



COLORADO
Department of Education

Legislative Report

Computer Science Education Grant Program 2022-23

By:
The Colorado Department of Education

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Introduction

Grant History

The Colorado General Assembly initiated the Computer Science Education Grant Program in 2019 upon the passage of House Bill 19-1277, with an appropriation of \$250,000 for FY 2019-20. Administered by the Colorado Department of Education (CDE), the Computer Science Education Grant (CSEG) Program is a state-funded program designed to provide funding to increase enrollment or participation of traditionally underrepresented students in computer science through educational activities. Funding must be used for one or more of the following:

- Increasing student access;
- Increasing student awareness;
- Implementing outreach; or
- Improving learning spaces.

Additionally, this program was designed with a priority focus on traditionally underrepresented students in computer science education activities which includes addressing gaps in:

- Gender access;
- Race and ethnicity access;
- Access for students receiving special education services or programs;
- Access for students who are multilingual learners; and
- Access for students who are eligible for free or reduced-cost lunch.

The legislation requires that CDE publishes an annual report by January 1, summarizing the following information that grantees are required to submit¹:

- The total number of all computer science education activities funded by the grant, with a description of the computer science programs and the computer science curriculum covered;
- The total number of students who are enrolled in the computer science education activities offered by the grant recipient, and disaggregated based on:
 - Gender;
 - Race and ethnicity;
 - Students receiving special education services or programs;
 - Students who are multilingual learners; and
 - Students who are eligible for free or reduced-cost lunch.
- The number of students who enrolled in the computer science education activities offered by the grant recipient and took an end-of-course advanced placement exam; and

The number of students who enrolled in the computer science education activities offered by the grant recipient and scored three or above on an end-of-course advanced placement exam.

Fiscal Year 2022- 2023 Summary

Due to COVID-19 budget constraints and disruptions, 2022-23 was the second year of implementation for this grant program. Funding for the 2020-21 fiscal year was withheld by the Colorado General Assembly. The legislature reappropriated \$250,000 to administer the grant program in 2021-2022 and then appropriated \$250,000 for the 2022-2023 school year.

¹ Because the 2022-23 cohort of grantees was given a no-cost extension allowing them to disburse funds until June 2024, most of the data points listed below are preliminary or unavailable at this time. This report summarizes all of the information submitted by grantees so far.



Implementation of this grant program has continued to be complicated by the residual impact of the COVID-19 pandemic during the 2022-23 fiscal year. The continued disruption, including staff shortages and recovery from learning loss, slowed a portion of the educational activities grantees originally had planned. Due to these challenges, the grantees of this program were provided with a no-cost extension which allowed grantees to spend fiscal year 2022-23 funds through June 2024. A no-cost extension extends the project period beyond the original project end date, and as the phrase “no cost” suggests, there is no additional funding.

Timeline

For the 2022-23 fiscal year, the application and distribution of grant funds were completed in fall 2022 and spring of 2023. The spring round of applications was added because the amounts requested by applicants in fall 2022 were less than the full amount available for distribution. Grantees originally had the opportunity to expend funds through June 30, 2023. Due to the no-cost extension, they can expend funds through June 30, 2024. Therefore, this report does not contain data on the activities to be implemented and students to be served [by June 2024](#). Not all end of year reporting was received prior to when this legislative report was written. As a result, data reported in the various sections of this report are not representative of all grantees, but only of the grantees who submitted end-of-year reports.

Eligibility

Local education providers (LEPs) that participated in the CSEG grant program were eligible to receive up to \$10,000 each to provide programming opportunities in computer science. These funds could be used for educational computer science activities that addressed the following focus areas:

- Increasing student access;
- Increasing student awareness;
- Implementing outreach; or
- Improving learning spaces.

In addition, funding could be used to purchase resources to support the implementation of computer science education activities. This included technology equipment equal to no more than 50 percent of the total grant award.

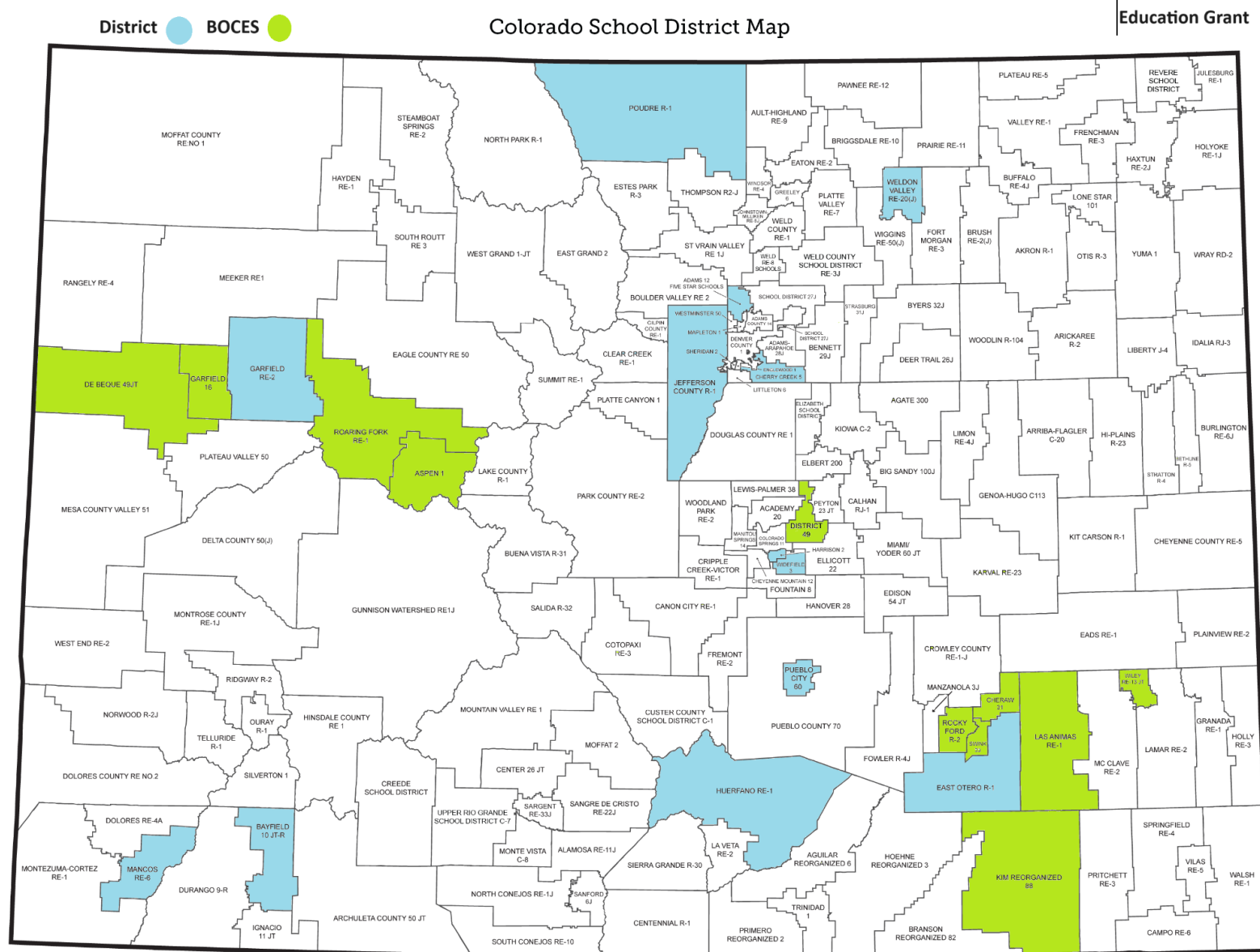
The authorizing legislation and Computer Science Education grant rules stipulate that CDE give priority to LEPs designated as rural and those serving students traditionally underserved in computer science education. CDE provided applying LEPs with assistance in completing the application to aid in meeting their goals for establishing or bolstering their computer science programming.

Grantee Participation Data

Local Education Provider Participation

CDE received applications from districts, Charter School Institute schools, and Boards of Cooperative Educational Services (BOCES) for the 2022-23 school year. After committee reviews, CDE awarded 17 CSEG grants totaling \$161,374. Applications that did not get funded were due to unallowable expenditures, incomplete applications, and duplicate applications (applications submitted twice). Figure 1, below, illustrates the location of the awarded districts throughout Colorado. Districts highlighted in blue received grant funding based on submission of individual applications, while those in green were served through an awarded BOCES.

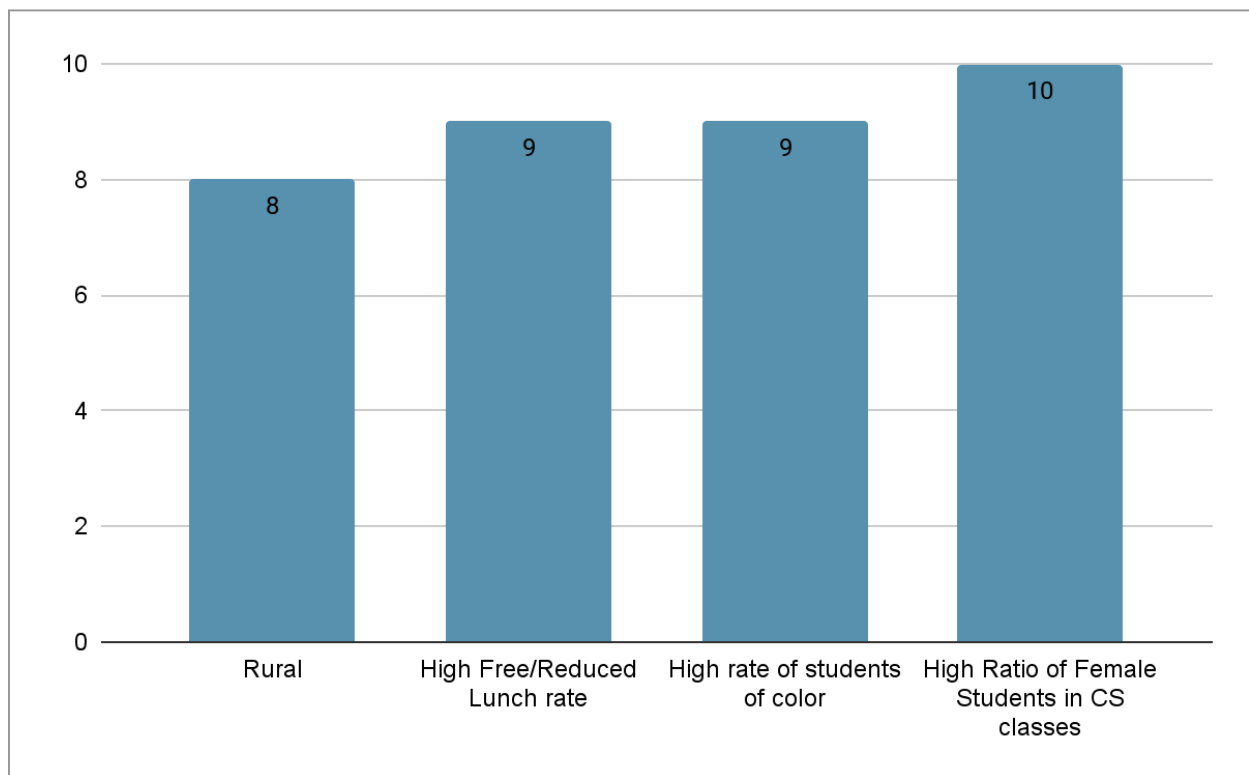
Figure 1. Geographic Location of CSEG Grantees across Colorado



Local Education Provider Priority Criteria

The CSEG grant program prioritizes LEPs designated as rural and those serving students traditionally underserved in computer science education. Seven out of the seventeen 2022-23 grantees served are designated as rural or small rural districts according to CDE definitions.² One is a BOCES that serves rural districts. The remaining nine grantees are non-rural LEPs (districts and charter schools). In addition, nine grantees have student populations with greater than 42 percent (the state average) who are eligible for free or reduced-price lunches, nine grantees have student populations with greater than 46.6 percent (the state average) who are minorities, and ten grantees are serving a high population of female students in their computer science classes. Figure 2 below illustrates the number of grantees meeting each of the priority criteria and it should be noted that grantees can qualify for more than one of each of these categories. For a detailed listing of all grantees and the priority area(s) each grantee met, please view Appendix A.

Figure 2. Number of 2022-23 Computer Science Education Grantees by Priority Area

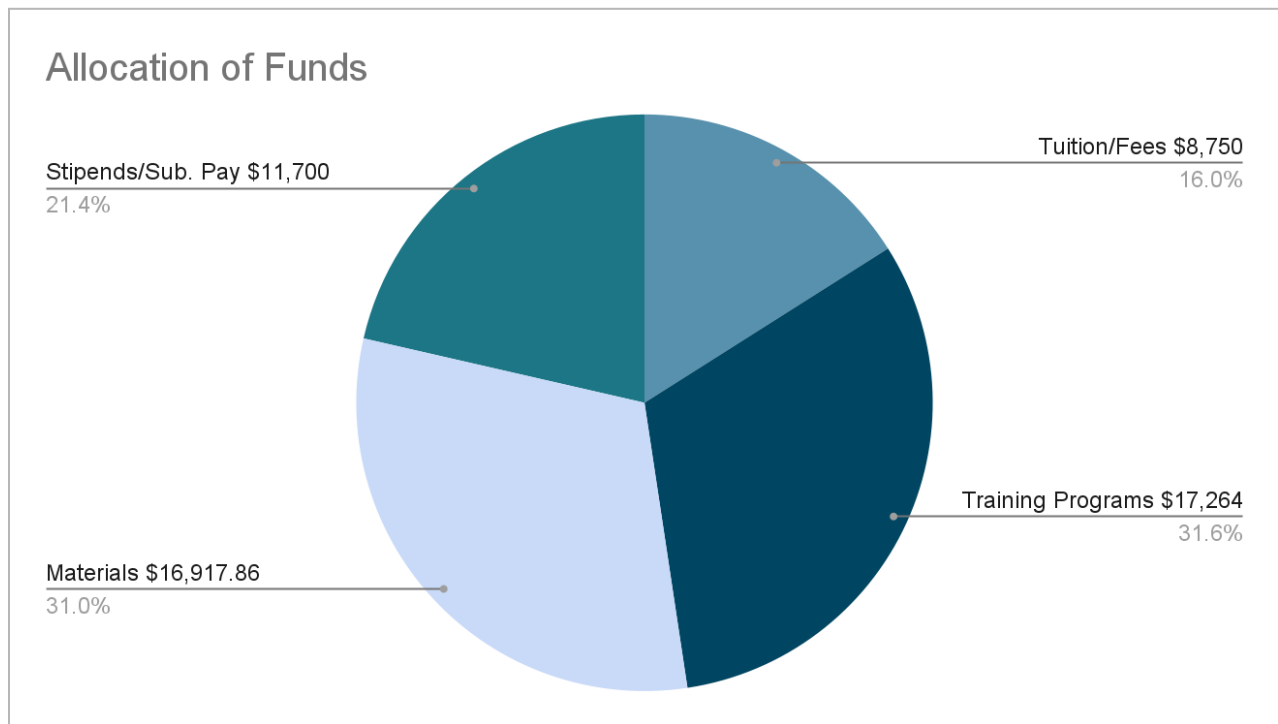


² A Colorado school district is determined to be rural based on the size of the district, the distance from the nearest large urban/urbanized area and having a student enrollment of approximately 6,500 students or fewer. Small rural districts are those districts meeting these same criteria and having a student population of fewer than 1,000 students. - Rural Education Council | CDE (<https://www.cde.state.co.us/ruraledcouncil>)

Total Grant Award and Designation of Funds

At the time this report was written, six out of the 17 grant awardees had completed end of year reports on designation of funds allocated. The remaining 10 grantees will report, or add to their reports in September 2024. Therefore, the data in this section does not reflect the complete designation of funds for all grantees. As currently reported, most funds allocated to grantees through the CSEG program were used for training programs (\$17,264). The second largest allocation was for purchase of materials and resources (\$16,917.86) for staff to implement these educational programs in addition to their normally contracted responsibilities. Figure 3 below shows an overall summary of the current allocation of funds for those districts reporting. For a detailed listing of the LEPs that were awarded funds and the anticipated use of funds, please see Table 3 within the attached Appendix B.

Figure 3. 2022-23 Computer Science Education Grant Allocation of Funds



Program Implementation Activities

Implementation Activities

At the time this report was written, seven out of the 17 grant awardees had completed the “Implementation activities” section of the end of year report. The remaining eleven grantees will report, or add to their report in September 2024. Therefore, the data in this section does not reflect the complete list of implementation activities for all grantees. Of those reporting, grantees implemented 39 educational activities, which included one-off events, recurring events, afterschool programs, classroom integrations, extracurricular clubs, and additional courses. Grantees developed proposals to implement educational activities that best met the needs of their students and their districts to increase the enrollment and participation within computer science. The

program guidelines stipulated that funds must be used on activities that increased student access, increased student awareness, implemented outreach, or improved learning spaces. Activities implemented by grantees could address one or multiple focus areas. As shown in Appendix C, grantees have reported data in each of these areas and it is anticipated that these numbers will change once all data is reported in September 2024.

Computer Science Activities Enrollment Data

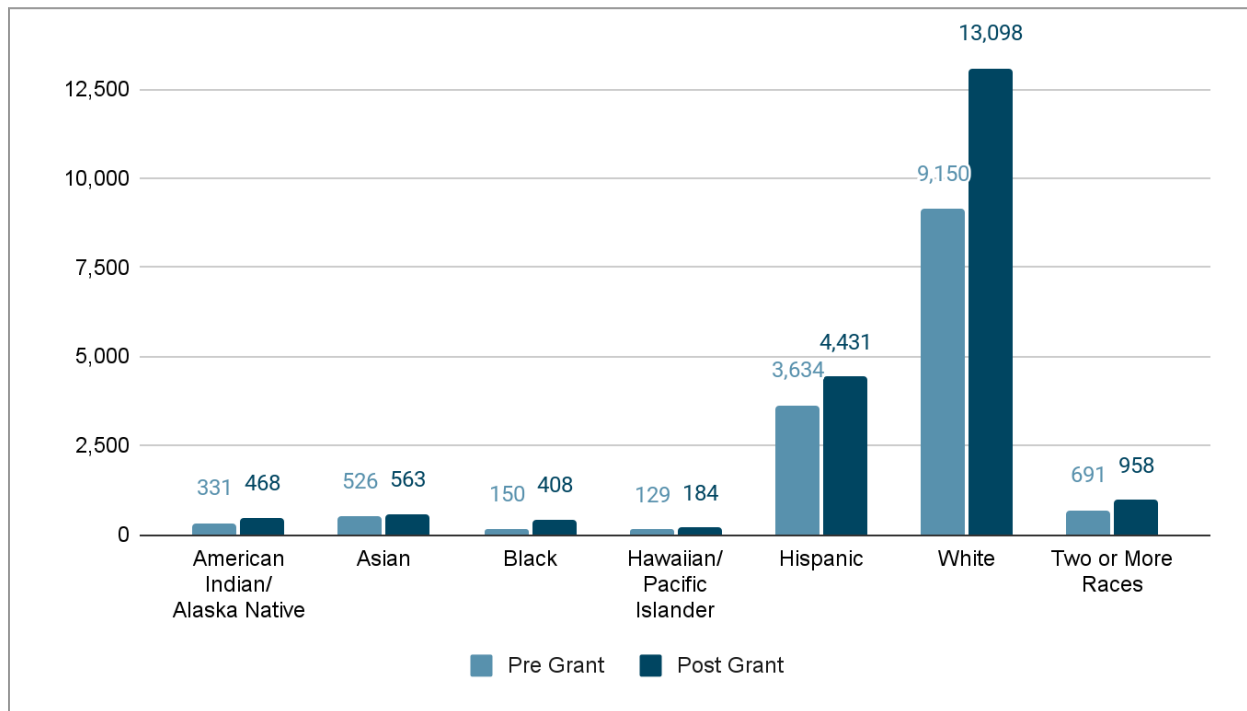
Summary of Impact

The intent of the CSEG program is to increase the opportunities in computer science learning for students in Colorado. Based on information from 8 reporting grantees available at the time this report was written, a total of 20,111 students took CS classes in CSEG program grantee LEPs in 2022-23 (from 14,611 in the year before the grant was implemented). We anticipate this number to be greater once final reporting is complete in September 2024.

Enrollment by Race and Ethnicity

Students from racial and ethnic groups that have been historically underserved continue to be less likely to attend a school where they have access to computer science classes. Based on the preliminary pre- and post-grant data submitted by the 8 LEPs reporting at the time of this report, while enrollment in CS programs increased for students of all races and ethnicities, the estimated number of Black/African American students enrolled in Computer Science classes more than doubled, which is the biggest increase of any group. Figure 4 shows the estimated number of students of each race and ethnicity enrolled in CS classes with reporting LEPs before and during the implementation of the 2022-23 grant.

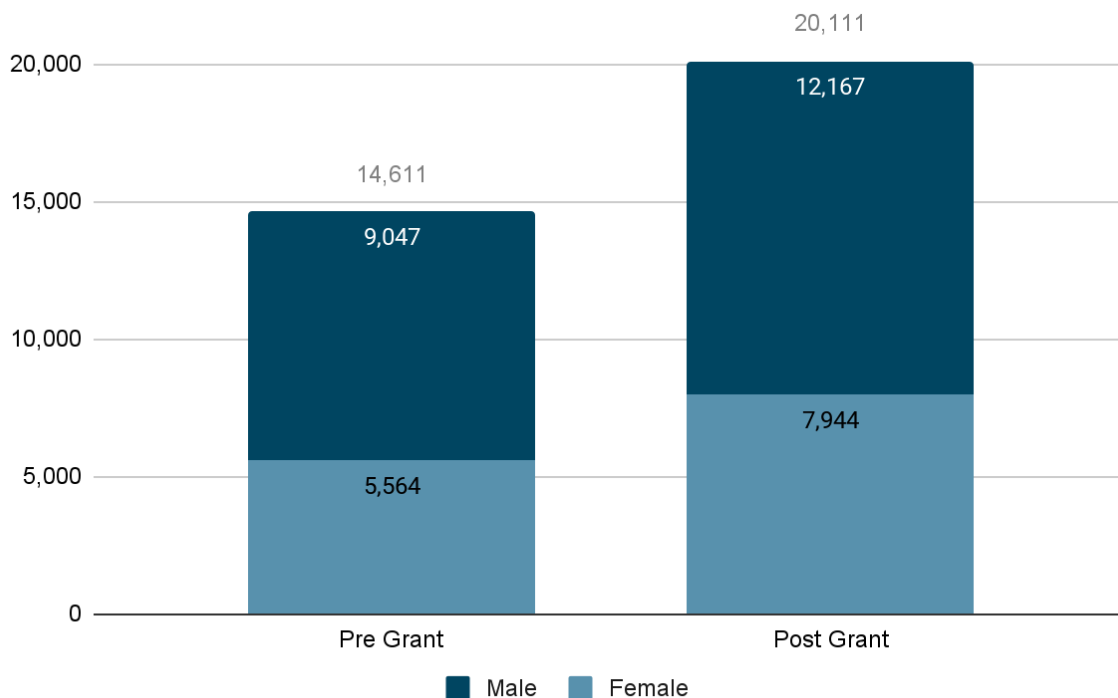
Figure 4. Pre and Post Grant Enrollment in CS classes by Race and Ethnicity



Enrollment by Gender

Historically, female students are underrepresented within the computer science field. According to [Code.org](https://code.org)³, “In U.S. high schools, the Advanced Placement exam in Computer Science has historically (since the beginning of the century) had only 22 percent participation by young women. This gender gap problem extends to university programs and to the software workplace, which suffer a similar lack of diversity. While things are starting to move in the right direction, we have a long way to go to reach a balanced population in computer science. Code.org focuses on K-12 learning because data shows that experiences in K-12 directly impact students’ future in computer science. Among young women, those who try AP Computer Science in high school are 10 times more likely to major in computer science.” The preliminary data from 8 reporting 2022-2023 grantees shows an increase of female student representation in computer science classes from 38.1 percent to 39.5 percent, with the estimated number of total enrolled female students in computer science education courses or classes increasing from 5,564 to 7,944. Meanwhile, the estimated number of male students enrolled increased from 9,047 to 12,167.

Figure 5. Pre vs. Post Grant Enrollment in CS classes by Gender



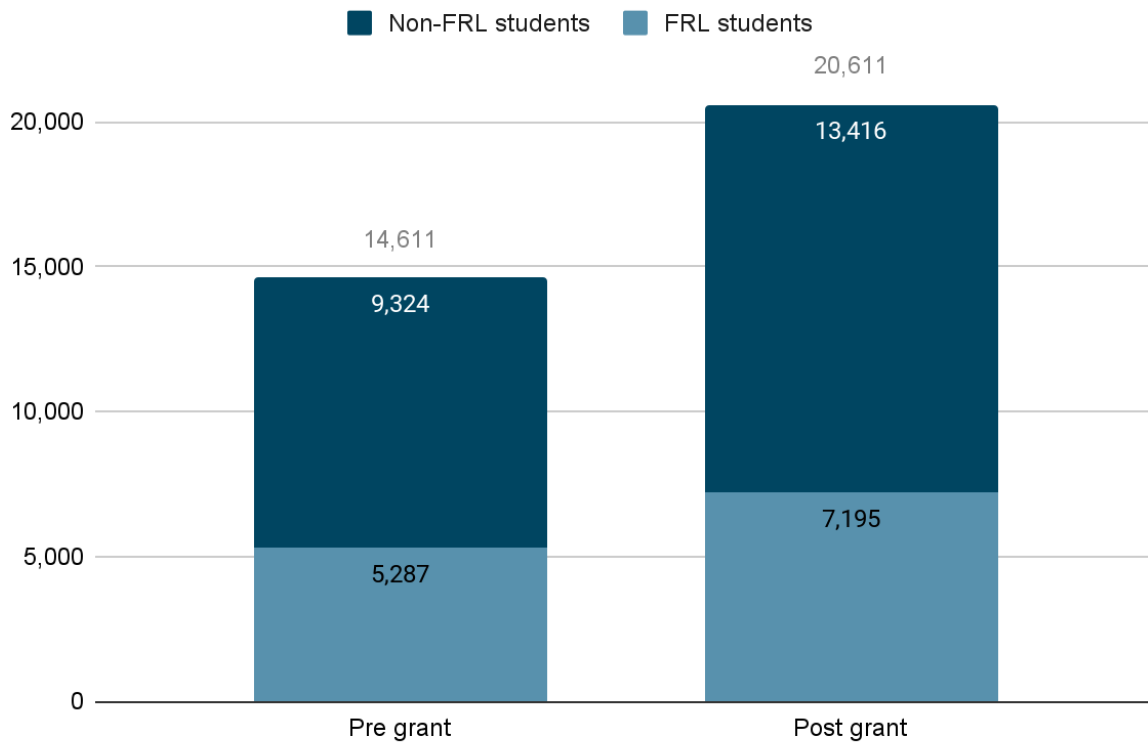
Enrollment by Free and Reduced Lunch (FRL) status

Historically, students from lower socioeconomic groups have had less access to computer science for reasons such as lack of high-quality teachers, curriculum, or access to technology. Based on the preliminary data reported by 8 LEPs at the time this report was written, the estimated number of students eligible for free or reduced-price lunch enrolled in computer science programs went from 5,287 in 2021-22 (before the grant was awarded) to 7,1945 in 2022-23. The data shows an overall slight decrease in the rate of CS students who have

³ Code.org Inspiring Girls to Learn Computer Science - CS Advocacy Site | CS Advocacy (code.org/girls)

FRL status post-grant (36.2% of students enrolled in CS classes in grantee schools had FRL status pre-grant, 35.8% of them had FRL status post-grant). It should be noted that because of evolving school meal policies over the last few years (free meals for all students during the pandemic, etc.) many eligible families did not complete Free and Reduced lunch (FRL) applications in 2022-23, which has made FRL numbers an unreliable indicator of students' socioeconomic status.

Figure 6. CSEG Grant Enrollment Percentages by Free/Reduced Lunch Pre and Post Grant



Enrollment of Students Receiving Special Education Services

Based on the preliminary data reported by 8 LEPs at the time this report was written, the estimated number of students receiving special education services enrolled in computer science programs went from 1,629 before the grant was awarded and post grant enrollment was 2,143. The data shows an overall increase in students who have enrolled in computer science classes.

Enrollment of Multilingual Learners

Based on the preliminary data reported by 8 LEPs at the time this report was written, the data show that the number of students identified as multilingual learners in computer science programs before the grant were 1,040 and post grant enrollment was 1,362. The data shows an overall increase in students who have enrolled in computer science courses.



Enrollment and AP Exam Participation

Of the seven reporting LEPs at the time this report was written, only two provided information on the number of students who took an end-of-course advanced placement exam after having enrolled in the computer science education activities offered by the grant recipient. The total number of students was 23. The number of students who enrolled in the computer science education activities offered by the grant recipient and scored three or above on an end-of-course advanced placement exam was 9 students.

Conclusion

The Colorado Department of Education has administered the CSEG grant with the goal of increasing enrollment or participation of traditionally underrepresented students in computer science through educational activities. The CSEG grant program provided LEPs with access to funding to implement high quality computer science educational activities. These computer science educational activities have consisted of single instance events, recurring events, afterschool programs, classroom integrations, extracurricular clubs, and additional courses. Overall, these activities have been able to increase student enrollment or participation within computer science programs for at least 6000 students by improving access, awareness, outreach and learning spaces.

Implementation was complicated by the aftermath of the COVID-19 pandemic, which resulted in continued staff shortages and the need for recovery from learning loss. However, even with these complications, the estimated number of students enrolled in computer science classes in reporting LEPs increased from over 14,000 students pre-grant to over 20,000 students once the grant was implemented. The estimated number of Black students enrolled in Computer Science programs in reporting grantee LEPs more than doubled, going from 150 before the grant to 408 with the grant, while the number of girls enrolled in Computer Science programs increased by over 40%, from 5,564 to 7,942.



Appendix A: 2022-23 Grant Awardees by Priority Area

Local Education Agency	Rural	>42% Free or Reduced Lunch	>46.6% Minority	More than 25% of CS students are female
Adams 12	*	✓	✓	*
Bayfield 10 JT-R	✓	*	*	✓
Cherry Creek	*	*	✓	*
Colorado River BOCES	✓	✓	✓	✓
East Otero RE-1	✓	✓	*	*
Orton Academy (Charter School in the Education ReEnvisioned BOCES)	*	*	*	✓
Garfield RE-2	✓	✓	✓	✓
Harrison	*	✓	✓	✓
Huerfano RE-1	✓	✓	✓	*
Jeffco	*	*	*	✓
Mancos	✓	✓	*	*
Poudre Re-1 (Compass Community Collaborative School)	*	*	*	✓



Local Education Agency	Rural	>42% Free or Reduced Lunch	>46.6% Minority	More than 25% of CS students are female
Pueblo City 60	*	✓	✓	✓
Swink 33 (Santa Fe Trail BOCES)	✓	*	*	✓
Weldon Valley	✓	*	*	*
Widefield	*	*	✓	✓
CSI - Pinnacle Charter School (CSI - Charter School Institute)	*	✓	✓	*
Total	8	9	9	10

* Represents a grantee who did not meet the noted priority area



Appendix B: Total Grant Awards and Use of Funds

Local Education Agency	Total Grant Award	Tuition Fees	PD/Training	Materials	Stipends and Substitute Pay
Adams 12	\$5000	\$5000	-	-	-
Bayfield 10 JT-R	\$9,920	NCE	NCE	NCE	NCE
Cherry Creek	\$8,674	NCE	NCE	NCE	NCE
Colorado River BOCES	\$10,000	-	-	-	\$10,000
East Otero - RE-1	\$9,996	\$3,750	\$2,414	\$3,236.86	\$300
Orton Academy (Charter School in the Education ReEnvisioned BOCES)	9,923	NCE	NCE	NCE	NCE
Garfield RE-2	\$10,000	NCE	NCE	NCE	NCE
Harrison	\$9,978	NCE	NCE	NCE	NCE
Huerfano - RE-1	\$9,931	-	\$3,750	\$5,881	\$300
Jeffco	\$10,000	-	\$5,000	\$5,000	-
Mancos	\$10,000	NCE	NCE	NCE	NCE
Poudre Re-1 (Compass Community Collaborative School)	\$9,520	NCE	NCE	NCE	NCE



Local Education Agency	Total Grant Award	Tuition Fees	PD/Training	Materials	Stipends and Substitute Pay
Pueblo City 60	\$10,000	NCE	NCE	NCE	NCE
Swink 33 (Santa Fe Trail BOCES)	\$10,000	-	\$6,100	\$2,800	\$1100
Weldon Valley	\$10,000	NCE	NCE	NCE	NCE
Widefield	\$9,230	NCE	NCE	NCE	NCE
CSI - Pinnacle Charter School (CSI - Charter School Institute)	\$9,202	NCE	NCE	NCE	NCE
Total	\$161,375	\$8,750	\$17,264	\$16,917.86	\$11,700

Note: Amounts spent on Tuition fees, PD/training and Stipends and Substitute pay are not final due to grant funds yet to be expended, or subject to change, due to the no cost extensions (NCE).



Appendix C: Educational Activities and Areas Addressed

Note: this table only includes activities implemented by the six grantees who reported on their activities so far. We expect more activities to be included in the next report due to the no cost extensions (NCE) which will expire in June 2024.

Local Education Agency	Activity	Area(s) Addressed	Activity Description (as written by the grantees in their applications)
Adams 12	Robotify	Access, Diversity, Awareness, Resources	With equitable access in English and Spanish, Imagine Robotify offers the best-in class browser-based robotics simulator to engage students in learning to code. Its three part foundational framework empowers any school or district to get up to speed in coding Blockly and Python— zero experience required.
Colorado River BOCES	Cyber Crew Courses	Computer Science	Cybersecurity competitions
Colorado River BOCES	Cyber Crew Courses	Computer Science, Access, Awareness, Outreach	Meeting cybersecurity professionals
Colorado River BOCES	Cyber Crew Courses	Computer Science	CS Teacher instruction
East Otero - RE-1	Purchasing classroom equipment	Access, Diversity, Improving Learning Spaces	Purchasing classroom whiteboards, computer mice and mouse pads, and headphones for student chromebooks.
East Otero - RE-1	Keyboarding without Tears	Access, Resources	Keyboarding without tears makes sure children use the correct habits from the beginning, with lessons designed for each age group to introduce key concepts. Kindergarten develops fine motor skills and teaches keyboard and mouse skills. 1st grade works on drag & drop and key association. 2nd grade works on common letters, words, and sentences.
East Otero - RE-1	Typing.com	Access, Resources	A keyboarding and digital literacy curriculum that allows teachers to easily track and align



Local Education Agency	Activity	Area(s) Addressed	Activity Description (as written by the grantees in their applications)
			the progress of multiple classrooms and students to state and national standards (including ISTE and the Common Core). The software's data reporting delivers important insights on identified needs to help design curricula that increase engagement long-term.
East Otero - RE-1	Code Monkey	Access, Resources	CodeMonkey is an award winning online platform that teaches kids real coding languages like CoffeeScript and Python. Children and teenagers learn block-based and text-based coding through an engaging gamelike environment. Millions of CodeMonkey's students are now excited about coding! CodeMonkey does not require prior coding experience to teach and is designed for schools, clubs, and home use.
East Otero - RE-1	abcya.com	Access, Resources	Activities are designed by parents and educators, who understand that children learn better if they are having fun. Games are categorized by grade and subject, and cover topics such as multiplication, parts of speech, typing, pattern recognition.
East Otero - RE-1	Brittany Washburn Modular CS Lessons	Access, Resources	Washburn's library of lessons, projects, curricula, and technology class resource guides are designed by an acclaimed computer science and technology educator specifically for computer science teachers, and include an array of digital and physical learning projects to teach digital literacy and coding basics.
East Otero - RE-1	Implementation and support	Resources, Awareness, Outreach	Generation Schools Network will provide ongoing coaching and support for the integration of the new CS curricula into the broader school curriculum. As an additional value add, GSN will provide peer support and guidance through a Professional Learning Community of peer teachers also implementing similar programs in other schools across the state. The guest speakers and content of the PLC have already been funded through the CDE Computer Science Education Grants for Teachers Program.
East Otero - RE-1	CS Guest Speakers	Diversity, Awareness, Outreach	Quarterly: During the weekly activity time, in-person or virtual job sharing experiences from guest speakers will allow students to be exposed to diverse people groups performing jobs related to computer programming. This activity, offered on a quarterly basis, will allow students the opportunity to see the diversity of people with careers in



Local Education Agency	Activity	Area(s) Addressed	Activity Description (as written by the grantees in their applications)
			computer programming and build social capital through offering connections into CS industry careers.
Huerfano - RE-1	SoundO co-instruction	Access, Diversity, Awareness, Resources, Improving Learning Spaces	Using the SoundO shared audio headset system, this program will increase access to STEM and computer science instruction within Peakview school through co-instruction across multiple classes, using the expertise of Peakview’s CS teacher trained through the previous year’s Computer Science Education grants to provide exemplar lessons and guidance to teaching staff who are less familiar and less comfortable with STEM and computer science. This will bring CS curricula on coding, robotics, digital literacy, and STEM to more classrooms within Peakview and help to integrate computer science education into the broader school curriculum.
Huerfano - RE-1	LEGO® Education SPIKE™ Curriculum	Access, Awareness, Resources, Outreach	The LEGO® Education SPIKE™ Prime Set is the go-to STEAM learning tool for grade 6-8 students. Combining colorful LEGO building elements, easy to-use hardware, and an intuitive drag-and-drop coding language based on Scratch, SPIKE Prime continuously engages students through playful learning activities to think critically and solve complex problems, regardless of their learning level. From easy-entry projects to limitless creative design possibilities, including the option to explore text-based coding with Python, SPIKE Prime helps students learn the essential STEAM and 21st century skills needed to become the innovative minds of tomorrow... while having fun! LEGO® Education SPIKE™ Essential is the cross curricular STEAM solution for primary education. SPIKE Essential engages students in hands-on investigation of STEAM concepts while contributing to literacy, math, and social-emotional development. Standards Aligned learning units use everyday themes, relatable Minifigures with different personalities and familiar LEGO® building elements to solve problems through storytelling. LEGO® Education SPIKE™ curriculum which is 40 guided lessons are tied to our local public library’s community engagement efforts who support local organizations and schools who integrate this curriculum to host their own mini contest to support kids and bring awareness to the concept of programming, creative play, etc.



Local Education Agency	Activity	Area(s) Addressed	Activity Description (as written by the grantees in their applications)
Huerfano - RE-1	LEGO® Education BricQ Motion Essential	Access, Awareness, Resources, Outreach	This kit and curriculum gives elementary students an understanding of forces and motion as they plan and conduct investigations. In the curriculum unit Train to Win, lower elementary students will work towards determining whether design solutions work as they were intended to change the speed or direction of an object with a push or a pull. In the curriculum unit Winning with Science, upper elementary students will investigate the patterns in an object's motion, developing and sharpening their ability to predict future motion.
Huerfano - RE-1	Wonder Workshop Dash Learn to Code and Applied Robotics Curriculum	Resources, Outreach	Using this programmable robot, the accompanying curriculum will guide students to practice and progress through the K-5 Learn to Code and 6-8 Applied Robotics curriculums, which cover the fundamentals and more advanced coding and robotic skills. These standards-based lessons encourage active learning through creative problem-solving tasks that have real-world application.
Huerfano - RE-1	Implementation and support	Resources, Awareness, Outreach	Generation Schools Network will provide ongoing coaching and support for the integration of the new CS curricula into the broader school curriculum. As an additional value add, GSN will provide peer support and guidance through a Professional Learning Community of peer teachers also implementing similar programs in other schools across the state. The guest speakers and content of the PLC have already been funded through the CDE Computer Science Education Grants for Teachers Program.
Huerfano - RE-1	Ozobot Eva and accompanying curriculum	Resources, Outreach	Using small Eva robots with multiple sensors and simple to learn software for student learning, these tools integrate CS, math, ELA, and more into hands-on STEAM projects that engage more students and boost top job skills like creativity and critical thinking.
Huerfano - RE-1	CS Guest Speakers	Diversity, Awareness, Outreach	Quarterly: During the weekly activity time, in-person or virtual job sharing experiences from guest speakers will allow students to be exposed to diverse people groups performing jobs related to computer programming. This activity, offered on a quarterly basis, will allow students the opportunity to see the diversity of people with careers in computer programming and build social capital through offering connections into CS



Local Education Agency	Activity	Area(s) Addressed	Activity Description (as written by the grantees in their applications)
			industry careers.
Jefferson County	Honor Societies	Access, Awareness, Resources, Improving Learning Spaces, Outreach, Diversity	Schools will receive funding to start a CS Honor Society. These students can work on creating awareness and outreach programs for feeder elementary schools.
Jefferson County	Coding Clubs	Access, Awareness, Resources, Improving Learning Spaces, Outreach, Diversity	Schools will receive funding to get a Coding Club started which will increase access and create awareness around computer science.
Jefferson County	Field Trips	Access, Awareness, Resources, Improving Learning Spaces, Outreach, Diversity	Schools will receive funding to help cover costs for computer science related field trips.
Jefferson County	Guest Speakers	Access, Awareness, Resources, Outreach, Diversity	Schools will receive funding to help cover costs of guest speakers, creating awareness about career opportunities and real world applications.
Mancos	LEGO® MINDSTORMS® Education Core Sets	Access, Awareness, Resources	LEGO® MINDSTORMS® Education EV3 Core Set is a hands-on, cross-curricular STEM solution that engages students by providing the resources to design, build and program their creations while helping them develop essential skills such as creativity, critical thinking, collaboration, and communication. A Core Set comes with a getting-started guide, video tutorials, and standards-aligned lesson plans. An eLearning program is included for educators.



Local Education Agency	Activity	Area(s) Addressed	Activity Description (as written by the grantees in their applications)
Mancos	LEGO® Education SPIKE™ Curriculum	Access, Awareness, Resources, Outreach	The LEGO® Education SPIKE™ Prime Set is the go-to STEAM learning tool for grade 6-8 students. Combining colorful LEGO building elements, easy to-use hardware, and an intuitive drag-and-drop coding language based on Scratch, SPIKE Prime continuously engages students through playful learning activities to think critically and solve complex problems, regardless of their learning level. From easy-entry projects to limitless creative design possibilities, including the option to explore text-based coding with Python, SPIKE Prime helps students learn the essential STEAM and 21st century skills needed to become the innovative minds of tomorrow... while having fun! LEGO® Education SPIKE™ Essential is the cross curricular STEAM solution for primary education. SPIKE Essential engages students in hands-on investigation of STEAM concepts while contributing to literacy, math, and social-emotional development. Standards Aligned learning units use everyday themes, relatable Minifigures with different personalities and familiar LEGO® building elements to solve problems through storytelling. LEGO® Education SPIKE™ curriculum which is 40 guided lessons are tied to our local public library’s community engagement efforts who support local organizations and schools who integrate this curriculum to host their own mini contest to support kids and bring awareness to the concept of programming, creative play, etc.
Mancos	Typing.com	Access, Awareness, Resources	Typing.com is a cross curriculum and standards based program, can be individualized for students, and tracks multi-year data. The program can be used by multiple teachers and all teachers can assign work. The curriculum helps to prepare students for college, career, and digital citizenship in an increasingly connected world. The K-12 typing curriculum includes games and media-rich activities that ensure students are engaged and self-motivated while developing important digital literacy, digital citizenship, coding, keyboarding, and understanding of how computers work.
Mancos	Learning Blade	Diversity, Awareness, Resources	Learning Blade: All students in grades 5-9 will have engaging resources that will expose them to STEM related career opportunities through “missions” that help them develop key 21st century skills. This innovative approach to STEM education focuses on activities



Local Education Agency	Activity	Area(s) Addressed	Activity Description (as written by the grantees in their applications)
			<p>that can be utilized both in a self-paced game environment and as practice in academic classrooms. Learning Blade is being provided to participating schools/districts through the Colorado Rural Education Collaborative (CREC) at no cost for the 2022-2023 school year. (coruraledcollab.org). This full scope curriculum will supplement the in-class curriculum and offer students support through after school programs and activities (DI and Science Fair) as well as Summer Camp. The system is built on the concept of Missions. Each Mission highlights a people-centered problem that engages today's students, and shows how STEM careers and technologies solve these problems. In addition, Learning Blade has an extensive 3D printer project (utilizing the equipment purchased last year) offering through 3D Maker Quests that align with the 12 Missions. These include printing a rolling car for testing on ramps, adjusting a wind turbine design, printing shapes that students can program using icon-based programming methods, designing a prosthetic hand, and testing a structure on a seismic shake table. These combine STEM skills by utilizing the printed objects to conduct experiments and design challenges offering practical applications of CS skills.</p>
Mancos	CODE and Scratch	Access, Awareness, Resources	CODE is a free curriculum (code.org) that will be utilized for grades K-2 and supplement grade 9-12 needs.
Mancos	CS Guest Speakers	Diversity, Awareness, Outreach	<p>Quarterly: During the weekly activity time, in-person or virtual job sharing experiences from guest speakers will allow students to be exposed to diverse people groups performing jobs related to computer programming. This activity, offered on a quarterly basis, will allow students the opportunity to see the diversity of people with careers in computer programming and build social capital through offering connections into CS industry careers.</p>
Mancos	Summer CS Camp	Access, Outreach	<p>Summer CS Camp: A weeklong camp (coding, robotics, drones) for students in grades 4-6. The Camp will serve to build excitement and interest in the CS program at SSD. Learning Blade or free online curriculum, CODE, will serve as the main curriculum components. Free resources for the 3D printing project will round out the camp.</p>



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Mancos	Drones	Access, Awareness, Improving Learning Spaces	Building on the success of the high school drone class, Swink School District will take this downstream to middle school (purchase classroom drone set) and create a class that will spark interest to continue into advanced level work in high school.
Swink	BitsBox	Access, Awareness, Resources	BitsBox (or similar): Students in grades 4-5 will look through the materials and pick an app project of individual interest. Every box comes with a mix of coding projects, ranging from simple to more advanced. Each level introduces a new computer science concept with a set of fun app creation projects. Students type the app into the Bitsbox website. Students start with the code from the materials, then change it to make it their own. Students use and share their apps on any mobile device. Bitsbox apps run on any computer, tablet, or phone with a web browser. Most people learn hard things by imitation and repetition. With Bitsbox, students learn to program by copying apps and making them their own. Student testimonials from Bitsbox indicate they are excited about the weekly class and share how much they love it with other students.
Swink	STEMscopes	Access, Awareness, Resources	Students in grades 6-12 will look through the materials and weekly pick an app project of individual interest. The IDEA lesson model provides constructivist pedagogy and facilitation to guide students through instruction. While lessons and key concept moments are provided, students can code apps independently. I-ILLUMINATE: Excite students about building their own app. D - D O: Students design an app, then share their success and questions E-EXTEND: Students who are able to code their initial app can improve their understanding with additional challenges. A-ASSESS: Exit tickets allow students to reflect on their accomplishments and express their thinking.
Swink	Learning Blade	Diversity, Awareness, Resources	Learning Blade: All students in grades 5-9 will have engaging resources that will expose them to STEM related career opportunities through “missions” that help them develop key 21st century skills. This innovative approach to STEM education focuses on activities that can be utilized both in a self-paced game environment and as practice in academic



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			<p>classrooms. Learning Blade is being provided to participating schools/districts through the Colorado Rural Education Collaborative (CREC) at no cost for the 2022-23 school year (https://www.coruraledcollab.org/). This full curriculum will supplement the in-class curriculum and our students support through after school programs and activities as well as the Summer Camp. The system is built on the concept of Missions. Each Mission highlights a people-centered problem that engages today's students, and shows how STEM careers and technologies solve these problems. In addition, Learning Blade has an extensive 3D printer project (utilizing the equipment purchased last year) offering through 3D Maker Quests that align with the 12 Missions. These include printing a rolling car for testing on ramps, adjusting a wind turbine design, printing shapes that students can program using icon-based programming methods, designing a prosthetic hand and testing a structure on a seismic shake table. These combine STEM skills by utilizing the printed objects to conduct experiments and design challenges offering practical applications of computer science skills.</p>
Swink	Blender, CODE and Scratch	Access, Awareness, Resources	<p>All are free resources. Blender is the world's best 3D CG technology. They believe that everyone should be free to create 3D CG content, with free technical and creative production means and free access to markets. CODE can be utilized for grades K-3 and to supplement grades 9-12 needs. Code.org® is a nonprofit dedicated to expanding access to computer science in schools and increasing participation by young women and students from other underrepresented groups. Their vision is that every student in every school has the opportunity to learn computer science as part of their core K-12 education. Scratch is the world's largest coding community for children and a coding language with a simple visual interface that allows young people to create digital stories, games, and animations. Scratch is designed, developed, and moderated by the Scratch Foundation, a nonprofit organization. Scratch promotes computational thinking and problem solving 8 of 11 skills; creative teaching and learning; self-expression and collaboration; and equity in computing. Scratch and Scratch Jr (PK-2nd) is always free and is available in more than 70 languages.</p>



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Swink	CS Guest Speakers	Diversity, Awareness, Outreach	Quarterly: During the weekly activity time, in-person or virtual job sharing experiences from guest speakers will allow students to be exposed to diverse people groups performing jobs related to computer programming. This activity, offered on a quarterly basis, will allow students the opportunity to see the diversity of people with careers in computer programming and build social capital through offering connections into CS industry careers.
Swink	Summer CS Camp	Access, Outreach	Summer CS Camp: A weeklong camp (coding, robotics, drones) for students in grades 4-6. The Camp will serve to build excitement and interest in the CS program at Swink School District. Learning Blade or free online curriculum, CODE, will serve as the main curriculum components. Free resources for the 3D printing project will round out the camp.
Swink	Wings over the Rockies	Access, Awareness, Resources	Flight simulator program that exposes students to Aerospace and physics. Students learn the hows and whys of flight, tour the local museum, plot a course on simulators, and build and fly gliders. Students make career connections and have an opportunity to hear from local community members with a wide range of experiences in several military and civilian aviation disciplines who discuss opportunities in professional, private and sport aviation fields.
Swink	Drones	Access, Awareness, Improving Learning Spaces	Building on the success of the high school drone class, Swink School District will take this downstream to middle school (purchase classroom drone set) and create a class that will spark interest to continue into advanced level work in high school.