of Potomac Eagle Scenic Railroad’s 2019 season.

Located in the eastern panhandle of West Virginia, Potomac Eagle is less than three hours from Baltimore, Pittsburgh, and Washington, DC. Close enough for a day trip, yet far enough away to escape the hustle and bustle of the every day.

Your journey begins at Wappocomo Station, situated next to a charming homestead and a sprawling view of the mountains. Enjoy the sounds of vintage diesels as they lead you through beautiful pastures and farms dating back to the 1700s. As you wind along the South Branch of the Potomac River, you’ll enter a visually striking gorge known as the Trough. One of the most scenic spots along the South Branch, the Trough is home to American bald eagles.

Bald eagles need clean water and tall, mature trees for suitable habitat. The South Branch provides the perfect home. Plus, the Trough, the six-mile-long, steep, narrow canyon that the South Branch flows through, limits access to this area. This isolation is the most important need for bald eagles to thrive.

Mature bald eagles are easy to spot with their distinctive white head and tail feathers and yellow beak and feet. Juveniles have mottled-brown tail, head, and body feathers with some white in the wing linings while their talons and bill are yellow. Although
eagles are spotted on over 90% of excursions. May and June are the best times to see the young eaglets.

While bald eagles are the main attraction for most passengers, Potomac Eagle offers something for everyone! A favorite way to view the scenery and those majestic eagles is a ride in one of our observation cars. One has a roof but large open windows; guests can ride here anytime during the trip. The other observation car is the gondola. It is completely open with no roof. Passengers can ride there while traveling through the Trough.

Potomac Eagle offers two classes of service with unique passenger cars. Step back in time and ride in a 1920s passenger coach. Open a window and enjoy the breeze as the train travels along the South Branch. Or, treat yourself to Club, which includes meal service aboard a 1950s lounge car.

Excursions include narration about the railroad, local history, and things to do in the area. Romney is in Hampshire County, the oldest county in West Virginia, established in 1754. The 52.4-mile line runs through three counties—from Green Spring to Petersburg—and is an original Baltimore and Ohio Railroad line, over 100 years old. When West Virginia purchased the line in 1978, it became the first state to own and operate its own freight service. Potomac Eagle began scenic excursions in 1991.

Learn more about Potomac Eagle Scenic Railroad at potomaceagle.info.
Turn Your Myrtle Beach Vacation into an Edu-Vacation with Brittain Resorts & Hotels

If there’s one thing Brittain Resorts & Hotels knows how to do is to create the ultimate Myrtle Beach family vacation. From oceanfront resorts filled with lazy rivers, water slides and giant pools to thrilling attractions, award-winning dining, and non-stop entertainment, Brittain Resorts strives to make each vacation experience unique. The Grand Strand is not only a top vacation destination, it has everything needed to combine fun and learning!

**Take it Outside**

Myrtle Beach is best known for its year-round mild weather and days filled with plenty of sunshine — making it possible to plan outdoor educational activities any season. Combing the outside with learning nature, Brookgreen Gardens is a botanical garden that’s home to a variety of sculptures, a lowcountry zoo, children’s discovery room with interactive stations for ages four to 12, and even a children’s nature and sensory trail. Myrtle Beach State Park offers bird watching, a beach perfect to find shells, and trails like Sculptured Oak Nature Trail, perfect for self-led scavenger hunts. Huntington Beach State Park is teeming with coastal wildlife that you can learn about from a naturalist in their Coastal Exploration program. Make sure to take a self-guided audio or docent-led tour of Atalaya, a national historic landmark.

**Get Up Close & Personal**

Although you can see tons of Myrtle Beach wildlife in its natural habitat, at Myrtle Beach’s own Ripley’s Aquarium you can immerse yourself in a world of colorful marine life while pursuing exhibits and interactive zones that explain all about the creatures who call the ocean home while protecting and conserving the ocean’s environment. Alligator Adventure is the reptile capital of the world and the perfect spot to get up close and personal with a variety of species — birds, snakes, alligators, crocodiles and more. Enjoy live shows where you can watch alligator feedings and even hold a snake! And, if you can’t fit everything into one day, no problem, the second day is free! Other exciting, entertaining and educational must-see attractions are Fun Warehouse, EdVenture Children’s Museum and Wonderworks.

Need a place to stay? Brittain Resorts and Hotels has you covered. Offering a premier collection of oceanfront resorts and hotels, we can accommodate any size group. Whether you choose to get wet n’ wild in our indoor and outdoor water parks at Breakers Resort, slip n’ slide your way down our water slides at Compass Cove, or kick back in our lazy rivers at Caribbean Resort - we know how to make a big splash. Two of our resorts, The Strand and Dayton House Resort, offer a complimentary deluxe hot breakfast. And for the adults in the group who need a little caffeine to keep up, five of our properties have on-site Starbucks coffee shops. So, if you’re ready to get your fill of sunshine, dive in the ocean and turn your vacation into an edu-vacation. Give us a call at 877-281-7259 or visit brittainresorts.com.
Why Use a Tour Planner?

Super Holiday Tours was founded over 40 years ago with the mission of providing service to student groups. Since 1975, Super Holiday Tours has developed a business model that provides full service travel arrangements for student performing groups traveling throughout the US and Europe. We work with over 5000 students comprising over 120 groups each year and maintain the highest standards of safety, customer service and performance planning in the industry. Super Holiday Tours also produces music performance events in Nashville, Orlando, Carnegie Hall and Daytona Beach.

Many ask “why should I use a tour planner like Super Holiday Tours?” Here are the five most common reasons why tour consultants are necessary in planning a group tour.

Time/Value Proposition
Save Time and Energy
An educator's time is valuable. Most teachers need more time for planning and teaching. With all of the duties outside of teaching, who wants to add yet another? Realize how valuable your time is, and “hire” a trip planner to handle all of the details.

Initial tour information is discussed over the phone, email or in person to begin the process. Once all of the data is gathered, the trip planner is able to create a package that

Tour Planner
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will be well researched and meet the needs of each individual group.

Resources and Buying Power

Buying Power and Industry Knowledge

Tour operators have tremendous buying power due to the high volume of individual travels that are serviced. Often through their connections with vendors, they are able to receive better pricing for attractions and hotels, which saves you money on your overall trip. There is a common misconception that a bigger group will drive a lower price. In the case of restaurants, attractions, and often hotels, this is true. However, airlines and some major hotel chains see this as a drain on their inventory, and actually charge higher prices. Tour operators are in the position to negotiate pricing for the group leader, often a very time-consuming task.

Insuurance

When booking travels and making any trip arrangements, many insurance options are offered to protect the travelers during the trip. This insurance covers the travelers for injuries sustained during the trip, as well as lost luggage, airline delays, and medical insurance for international trips. Additionally, participants can purchase insurance for cancellation before the trip due to family and medical issues. Tour Operators carry professional and general liability insurance as additional insurance on our group trips; teachers planning their own trips are rarely covered under their schools’ insurance, which leaves them at great personal risk. Do not take this lightly. Being personally named in a lawsuit could devastate a career in minutes.

Safety Due Diligence

The help of a tour operator becomes especially useful when planning youth-oriented journeys. Safety becomes the number one issue as the parents want to ensure their children’s safety at all times during the travel. Trip organizers review all safety regulations and ensure that all booked components meet the standards of the industry and comply with generally accepted safety standards.

Destination Knowledge

Financial Considerations

Do you have the skills, time and resources to accept trip payments, track who owes money, and contact parents to remind them to make payments? This can be the most time consuming activity involved in planning a trip. Let your tour operator handle all of this for you. Many can create online accounts that will allow parents to pay the operator directly. This also allows parents to pay with credit cards and plan how and when they can make payments. This one benefit may be the greatest benefit of using a trip planner.

Planning a student tour is best addressed by professionals who are experienced planning group travel. Super Holiday Tours is a travel planner that can meet all of the needs of your trip planning. Since they have been in business for more than 40 years, they have the expertise, technology, staff and knowledge of dozens of destinations throughout the United States and internationally.
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