

Spotlighting promising practices from the 2021 Making Schools Work Conference

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Oklahoma Students Designing Products for NASA

By Tim Shaughnessy, SREB, and Diane James, SREB

Students at **Meridian Technology Center** in **Stillwater, Oklahoma**, are enjoying maximum benefits and national recognition for their project-based learning experiences. In the 2020-21 school year, three teams of students in Meridian's STEM Academy were selected as finalists in NASA'S annual HUNCH design competition.



Debbie Short, Instructor, Pre-Engineering STEM Academy at Meridian Technology Center, Stillwater, Oklahoma

HUNCH — **H**igh Schools **U**nited with **N**ASA to **C**reate **H**ardware — is a national instructional partnership between the National Aeronautics and Space Administration and schools. HUNCH uses project-based learning to inspire students to build cost-effective hardware and soft goods for use aboard the International Space Station. Challenged to find solutions to real-world problems identified by NASA engineers and astronauts, students receive feedback on their concepts, designs and fabrication tasks from NASA engineers and staff.

Debbie Short, an instructor in Meridian's Pre-Engineering STEM Academy, says her students have participated and been finalists in the HUNCH program for the past two years.

What's more, all three of the three student teams who presented their final projects in 2020-21 were finalists, "which personally just blew me away," says Short.

The HUNCH program has six different pathways that include design and prototyping, software, hardware, sewn flight articles, video and media, and culinary. Each September, NASA releases a description of 10 to 15 potential HUNCH projects. Students select which projects they are most passionate about and want to tackle. This year, Meridian students chose to work on Simulated Gravity VR/AR (Virtual Reality/Augmented Reality), Energy Food Bite Dispenser and Trash Ejector.

The Projects and the NASA Challenge

Simulated Gravity AR/VR: When astronauts live on the space station for several months at a time, even though they exercise every day, they often experience difficulties when they return home due to the effects of low gravity on the human body. NASA challenged students to use virtual reality and/or augmented reality technology to design a space station environment that simulates the effects of gravity on astronauts living in that environment.

Meridian students Collin Bovenschen, Brendan Bovenschen, Emma Li and Kurt Sewel used Oculus Quest hardware and Unity software to design a virtual reality simulation that illustrates how gravity would work in a rotating space environment with altered states of gravity.



"Stay awesome!"

Stephen Pruitt, president of SREB, welcomes educators back to school with a message of support and confidence in our teachers' and leaders' ability to rise to the challenges of this new school year.



"We congratulate you!"

Dale Winkler, vice president of School Improvement, shares how we help teachers and leaders with resources for online teaching, state and district planning, serving students with disabilities, counseling, unfinished learning and more.



"We have your backs!"

Scott Warren, director of Making Schools Work, wants educators to know SREB stands ready to support them with instructional tools for online and blended learning and reaching students in need — plus supports for their own emotional health, too.

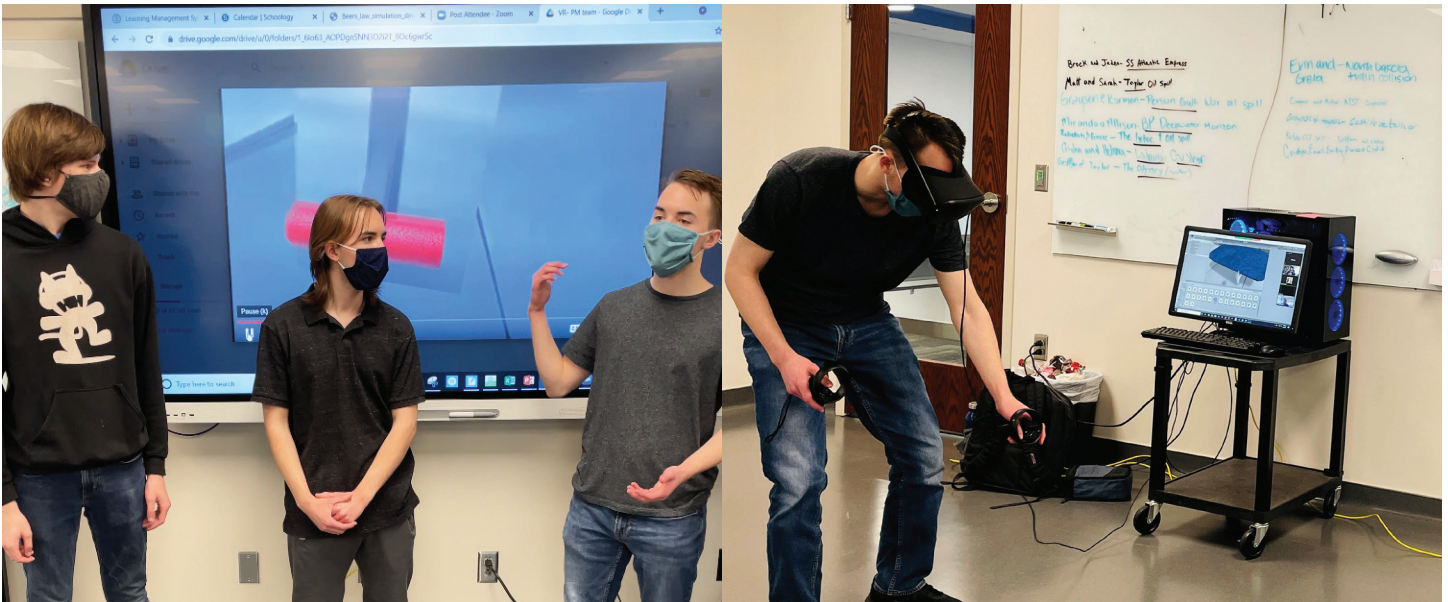


Image left: Kurt Sewell, Collin Bovenschen and Brendan Bovenschen were finalists for their Simulated Gravity AR/VR project. Image right: Brendan Bovenschen demonstrates their virtual environment.

Mars Trash Ejector: Astronauts traveling to and from Mars will accumulate a significant amount of trash that could be detrimental to their mental and physical health and have a significant impact on fuel consumption. NASA challenged students to come up with a way to dispose of trash on the ISS or smaller shuttle craft.

Students Sam Glenn, Gage Allen, Wyatt Lopp and Seth Thibodeau designed a model prototype that ejects non-human waste from the space station directly into space without losing air in the station. Using a soup can as a stand-in for a small-scale trash can, they demonstrated how pressurized air and locking mechanisms could be used to accomplish this task.

Energy Food Bite Dispenser: Future astronauts will need to walk on the moon or Mars in their space suits for up to six to eight hours at a time — a strenuous task for which they’ll need to maintain their energy. NASA’s astronauts challenged students to find a way to store small amounts of food or water inside their suits.

Student creators Faeron Dewart-Cordray, Reagan Todd and Caroline Elki used 3D CAD (computer-aided design) software to design a dispenser, similar to Pez candy, that could be worn in a flexible tube around an astronaut’s neck and dispense bite-sized foods like fruit chews or beef jerky.

If NASA uses student finalists’ designs, their names will be put on those items when they’re used aboard the International Space Station, says Short. “It has been one of the best project-based learning experiences we’ve implemented in our STEM Academy,” she shares.

The Nine-Month Project Journey

Short says many of her students had minimal knowledge of NASA before beginning the HUNCH program, so at the start of school, she asked students to conduct preliminary research about the space agency. In September, NASA announced the 10 to 15 HUNCH projects, and Short’s students were able to select the ones that best captured their passions and interests.

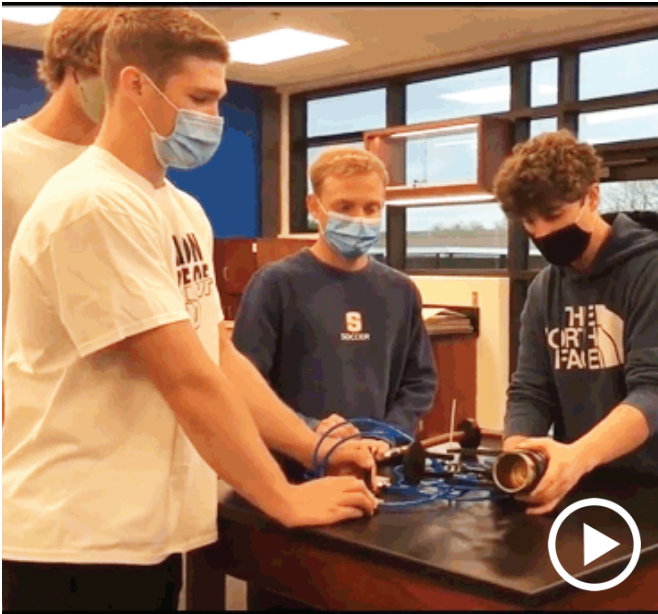
Students then conducted research about their chosen projects in October and November. As part of the process, students searched for patents, participated in Zoom meetings with NASA researchers and developed ideas for their prototypes and display boards.



Gage Allen, Sam Glenn, Seth Thibodeau and Wyatt Lopp were finalists in NASA’s Mars Trash Ejector project.



Faeron Dewart-Cordray was a finalist for NASA’s Energy Food Bite Dispenser project.



Listen to students describe their projects in a short “elevator speech” in this video shared at SREB’s Making Schools Work Conference in July.

In late winter and spring, students began the hands-on work of transforming their ideas into models, testing prototypes and documenting their research. They made final presentations of their solutions to NASA in May 2020. Before COVID-19, HUNCH students could travel to the Johnson Space Center in Houston, but during the pandemic, presentations were made virtually.

About Meridian Technology Center

Meridian Technology Center is a shared-time facility that serves 10 local school districts. The school’s STEM Academy includes Pre-Engineering and Biomedical Sciences. Meridian has been designated as a distinguished high school with Project Lead the Way for four consecutive years. High school students in grades 10-12 are on the campus for a half-day — morning or afternoon.

HUNCH aligns with Meridian’s senior capstone engineering development and design course in which students are required to research, design and test a solution to real-world problems. The pre-engineering students are given a budget for their HUNCH projects.

Contact: Debbie Short, debbies@meridiantech.edu;
Facebook: [@meridiantech.edu](https://www.facebook.com/meridiantech.edu)

Implementing Standards-Based Grading

By Diane James, SREB

Eliminating letter grades in schools.

For many educators, that concept is a jaw-dropper; a true non-starter. But for the administration at **Mapleton Middle School** in **Ashland, Ohio**, it’s an opportunity. Principal Skip Fulton sees eliminating letter grades as a paradigm shift that can lead to increased student learning and achievement.



*Skip Fulton, Principal,
Mapleton Middle School*

In the 2018-19 school year, the school began a three-year process that led to schoolwide implementation of standards-based grading. “Our biggest goal was to change the conversation about grading. We can’t do that if we’re still thinking about an A, B, C world, so we went whole hog and threw it out the window,” says Fulton.

What Is Standards-Based Grading?

Standards-Based Grading (also known as standards-based assessment) is a system of assessing what students know and can do based on their mastery of content standards instead of traditional grading methods based on the percentage of work students complete. With standards-based grading, students who master standards quickly can move on to more challenging concepts, while students who need more support receive personalized interventions and reteaching.

Mapleton Middle School’s handbook further clarifies that standards-based grading rests on the idea that learning expectations are clearly defined, students have multiple opportunities to demonstrate their learning, and academic achievement is reported separately from non-academic accomplishments such as class participation and extra credit.

Why Standards-Based Grading?

One driving force behind Mapleton Middle School’s shift from traditional grading to standards-based grading was a desire to increase rigor and improve college readiness. Another, more important force was the obvious “difference between grades in what our state report card said and what our classroom grades said,” notes Fulton. Although classroom grades were good, students’ state test scores didn’t match the same level of proficiency.

Mapleton Middle also embraced standards-based grading to remove grade inflation, encourage students to own their learning, foster a growth mindset and give teachers a clearer picture of students’ strengths and deficiencies.

Three-Year Implementation Journey

Katie Hennessy, a seventh-grade English/Language Arts teacher and Cassie Swanson, a seventh-grade World Studies teacher, were part of the school’s ELA standards-based grading pilot rollout team in 2018-19.

Swanson notes that the first steps of the school’s adoption of standards-based grading involved observing a standards-based classroom at a nearby school to see how it works. The pilot team talked to teachers and students and did their own research, including reading *Rethinking Grading* by Cathy Vatterott, a book they highly recommend.

Pilot staff then began “deconstructing our standards,” says Swanson, to determine what they wanted students to know. They used state assessment data to determine which standards needed the greatest emphasis in classroom instruction.

“In the very first year, we started experimenting with our grade book and cutting out the fluff,” says Swanson. Teachers didn’t give grades for extra credit or practice homework, but students knew that completing such assignments is important to mastering the standard connected to it.



*Kattie Hennessy,
ELA Teacher,
Mapleton Middle School*

*Cassie Swanson,
World Studies Teacher,
Mapleton Middle School*

Despite disruptions caused by the pandemic, the process for planning whole-staff collaboration and professional development around standards-based grading began in the 2019-20 school year. Hennessy says this included working with various departments to establish learning levels for each standard, determining the progression for what students should know and be able to do in terms of skills, and then developing assessments for the most critical standards.

Considerable time was spent formatting the report card and learning management system. Teams collaborated weekly in department meetings. “If you don’t have those conversations as a whole staff, as small groups and as individuals, you’re not going to get anywhere,” insists Fulton.

During the summer before the 2020-21 school year, Mapleton’s staff spent time looking at the standards and creating a rubric around them, using a learning progression on a scale of 1 to 3.

Performance Level Descriptors

Performance Level	Code Shown on Progress Book and Report Card
Met the standard	3
Approaching the standard	2
Developing knowledge of the standard	1

Fulton says the school decided on a 3-2-1 system because “If a student meets the standard set by the state, then why have a level that’s higher? Why have a higher level that some kids might not be able to achieve?”

In the 2020-21 school year, only students in the core subject areas of ELA, math, science and social studies had standards attached to them. Electives and special courses did not. Students in those courses received an overall performance level of 3, 2 or 1.

In 2021-22, all courses will have standards attached to them and the 3-2-1 progression system will change to M = met the standard; AP = approaching the standard; DK = developing knowledge of the standard, and NE = no evidence.

Assessments and Reassessments

Students are assessed for each standard throughout the nine-week period. Because reassessments are a vital component of standards-based grading, each student who does not achieve level 3 mastery is required to reassess after completing remediation activities. Students have multiple opportunities to retest and master standards and are not penalized for needing extra time. No reassessments are done in the last week of a grading period.

Successes

Standards-based grading is still new at Mapleton Middle, but overall, students are beginning to appreciate the learning process rather than just earning a grade, and teachers have begun to see a “shift in mindset happening with students,” says Hennessy. Students take greater ownership of their learning. Students with an Individualized Educational Plan feel encouraged when “they’re getting a 1 instead of a zero,” says Hennessy. On the other end of the spectrum, gifted and advanced students may demonstrate mastery and move on to more challenging work.

Contact(s): Skip Fulton, mapl_sfulton@tccsa.net; Katie Hennessy, mapl_khennessy@tccsa.net; Cassie Swanson, mapl_cswanson@tccsa.net

Districts Improve Teacher Recruitment and Retention

By Joe Tadlock, SREB, and Jahana Martin, SREB

Good teachers are a district's greatest asset, but most K-12 school districts face challenges recruiting and retaining them, especially in low socioeconomic communities. More than any other school-related factor, teacher effectiveness arguably has the greatest impact on student achievement and success. That's why districts urgently need to recruit, prepare and retain high-quality, effective teachers.

Once quality teachers are hired, school districts must commit to continuously adopting and adapting programs and policies that persuade them to enhance their instructional and classroom management skills and remain in the profession.

To meet this need, Insight Education Group created networked improvement communities to tackle teacher recruitment and retention in small, rural school districts in Delaware, Indiana, South Carolina and Texas. Their goal was to create awareness of the most effective characteristics of a recruitment and retention system and assist districts in those states in implementing such a system.

Using Data in Teacher Recruitment

Insight Education Group emphasizes the importance of data to any effective recruitment and retention system. The first steps for districts are to collect meaningful data from teachers and administrators to capture what is and is not working with districts' existing recruitment and retention systems, analyze that data to identify trends and reflect on the practices and strategies that produced the data.

"Data help us see where the gaps and opportunities are for improving our system," says Jill Nyhus, former vice president of educator quality at the Insight Education Group. Districts cannot be intentional in their recruitment and retention practices without data, she adds.

Marion County Schools in South Carolina is a member of this networked improvement community. Deborah Wimberly, who works in the district's special projects and public relations department, describes teacher recruitment and retention as a team effort, not the sole responsibility of human resources. District departments must work closely with principals to ensure the right school culture is in place to support teachers. Further, teachers need opportunities to provide feedback about their onboarding experiences. Armed with principal and teacher feedback, districts can become more intentional in how they identify the right candidates for their schools.



Deborah Wimberly, special projects and public relations, Marion County School District

Recruitment is a year-round process in Marion County Schools. As Wimberly explains, "We start by identifying our vacancies and decide on our ideal candidates. We intentionally develop our message to recruit our profiled candidates." Once teachers are interviewed and placed, the district checks in with principals and surveys new hires to ensure the data from both sides inform their ongoing decision-making and hiring practices.

Increase Retention

In **Indiana's Metropolitan School District of Decatur Township**, a networked improvement community member, principals call new teacher hires within 24 hours of accepting their offers and use brief, three-to-five question reflection surveys monthly to learn more about their first-year teaching experiences.

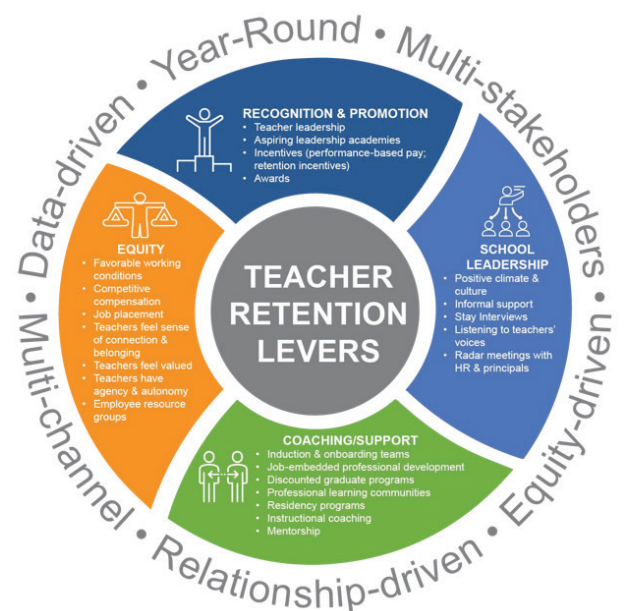


Chris Gearlds, human resources director, Metropolitan School District of Decatur Township

Getting this teacher feedback to principals quickly allows principals to make changes in their buildings that show that teachers' voices are valued and heard.

Chris Gearlds, human resources director with the district, says effective recruitment and retention systems require input from multiple stakeholders — district leaders, principals, instructional leaders, coaches and mentor teachers — to implement processes that influence whether teachers stay in the classroom.

These processes include professional development, coaching, career ladders and a strong benefits package to promote teacher growth and satisfaction. According to Gearlds, district administrators should create positive relationships and listen to teachers. What they learn from teachers can help district administrators gain the perspective they need to help create a positive culture and climate in schools districtwide.



Components of an effective teacher recruitment and retention process (Insight Education Group)

Quarterly principal check-ins also help the district ensure two-way communications between principal and teachers. These check-ins help principals reflect on the school and classroom instructional practices they have instituted and get teacher feedback.

Building Relationships

Katie Strouss of **Colonial School District in Delaware**, another member of the networked improvement community, uses relationship-building strategies to increase teacher retention in her district. “Our recruitment plan is strategic and intentional from the first moment of contact to the first day of employment, all the way through their first year teaching,” says Strouss, lead teacher for recruitment and mentoring. Relationship-building begins when Strouss meets candidates at career fairs or interviews, for example. An entrance survey then helps gauge new hires’ preferences and opinions, and they receive a welcome box from the district containing small gifts.



Katie Strouss, lead teacher for recruitment and mentoring, Colonial School District

Strouss launched Colonial Recruitment Mixers, an initiative in which new and veteran teachers and district and school leaders network and form professional and personal relationships in a relaxing environment. Although COVID-19 partially interrupted these mixers, moving them from in-person to online during the pandemic helped decrease the physical distance between faculty and reduce the new pandemic-related stressors in their lives, says Strouss.

Each Colonial school has an onboarding team comprised of mentors and coaches who connect with new hires, form early relationships and establish support systems that nurture new hires through their first year in the district. Principals conduct annual “stay interviews” with teachers to assess their plans for the following school year.

“A stay interview is an excellent opportunity to listen, and that means really listening to teachers, so they feel seen and heard. It is also an excellent opportunity for principals to directly tell specific teachers they are valued and needed in the district,” explains Jennifer Alexander, director of talent development for the district. These one-on-one conversations have helped schools retain their very best teachers.



Jennifer Alexander, director of talent development, Colonial School District

Ensuring Diversity

Another focus of Colonial School District’s recruitment and retention efforts has been a renewed and concentrated effort on diversifying its faculty. Like many school districts, Colonial’s faculty does not mirror its student demographics. Over the last two years, Colonial has been able to increase diversity by hiring more teachers of color. However, the district continues to lose far too many of these teachers each year and is continuously reexamining what it can do to meet its diversity goals.

“Our focus is on hiring and retaining educators of color and to create spaces where educators of color feel valued, heard and have a sense of belonging,” Strouss says.

Colonial School District’s commitment to intentionality with its recruitment and retention efforts led to the development of an equity workgroup to review the district’s strategic plan, equity initiatives and professional development topics. The district has conducted focus groups with current teachers of color to fully understand their realities and experiences. The district has also partnered with Delaware State University, a local historically Black university, to develop a year-long residency program to encourage more new teachers of color to consider employment with the district.

Contacts: Deborah Wimberly, carolinadwimberly@marion.k12.sc.us, [@ddwimberly](https://twitter.com/ddwimberly); Chris Gearlds, cgearlds@decaturproud.org, [@ChrisGearlds](https://twitter.com/ChrisGearlds), [@MSDDecaturHR](https://twitter.com/MSDDecaturHR); Katie Strouss, kathryn.strouss@colonial.k12.de.us, [@TeachCSD](https://twitter.com/TeachCSD)

Inspire Deep Learning With Resources From the National Geographic Society and SREB’s Powerful Instructional Practices

By Fay Gore, National Geographic Society; Leslie Eaves and Quinton Granville, SREB

The National Geographic Society, a global non-profit organization, uses the power of science, exploration, education and storytelling to illuminate and protect the wonder of our world. For over 133 years, the Society has pushed boundaries to further our understanding of our planet and empower individuals to seek solutions for a thriving, sustainable future.

Young people and the educators who reach them are key to addressing the planet’s most pressing problems. To that end, National Geographic Education has created high-quality, game-changing tools and resources designed to empower the next generation to become solution-seekers, changemakers and planetary stewards — a generation known as **#GenGeo**.

The National Geographic Society is excited to share these resources with the SREB community and embark upon a new adventure to support **SREB’s Powerful Instructional Practices**. Below, we share some of the resources the Society offers that help young people develop empathy for the earth by creating a spark that drives their curiosity and ignites their spirit of exploration. These resources enhance knowledge building and help young people develop skills to address challenges in their communities and beyond.



Game-Changing Content:

- [Learn Anywhere](#)
- [Resource Library](#)
- [Explorer Magazine](#)
- [Mapping](#)
- [National Geographic Education Blog](#)

Professional Learning Experiences

- **Online Courses:** New to National Geographic? Take a self-paced mini-course, like [Developing a National Geographic Explorer Mindset with Your Learners](#) or [Applying Geographic Thinking Skills with Your Learners](#). Fall cohort-based courses are now available.

Student Experiences:

- [Explorer Classroom](#)

SREB's Powerful Instructional Practices

If National Geographic's resources light the spark of empathy and exploration, SREB's Powerful Instructional Practices help take it one step further. The practices help teachers design effective, engaging lessons, assignments and assessments that empower students to own their learning and reach new heights of achievement in any content area. Below, we share how educators can use our PIPs for social studies, science and project-based learning to structure their use of National Geographic's resources in their classrooms.

Social Studies

National Geographic's resources are a vetted, trusted source of grade-level articles, infographics and videos that teachers can use to bring history and culture to life in their classrooms. These resources help teachers create social studies lessons that transcend instruction focused on mere recall strategies, allowing students to develop real connections between historical events and social movements and their own lives and communities. SREB's [Powerful Social Studies Instructional Practices](#) give teachers a framework for using these resources to encourage students to engage with disciplinary and interdisciplinary sources. Our PIPs help teachers create opportunities for students to learn how to read, analyze and synthesize what they glean from informational texts, primary sources and secondary sources in ways that allow them to formulate arguments and engage in discourse with their peers.

Science

SREB's [Powerful Science Instructional Practices](#) inspire students to become scientific explorers and thinkers by providing teachers with an instructional model for engaging students in scientific inquiry. Instruction structured around the PIPs encourages students to discover and observe natural phenomena, ask questions, collect evidence through experimentation and research, and present their findings. Students continuously engage in scientific and technical reading and writing to explain their thinking, question themselves and each other, and engage in collegial academic discourse. Many of National Geographic's standards-based lessons and units of study use this process. For example, their citizen science program "[bioblitz](#)" challenges students of all ages to observe and gather data and identify as many plants, animals, fungi, and other living species in their local community as they can.

Project-Based Learning

SREB's [Powerful Project-Based Learning Instructional Practices](#) cultivate rich, student-centered learning environments in which students engage in longer [project-based units of study](#) that help them make connections between content knowledge and skills and future career possibilities. The PBL planning process can be time-consuming and feel overwhelming, especially for teachers who are new to PBL instruction. By using National Geographic's unit plans as a starting point for PBL units of study, teachers can begin making small shifts in their instruction, such as incorporating local community partners as mentors and experts to help provide authentic, meaningful local contexts for specific learning within a National Geographic unit.

Learn More

Join National Geographic in its quest to support the next generation of changemakers by [signing up](#) for their newsletter and watch for future *Promising Practices Newsletters* to learn more about how SREB and National Geographic are teaming up to support educators and young people.

Contact(s): Fay Gore, cgore@ngs.org; Leslie Eaves, leslie.eaves@sreb.org; Quinton Granville, quinton.granville@sreb.org

Meet SREB's Readiness Digital Tool Suite

If you're using SREB's literacy and math Readiness courses to help underprepared students succeed in high school and college, our new Readiness Digital Tool Suite will help you quickly find and upload interactive Readiness course activities and web-based resources directly to your learning management system.

Our easy-access, Canvas-based platform houses hundreds of evidence-based Readiness lessons, links and activities that give students the knowledge and strategies they need to apply math and literacy skills to solve problems and build a deeper understanding of their world.

All Readiness learning activities that were previously available only through PDFs are now interactive learning tools that harness the power of platforms like Desmos, Google Docs, Google Slides and Jamboard. Teachers can create their own digital copies of any resource, activity or lesson from all Readiness courses and upload them into Google Classroom, Canvas, Schoology or other LMS systems. Plus our Canvas platform connects Readiness teachers with a network of peers and SREB coaches who can share new tools, ideas and approaches for implementing the curriculum.

Learn more: <https://www.sreb.org/readiness-digital-tools>

Contact: Jason Adair, jason.adair@sreb.org





Pacesetter School Award Nominations

Is your school awesome? We want to know!

SREB's Summer Conference team is seeking nominations for the 2022 Gene Bottoms Pacesetter School Awards. Outstanding middle grades schools, high schools and technology centers will be recognized at our 2022 conference. To be recognized as a Pacesetter, schools must be active members of our Making Schools Work network for two years, administer our surveys and provide evidence of how changes in school and classroom practices are impacting student success. Self-nominations are encouraged!

Nomination deadline: November 1, 2021

Learn more and download a nomination form:

<https://www.sreb.org/pacesetters>

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