



Columbus State University
Turner College of Business and Technology

COCA-COLA SPACE SCIENCE CENTER

Economic Impact Study

Columbus, GA



The Butler Center for Research
and Economic Development



THE COCA-COLA SPACE SCIENCE CENTER

Established in 1996 as an informal science education institution, CCSSC was founded with the mission of promoting interest and excellence in physical science, space science, and space exploration.



THE COCA-COLA SPACE SCIENCE CENTER

- **Students travel to the CCSSC to engage in hands-on, standards-based science learning.**
- **Interactive simulations such as the “Falcon Moon Base Adventure”, where students work collaboratively to complete experiments, collect and analyze data, and navigate a simulated journey to the Moon.**
- **Served as a key educational hub for students in the Muscogee County School District (MCSD) across the region.**
- **Students take part in interactive activities led by MCSD educators stationed at the CCSSC faculty and staff, and CSU student interns from both education and science programs.**
- **Younger students receive portable planetarium programs delivered to their schools.**
- **Immersive planetarium shows in the Omnisphere Theater.**
- **Guided tours through exhibits featuring over \$19 million in NASA artifacts.**

ROBOTICS

Over the past decade, the partnership between CCSSC and MCSD has expanded beyond astronomy and physical science to include robotics and engineering education.

CCSSC has developed facilities for 3D design and printing, programming, and robotic system fabrication, positioning itself as a regional leader in robotics education.

The CCSSC has offered a wide range of programs, including teacher training workshops, summer camps, student robotics competitions, and collaborative research initiatives funded by federal grants.

These activities have introduced both teachers and students to robotics platforms such as LEGO Spike Prime, LEGO Spike Essential, REV, drones, LEGO Mindsprings, VEX, and NAO, thereby building foundational skills in coding, engineering, and problem-solving.

ROBOTICS

In 2019, the Muscogee County School District became a FIRST LEGO School District, formally integrating robotics education across all grade levels.

That same year, Columbus State University launched its new bachelor's and master's degree programs in Robotics Engineering, creating a transparent and continuous pipeline from K-12 to college-level STEM education.

A new facility will be built to serve as a shared space for MCSD and CSU, providing a central location for students of all ages to learn robotics, engineering, coding, and 3D design. It will also provide a permanent home for NASA's Quarter-Scale Space Shuttle Test Article, the largest sub-scale shuttle prototype ever built and a one-of-a-kind artifact already in the CCSSC's possession.

MOTIVATION OF THE STUDY

CCSSC IS MORE THAN A SPACE SCIENCE CENTER.

Support CSU's innovative partnership efforts to address critical workforce needs across technology and robotic engineering.

Strengthening the local talent pipeline that was emphasized in the Columbus 2025 plan through “cradle-to-career” (C2C)

Support the University partnership with Fort Benning in building the region's robotics and engineering capabilities. laying the groundwork for a new era of collaboration among higher education, the military, and industry.

Many individuals now working in aerospace and defense industries, including NASA, trace their initial interest in STEM to their early experiences at the CCSSC—a testament to its lasting influence on career pathways.

By igniting curiosity about space, science, and technology among young learners, the CCSSC supports the development of the future STEM workforce essential to America's national security and defense technology sectors.

METHODOLOGY

This study evaluates CCSSC through four complementary perspectives

- 1. Monetary impact on the regional economy: operations and expenditures contribute to economic activity, employment, and labor income in the Columbus area.**
- 2. Quantitative student and teacher outcomes: quantitative evidence from student and teacher surveys**
- 3. Qualitative career and educational pathways: interviews, illustrating how early engagement with the CCSSC has shaped participants' academic interests and career trajectories in space science, engineering, and related fields.**
- 4. Broader national security and competitiveness implications: sustain U.S. leadership in aerospace, defense, and advanced technologies amid intensifying global competition**

MONETARY IMPACT ON THE REGIONAL ECONOMY

Impact estimated using IMPLAN input–output modeling:

Table 1. Annual Economic Impact of the Coca-Cola Space Science Center’s Operations in the Columbus, GA–AL MSA

Impact	Employment	Labor Income	Value Added	Output
Direct	16	\$591,745.43	\$753,043.05	\$1,549,572.70
Indirect	4.37	\$179,218.11	\$324,914.91	\$709,177.90
Induced	2.43	\$105,940.59	\$221,654.52	\$376,778.29
	22.8	\$876,904.14	\$1,299,612.48	\$2,635,528.88

Conservative approach:
Visitor-related tourism spending excluded.

MONETARY IMPACT ON THE REGIONAL ECONOMY

Table 2. Annual Tax Impacts of the Coca-Cola Space Science Center’s Operations in the Columbus, GA-AL MSA

Impact	Local	State	Federal	Total
Direct	\$11,695.53	\$19,850.97	\$118,347.62	\$149,894.12
Indirect	\$9,823.53	\$10,759.56	\$40,200.20	\$60,783.28
Induced	\$12,642.08	\$10,469.90	\$25,079.65	\$48,191.62
	\$34,161.14	\$41,080.42	\$183,627.47	\$258,869.02

STEM TALENT AND NATIONAL SECURITY

In the contemporary global environment, the strategic importance of STEM education has intensified.

Advanced technologies—including artificial intelligence, aerospace systems, robotics, cybersecurity, and advanced manufacturing—are increasingly central to both economic power and military capability.

The National Security Commission on Artificial Intelligence explicitly characterized the current environment as a global competition for technical talent and warned that insufficient domestic STEM capacity poses a direct risk to U.S. national security (NSCAI, 2021a).

The Commission further called for a renewed national education strategy—often described as a “National Defense Education Act II”—to strengthen the STEM pipeline from K–12 through advanced training (NSCAI, 2021b).

STEM TALENT AND NATIONAL SECURITY

U.S. leadership in science and technology depends on sustained investments in STEM education and workforce development (NASEM, 2010).

Innovative STEM workforce models are crucial to address emerging national security and competitiveness challenges (NASEM, 2025).

National security assessments again emphasize the central role of STEM talent in sustaining U.S. leadership (NSCAI, 2021a; NSCAI, 2021b; NASEM, 2010; NASEM, 2025).

NASA states that its STEM engagement efforts are designed to “attract, engage, and enable” students to pursue STEM pathways aligned with the agency’s mission and long-term workforce needs (National Aeronautics and Space Administration [NASA], 2025a). NASA’s STEM reporting further emphasizes that these efforts are intended to prepare the future workforce necessary to sustain U.S. leadership in aeronautics and space exploration (NASA, 2025b).

STEM INTEREST, SPACE EDUCATION, NATIONAL SECURITY & COMPETITIVENESS

Triggering Student Interest in Space and Science as a National Security Imperative.

The United States' ability to maintain leadership in these domains depends on a continuous supply of scientists, engineers, and technically skilled workers, making early STEM engagement a foundational component of national security strategy (National Academies of Sciences, Engineering, and Medicine [NASEM], 2010; National Security Commission on Artificial Intelligence [NSCAI], 2021a).

Following the Soviet Union's launch of Sputnik, U.S. policymakers explicitly framed education—particularly science and mathematics education—as a national defense priority. The National Defense Education Act of 1958 (NDEA) was enacted to expand educational capacity in critical fields and ensure an adequate supply of trained personnel for national defense needs (U.S. House of Representatives, n.d.; U.S. Senate, 2022).

STEM INTEREST, SPACE EDUCATION, NATIONAL SECURITY & COMPETITIVENESS

Hidi and Renninger's (2006) four-phase model of interest development shows that situational interest—often triggered by engaging experiences—can evolve into sustained individual interest that supports deeper learning and long-term commitment.

Tai et al. (2006) students who expressed interest in science careers during middle school were significantly more likely to complete science degrees later in life.

Fascination, relevance, and engagement in science activities are strongly associated with later STEM career preferences (Dorph et al., 2017).

Whitesell (2016), Falk et al. (2017), middle school students who participate in field trips to informal science education institutions exhibit statistically significant gains in standardized science achievement, with particularly strong effects for relatively disadvantaged students.

Falk et al. (2017) early adolescent experiences visiting science centers are among the few factors that uniquely and significantly predict adult science interest, values, and cognitive predispositions.

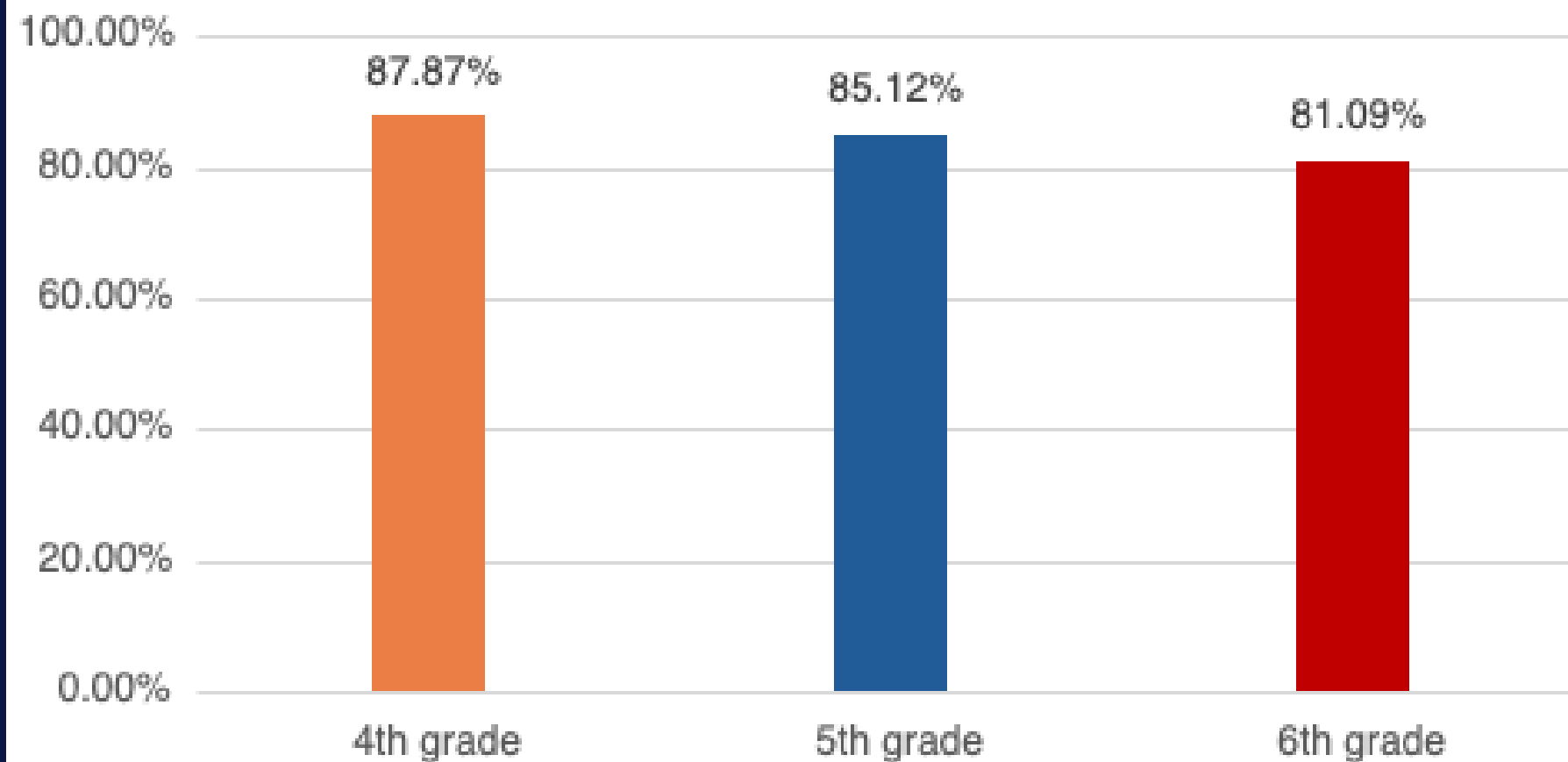
QUANTITATIVE EVIDENCE: STUDENT AND TEACHER SURVEY

Table 3. Number of Surveyed Students by Grade Level and Fiscal Year

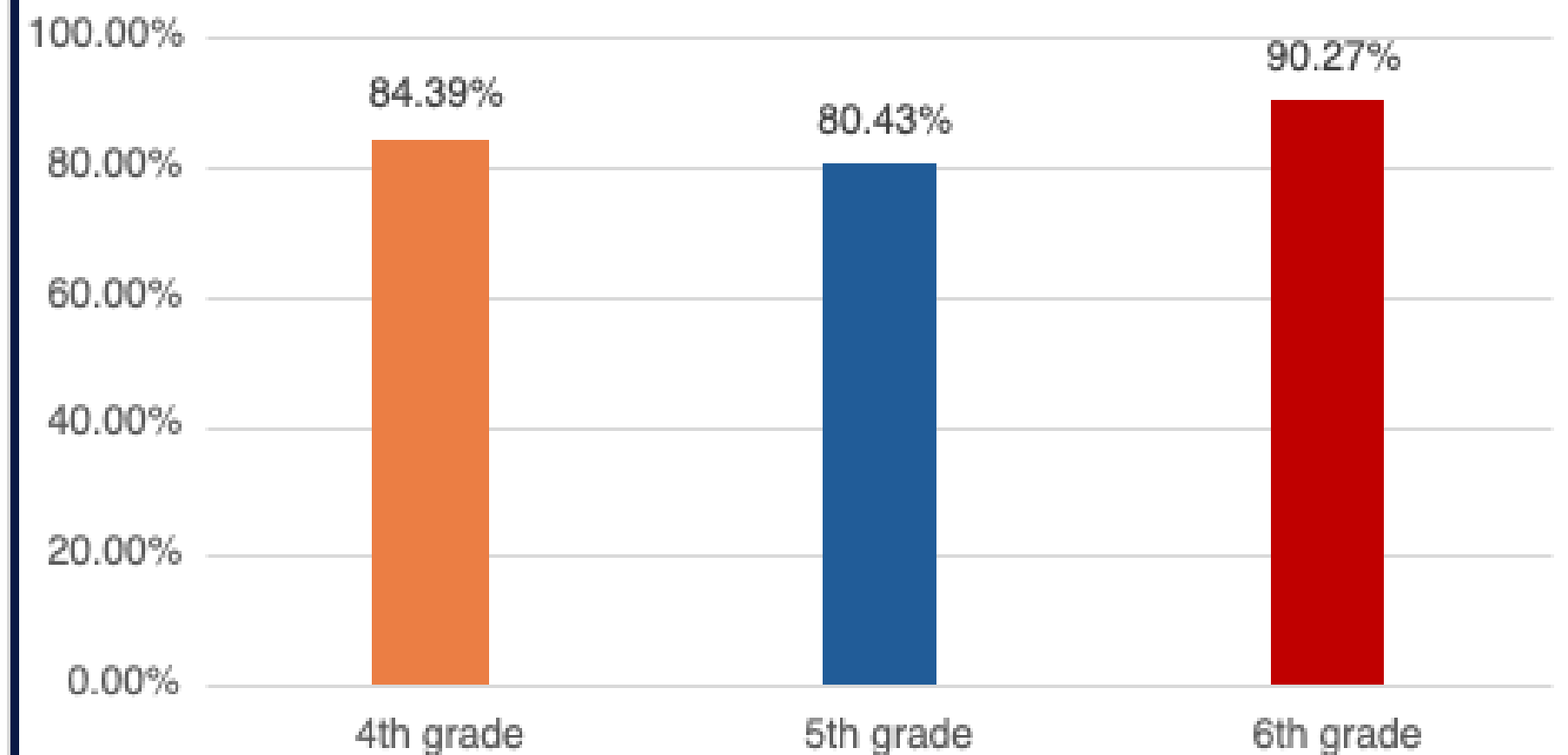
Fiscal Year/Grade	Fourth Grade	Fifth Grade	Sixth Grade
FY 23	677	1031	187
FY 24	764	869	711
FY 25	769	681	475

STUDENT SURVEY RESPONSE

After the field trip, are you interested in learning more about science? ("yes" response)

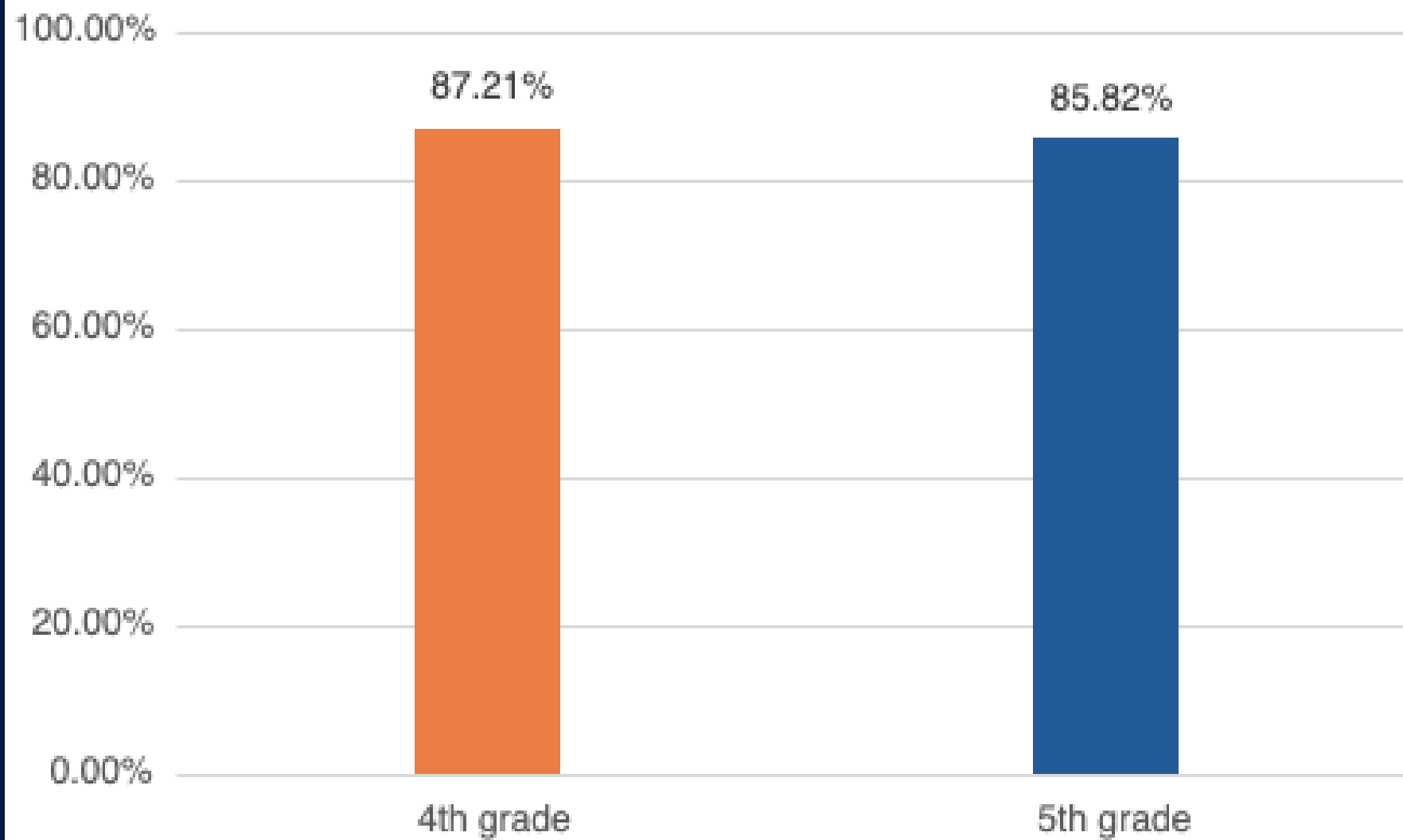


I would like to participate in future activities and events at the CCSSC ("yes" response)

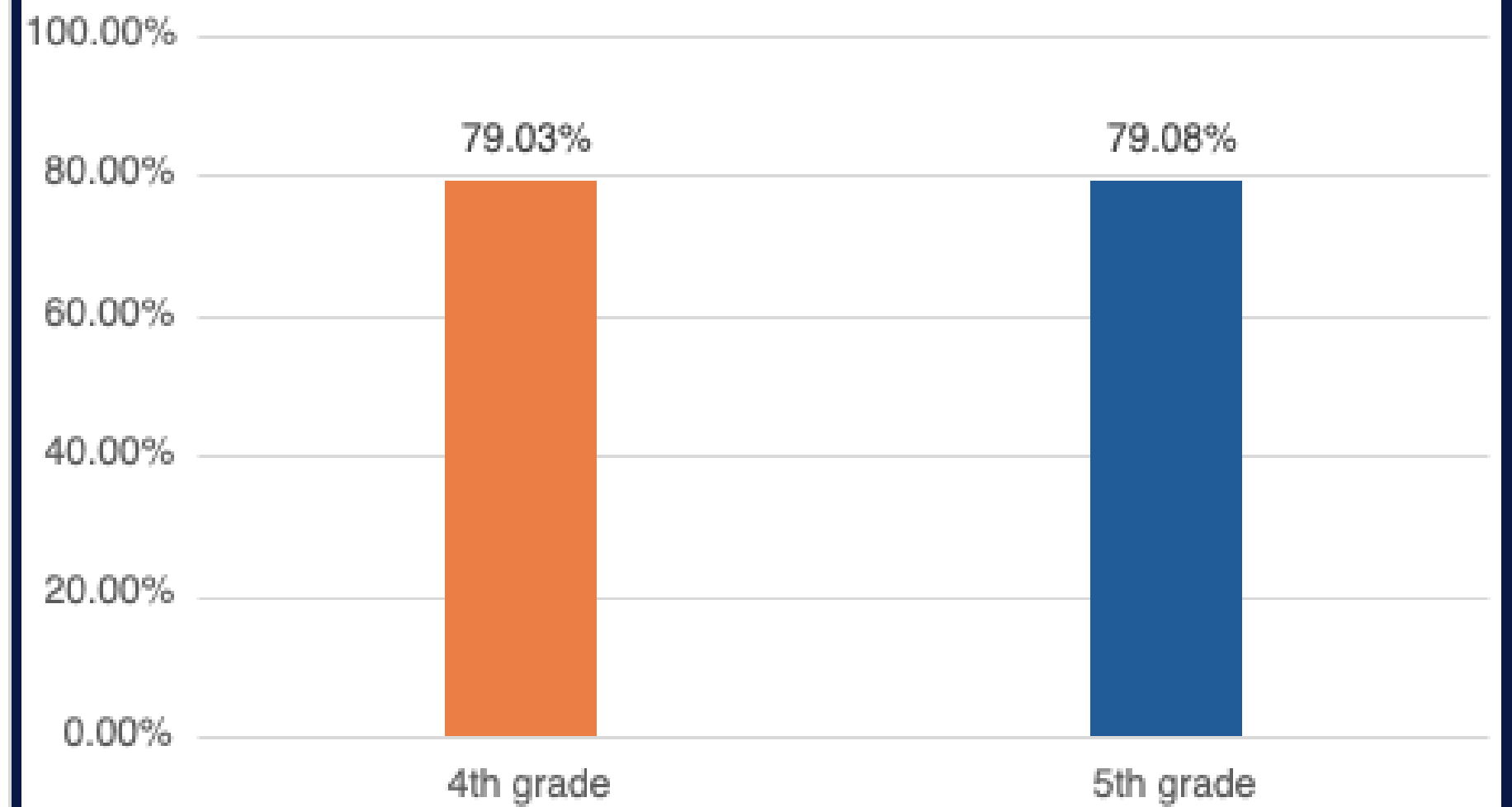


STUDENT SURVEY RESPONSE

Are you excited to learn about space and space travel?
("yes" response)

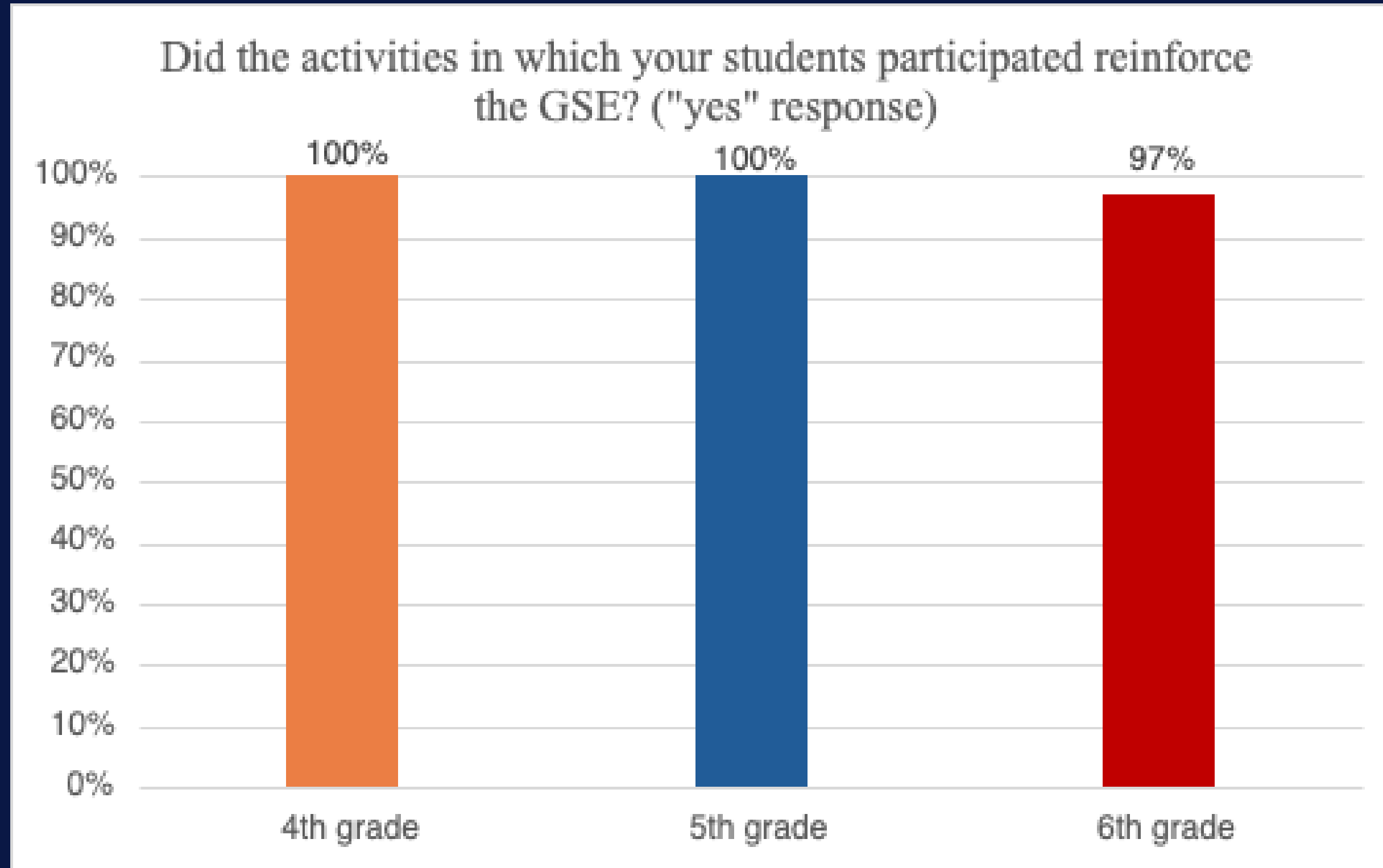


Did this field trip make you think about other science,
math, English, social studies or other information that you
have learned in school or at home? ("yes" response)



TEACHER SURVEY RESPONSE

GSE Reinforcement by Activities (%)



QUALITATIVE EVIDENCE: ILLUSTRATIVE EDUCATIONAL AND CAREER PATHWAYS

The Butler Center research team conducted more than fifteen in-depth, structured interviews with key CCSSC stakeholders, including instructional faculty, senior leadership from Muscogee County School District, strategic partners, and distinguished alumni who have advanced into leadership and technical roles within the space and aerospace sectors.

The following highlights reflect critical qualitative insights gathered through this process. These testimonies provide essential context to the quantitative findings of the CCSSC Economic Impact Study, strengthening the analysis by illustrating workforce development outcomes, institutional value, and long-term regional impact.

B.H. “Skip” Henderson III

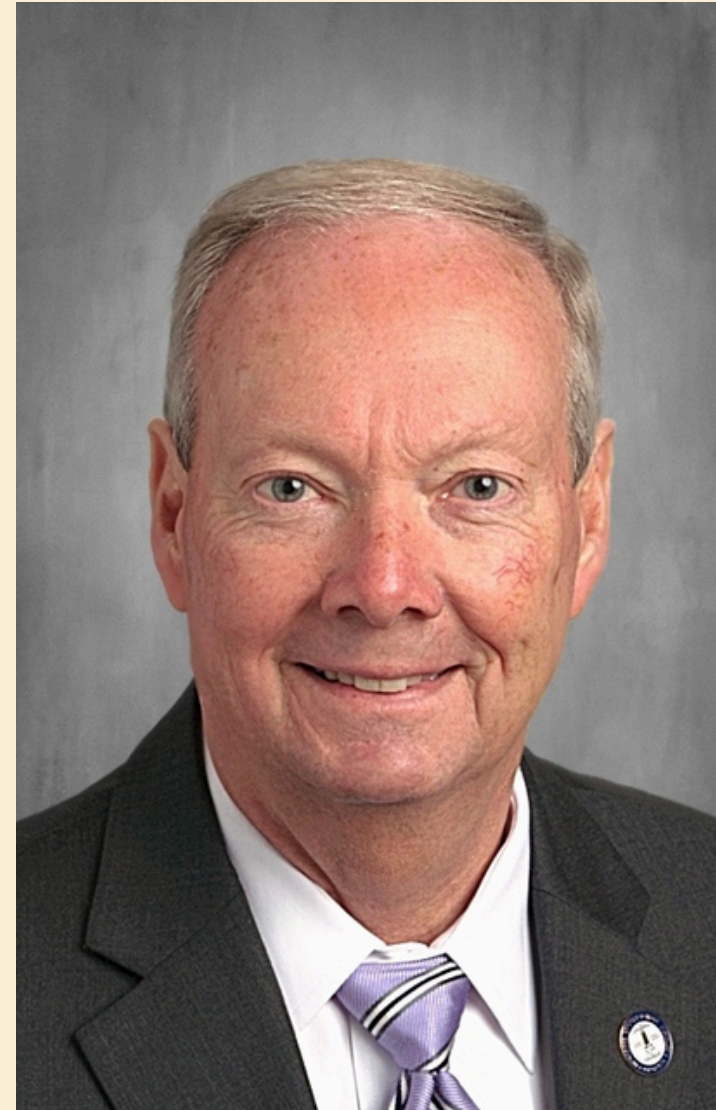
Mayor of Columbus, Georgia

I believe the CCSSC has had a tremendous impact on the educational mindset within the Columbus community. When it opened in 1996, it was one of the few centers of its kind in the United States. It has given young people a place where they can expand their curiosity and reach for the stars—literally and figuratively. The CCSSC has removed imaginary limits on what they can achieve by showing them that exploration, innovation, and discovery are all within their reach.



Dr. David F. Lewis

Superintendent of Education Muscogee County School District



It's helped us look ahead—anticipating what's possible in the future and what kinds of opportunities and instruction we should provide to prepare students for that world. The focus on problem-solving, advanced engineering, and space science has shaped the kinds of curricular experiences we offer, ensuring that students engage in authentic, application-based learning.



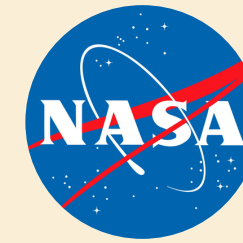


Ashley Woitena

CEO of VisitColumbusGA

Pathways are essential now in all aspects of education, and that's something the CCSSC supports powerfully. These pathways—especially in science and technology—are opening new doors for students. Robotics, in particular, has put Columbus on the map. It's connected to what's happening with Fort Benning and aligns perfectly with CSU's undergraduate and graduate robotics engineering programs. Together, they position Columbus as a regional leader in robotics education and workforce development.

Community development, I look at it from multiple angles, including tourism. The CCSSC brings in people who are naturally curious, creative, and intellectually engaged—people who strengthen our community just by being part of it. This aligns with broader efforts to attract the “creative class” that helps shape the future of Columbus



Cameron McCarty

Payload Operations Director, NASA

The CCSSC has been an ever-present feature of my life, but I think it's one of the main reasons my interests have shifted so heavily into the space industry. Even in my current job, I still think about how I would explain what I do during a telescope night or to someone visiting the lobby. It's always in the back of my mind. I see my experience as a CCSSC Star preparing me to contribute to my community and profession because the CCSSC really teaches all the skills you need to succeed in your field. As a civil servant with NASA, I see it as my responsibility to educate my community about what we do, how we spend taxpayer dollars, and why it matters. The CCSSC gave me the confidence and knowledge to discuss that with anyone—whether an elected representative or a third grader.





Rontra Brown

STEM/STEAM specialist, GA DOE community

My perspective on community development has evolved greatly through my involvement with the CCSSC. I used to view community development mainly as economic growth and resources, but partnering with the CCSSC showed me that education—especially in STEM—is vital to inspiring the next generation. The CCSSC serves families, schools, and community partners, including the Department of Education (Georgia), by building knowledge, pride, and curiosity. It creates opportunities for young people to see broader career paths beyond traditional ones. I've learned that true community development isn't just about infrastructure—it's about cultivating people, sparking innovation, and creating real-world opportunities.



John Hood

**Post-Doc, University of Chicago- National Science Foundations, Office of Polar Programs
CSU 2014 Alumni**

When I think about the opportunities and experiences I gained through the CCSSC, it really shaped my path. During my time as an undergrad at CSU, I worked at the CCSSC, balancing coursework, education, and a lot of community outreach. That experience put me in a great position for what I do now—I work as a NSF-OPP at the Adler Planetarium in Chicago as part of a program called “Astronomy Conversations.” It's a lot of fun, and I can see how my time at the CCSSC prepared me to talk with people from all kinds of backgrounds and education levels. It also helped me explain my research more clearly when presenting at conferences. It taught me not to assume everyone in the room knows the same things I know, but instead to make sure everyone leaves understanding on a fundamental or high level.





Benjamin Travers

Elementary Science Support Specialist

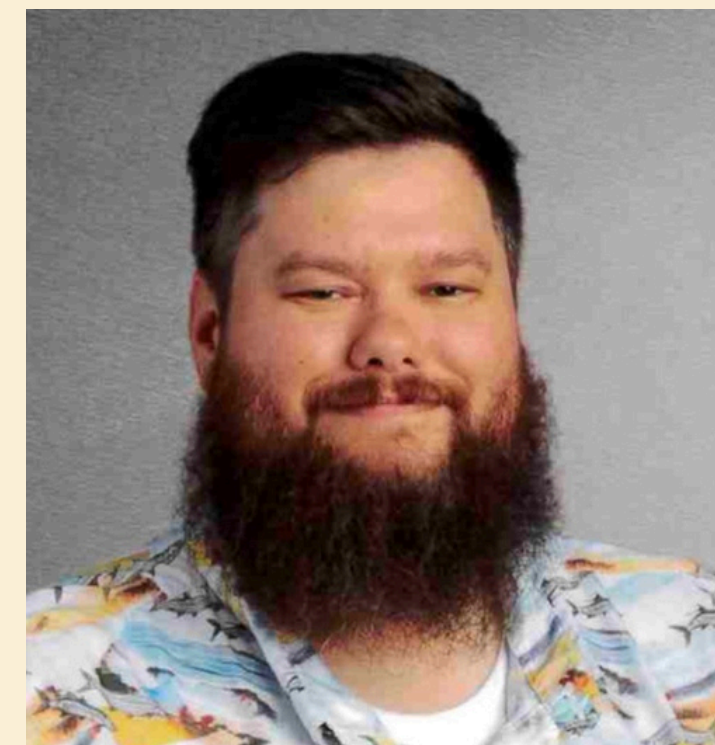
The CCSSC has greatly shaped my perspective on the role of technology in education by showing just how essential it is for preparing students for the future. I often remind teachers that when our 4th graders graduate, 65% of the jobs available will involve computer science or technology—and most of those jobs don't even exist yet. That fact alone highlights how quickly our world is changing and how important it is to integrate technology into daily learning.



Hunter Gore

**Elementary Media, Robotics and Technology
Expert Teacher, Midland Academy**

My perspective on technology has shifted to be much more inclusive because of my time with the CCSSC. I always remind myself, "We can do hard things." The robotics trainings there showed me that even the youngest learners can code. Using plug-in blocks that connect like Legos, my students learned to make robots move, dance, and sing. The CCSSC helped me see that technology isn't limited by age—it's about giving children the opportunity and confidence to explore it hands-on.



Christi Scarbrough

**Science Teacher, Robotics Coach,
Veteran Memorial Middle School**

In terms of how the CCSSC has shaped my perspective on technology in education, it all began during a visit when Senator John Ossoff came to announce funding for the new SIM Center. Dr. Lewis asked us about artificial intelligence, and that simple conversation sparked a whole new area of interest for me. I began researching AI and now teach other educators across four states how to integrate it into core classes. That one interaction at the CCSSC completely redirected my professional focus toward technology and innovation.



Robin Stephens

**Credentialing Specialist at Melrose Wakefield Healthcare
Previously: Social media manager/student employee
manager, Coca-Cola Space Science Center**

Looking back, my time at the CCSSC shaped my educational path and career mindset in a big way. I was actually one of the few students who wasn't a science major to work there — I was an English major. The experience helped me cultivate friendships and perspectives outside my immediate circle and gave me more tools to use in my studies. Working in a space completely different from my field gave me abilities and insights I wouldn't have gained otherwise.



Neal Garner

**CCSSC Former employee, Retired
Previously Science Teacher, Muscogee County**

The specific skills, experiences, and opportunities I gained here have had a lasting impact on my professional journey. As a teacher, I received training and development from NASA professionals, handled real moon rocks, and got classroom-ready activities to take back to my students. Once I started working here full time, I had opportunities to collaborate with professionals like Mr. Chris Johnson, who worked in robotics and graphics — things I never would have experienced otherwise. Working alongside astronomers every day was like having a master class in astronomy. The networking with other teachers, the exposure to NASA, and the access to real scientific tools and people — all of it shaped how I taught and inspired my students.



Wanja Ngugi

**Director of Strategy, Black Mamas Matter Alliance, Inc. (BMMA)
Previously: Assistant Director, Coca-Cola Space Science Center**

The CCSSC plays a major role in preparing students for careers in science, technology, and related fields by “hooking” them through play. It draws people in—whether through artistic programs like Music Under the Dome, family visits, or hands-on field trips—and before they know it, they’re learning through discovery. It’s play with purpose. What stands out most, though, is the mentorship. The CCSSC’s staff serve as true mentors in ways I’ve rarely seen elsewhere. Student assistants learn not only technical knowledge but also soft skills—handling money, working with the public, collaborating with peers. I’ve seen student after student develop into confident, employable professionals, regardless of their major. That’s a powerful and sometimes underappreciated part of the CCSSC’s legacy.



Eric Stephens

Previously: Education Services Assistant at Coca-Cola Space Science Center

I think the CCSSC's success in preparing students for careers in science and technology comes down to the people. Dr. Shawn Cruzen (Executive Director), Dr. Rosa Williams (Director, WestRock Observatory), Mr. Chris Johnson, (Graphics/IT Director) Mr. Lance Tankersley (Director, Omnishpere Theater), all of them have such genuine passion for what they do, and that passion is contagious. It inspires everyone who spends time there. Many students who came through the astronomy programs ended up working at the CCSSC themselves, learning directly from these mentors. It's not just about the STEM education—it's about the one-on-one mentorship, the encouragement, the friendships, and the personal attention they give to every student. Those human connections make all the difference.



Shelia Baker

Assistant Superintendent, Harris County Schools

The CCSSC has had a big impact on my mindset toward learning and discovery because I love the hands-on approach and how fun they make learning for students. As parents or teachers, being able to watch students interact, explore, and realize that science and the world beyond them can actually be at their fingertips is wonderful. My own children have had the opportunity to experience it through me, their schools, and summer programs. The discovery it offers goes beyond what's normally reachable—helping children understand that they can embrace science and have fun doing it. In terms of the services the CCSSC offers, I think it's magnificent. It plays such an important role in bringing educational opportunities to the community, and its reach goes far beyond the classroom. Overall, it's inspiring to see how the CCSSC continues to spark curiosity and make science feel accessible for everyone.



Steve Rutledge

**Information Technology Manager,
Synovus**



When I was young, I could visit, learn new things, and have hands-on experiences with people who were knowledgeable and enthusiastic about science. Having that close by—rather than traveling outside Columbus—was perfect. Meeting local experts and being part of that environment had a big impact on my interest and learning in science.

At first, I was perplexed that something like this even existed here, but it has shown me how much potential the city has. The CCSSC brings influence and attention to Columbus, giving people something different to experience beyond the usual.

Sarah Schmidt

**Science (Biology) and English
teacher, Germany**



Even after eleven years, my connection to the CCSSC continues to shape how I teach and design lessons. I still think back to that experience whenever I plan a class. It reminds me to make learning hands-on and memorable. I don't want my students to learn only from textbooks—I want them to go outside, visit museums, or explore labs at universities. Even if they're not naturally interested in a topic, these experiences can motivate them to stay curious and engaged.

Madeline Corrao

**Current CSU Student, Employee
at Coca-Cola Space Science
Center**



The skills and experiences I've gained at the CCSSC, especially in public speaking, have greatly shaped my professional growth. I've learned to adapt to different audiences—whether five people or forty—and explain complex space science topics in simple, engaging ways. Working at the CCSSC has also expanded my network, connecting me with NASA professionals and professors from across the country. It's truly a hub for STEM engagement and professional growth."

Taken together, the testimonial qualitative evidence reinforces the survey quantitative evidence by illustrating how early, hands-on exposure to space and STEM programming can shape student interest, confidence, and awareness of educational and career opportunities over time. While individual experiences differ, the narratives consistently reflect themes identified in the literature, including the role of early engagement in sustaining interest and supporting longer-term educational pathways. When viewed alongside the quantitative findings, these perspectives suggest that the CCSSC contributes meaningfully to the local STEM ecosystem by fostering curiosity and helping students envision futures in science, engineering, and space-related fields.

CONCLUSION

In conclusion, the findings suggest that the Coca-Cola Space Science Center contributes not only to the local economy but also to the foundational conditions required for long-term national competitiveness and security. Sustaining U.S. leadership in aerospace, defense, and advanced technologies depends on a robust domestic STEM pipeline, beginning with early interest formation and continued engagement through education and training. By sparking curiosity in space, science, and engineering at early stages of learning, the CCSSC supports workforce development priorities that are closely aligned with national security objectives, while simultaneously strengthening the regional educational and economic ecosystem.

“WE SERVE WITH CARE.”

Sincerely,

Fady Mansour