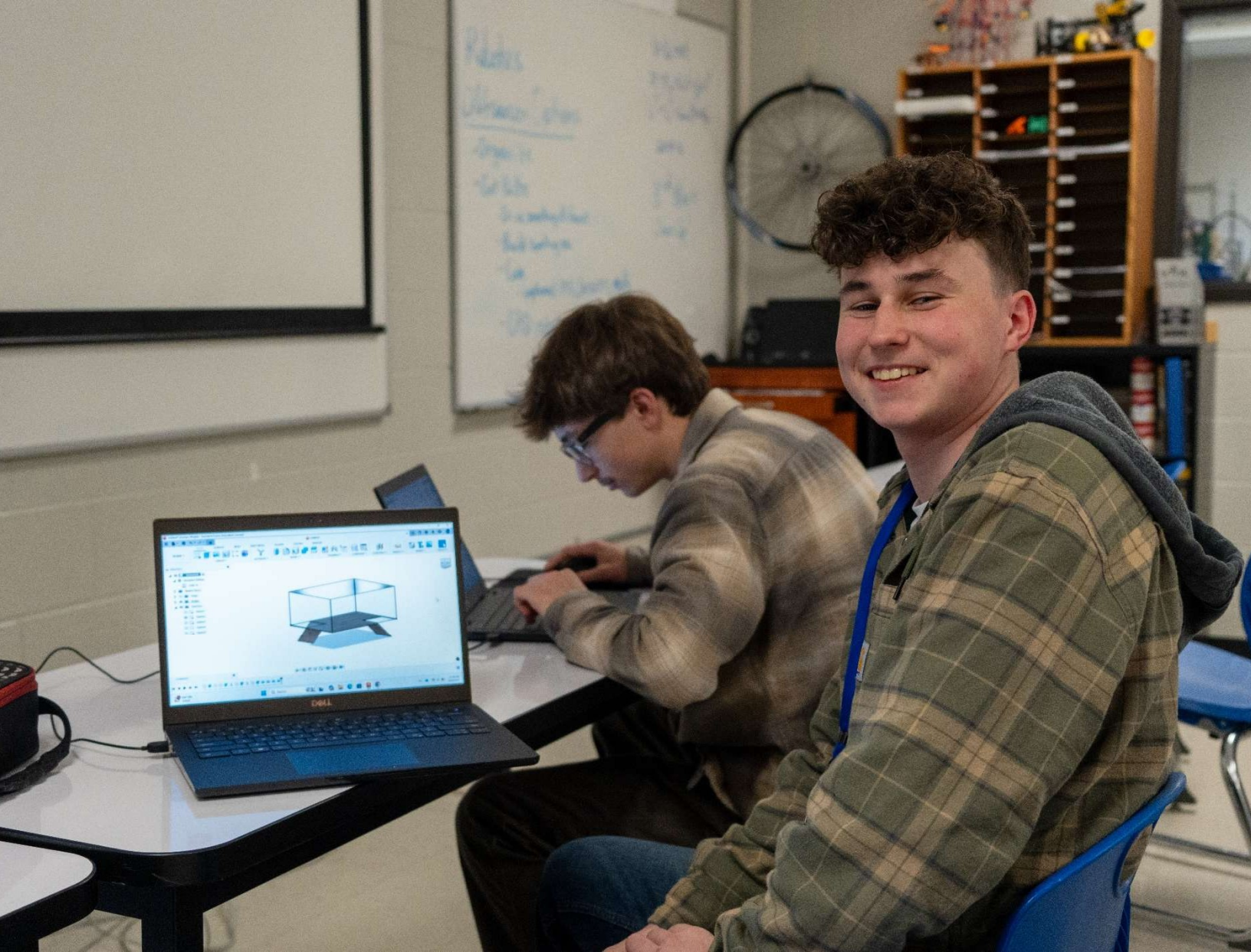




Computer Science

Annual Report

Tennessee Department of Education | July 2025



Executive Summary

Recognizing the urgent need to equip students with the skills demanded by today's workforce, Tennessee instituted computer science (CS) as a foundational element of K-12 education through the enactment of [T.C.A. § 49-1-232 \(Chapter 979 of the Public Acts of 2022\)](#). Signed into law by Governor Bill Lee and passed by the Tennessee General Assembly, this legislation made Tennessee one of the first five states in the nation to establish CS as a high school graduation requirement. The statute mandates that all middle school students complete one grading period of foundational CS instruction, and that CS and computational thinking be integrated into academic instruction at the elementary level. These efforts reflect the state's commitment to equipping students with essential digital skills and problem-solving abilities from an early age.

In support of this initiative, the Tennessee Department of Education (department), in partnership with the Tennessee STEM Innovation Network (TSIN), launched the Computer Science Endorsement Pathway (CSEP). This no-cost program provides a route for licensed K-12 educators to earn a CS endorsement, enabling them to deliver high-quality instruction aligned with Tennessee's CS standards. This initiative has played a critical role in expanding the state's capacity to offer CS education across all grade levels.

While significant progress has been made to align educational outcomes to meet the needs of industry and higher education, the full impact of this legislation will emerge over time. The first cohort of students required to complete a CS course will graduate in 2028 and enter the workforce with a deeper understanding of technology's role in society and a greater awareness of career opportunities in Tennessee's growing tech sector. Moreover, they will bring valuable digital skills to other high-demand industries, such as manufacturing and healthcare, that increasingly rely on automation, data management, and computer-based tools.

Key Findings

- **Student Enrollment Increase:** CS enrollment across all grade levels increased by 56 percent from the previous school year, with 178,670 students participating in CS courses in 2024–25. Middle and high school enrollments have more than doubled since 2022–23.
- **Teacher Endorsement Growth:** Since the launch of the CSEP in 2022, 1,796 teachers have completed the program. As a result, the number of CS teachers of record rose 154 percent over the past year, totaling 1,868 statewide in 2024–25.
- **School and District Participation:** The number of schools offering CS more than doubled over the last year, increasing by 119 percent to 746 schools. CS is now offered in 137 out of 141 Tennessee school districts that include middle and high schools.
- **Professional Development:** Statewide professional development (PD) efforts, including *Reach Them All*, *CS Accelerator Week*, and regional workshops, have empowered educators and created lasting leadership networks.
- **Four Pillars Alignment:** CS instruction directly supports the department's FutureReadyTN initiative by aligning with its four pillars: Seamless Transitions, Credentials of Value, Individualized Advising, and Work-Based Learning (WBL). It prepares students to pursue career and technical education (CTE) programs of study, earn industry-recognized credentials, explore postsecondary options, and enter military service with relevant technical skills.

Computer Science

Standards, Guidance, and Additional Resources

In 2022, the department and the TSIN convened a committee of educators and professionals to develop the [Tennessee K-12 Computer Science Standards](#). These standards provide a clear framework for CS instruction statewide, emphasizing computational thinking, digital literacy, collaborative problem-solving, and foundational programming concepts. They help guide teachers in delivering comprehensive, academically appropriate instruction that prepares students to progress within the field.

The CS Implementation Guidebook was released in June 2024.

In 2023, the department released the [Computer Science Integration Guidebook](#) to provide context for CS integration. This resource includes exemplar lesson plans, practical strategies for interdisciplinary integration, and a process for adapting curriculum to align with CS standards. TSIN also curated a library of video exemplars and instructional resources available on its [website](#).

In 2024, the department published the [Computer Science Standards Implementation Guidebook](#) to provide in-depth implementation support for each grade-level standard. Developed by the 30-member Computer Science Standards Resource Team, this guide offers explanations of standards, related concepts and vocabulary, and guidance for aligning lessons and assessments to the state standards. The detailed descriptions provided for each standard include specific examples of what outcomes should be used to evaluate student expertise, along with suggestions for teacher inputs and methods of instruction. The structure of the document, organized by core concept, highlights vertical alignment between grade bands to showcase the learning progression from elementary to high school. This document provides a thorough dissection of the TN K-12 Standards and is a valuable tool for educators to evaluate, modify, and implement instruction.

The department was also tasked with providing districts with a free CS curriculum. TSIN, serving as a partner agency, selected Kira Learning as the content provider after completing a thorough request for proposal. Kira developed a yearlong course for both middle and high school that addresses all the TN K-12 CS Standards and is hosted on their browser-based learning platform. The curriculum includes pacing guides, lesson plans, slide decks, guided notes, a teacher-facing gradebook, and a student-facing user interface with an integrated development environment (IDE). In May 2025, over 700 teachers were actively using the platform, with 56,055 middle school students and 17,011 high school students enrolled in a course.

The Computer Science Endorsement Pathway (CSEP)

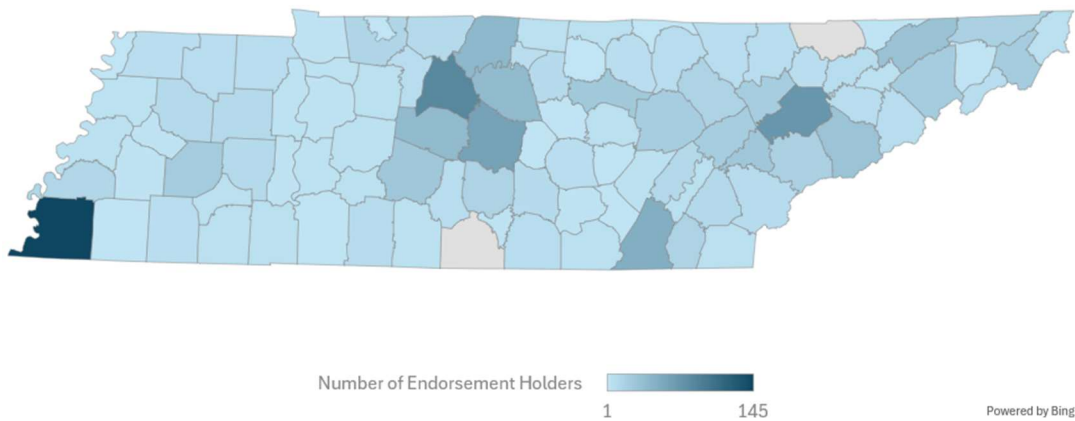
A central provision of T.C.A. § 49-1-232 was the creation of a no-cost pathway for licensed teachers to earn a CS endorsement. This requirement recognized that the existing educator workforce needed additional preparation to deliver high-quality instruction aligned with Tennessee's K-12 CS Standards. In response, the department partnered with TSIN to design and implement the CSEP.

Teacher capacity has increased by 3,500 percent since the inception of CSEP.

Developed by a team of educators and approved by the State Board of Education (SBE) in 2022, the CSEP offers licensed teachers a route to earn the CS endorsement and expand course offerings in their schools. The course includes eight modules and requires up to 60 hours of work over the course of a semester. Participants develop a foundational understanding of CS guided by Tennessee’s CS standards and core concepts. In addition, the course builds pedagogical skills in CS instruction, including strategies for planning and delivering lessons that promote student learning.

At the program’s launch in Fall 2022, fewer than 50 teachers statewide held a CS endorsement. Since then, the program has hosted six cohorts, with the Spring 2025 cohort concluding in May. As of this report, 1,843 teachers are now eligible to teach CS courses. The most recent cohort reached its maximum capacity of 600 participants, and interest continues to grow. Given this ongoing demand, the department will continue to offer the CSEP as a key strategy for expanding access to CS education across Tennessee.

	Fall 2022 (Pilot)	Spring 2023	Fall 2023	Spring 2024	Summer 2024	Fall 2024	Spring 2025	Total
Completed CSEP	42	167	223	451	244	284	385	1,796
Enrolled in CSEP	42	167	223	467	363	392	535	2,189



Below are remarks from educators across the state who took part in the course.

“I thoroughly enjoyed this course and found it to be incredibly valuable. Despite having no prior experience with computer science, I now feel equipped to begin teaching the subject.”

“I did not expect the course to be as rigorous and in-depth as it was, but I am really glad I stuck with it. The knowledge and skills I have gained will benefit both my students and my school community.”

“The Computer Science Endorsement Pathway prepared me to teach the Tennessee K-12 CS Standards because I knew going into this year what was expected of my students.”

Student Enrollment and District Participation

To support a successful statewide rollout of the requirements outlined in T.C.A. § 4-1-232, the legislation included a two-year "on-ramp," allowing districts time to adjust course offerings, staffing, and schedules in preparation for the new CS expectations. During this period, many districts took proactive steps to expand access to CS education. Some introduced new courses, while others increased the number of sections available to students. As a result, the 2024-25 school year shows measurable growth in student enrollment, course availability, and teacher participation across both middle and high schools.

Student enrollment has increased by 56 percent in the 2024-25 school year.

- Student enrollment has increased by 56 percent from the previous year, with 178,670 students participating in a CS course for all grade levels in 2024-2025.
- The number of teachers leading a CS course has increased by 154 percent from the previous school year, with 1,868 teachers of record in 2024-25.
- The number of schools offering CS has increased by 119 percent from the previous school year.
- The number of districts participating has increased to include all but four that offer middle school and high school options.

The table below includes year-over-year data on middle and high school student enrollment in CS courses, the number of teachers of record, and the total number of schools and districts offering CS course options.

	2022-23	2023-24	2024-25
Students Enrolled in a CS Course	MS: 29,687 HS: 16,992	MS: 38,170 HS: 19,418	MS: 79,990 HS: 40,828
Teachers of Record in a CS Course	MS: 107 HS: 486	MS: 180 HS: 556	MS: 615 HS: 1,253
Schools Offering CS (MS and HS)	285	340	746
Districts Offering CS (MS and HS)	102	109	138

Supporting Career and Technical Education (CTE)

In addition to building a foundation in computational thinking and core programming concepts, CS instruction supports student readiness for CTE pathways, particularly within the Digital Technology career cluster. Foundational CS coursework at the middle and early high school level equips students with essential skills that position them for success in more advanced CTE programs. Enrollment in Computer Science Foundations, the first course in many Digital Technology programs of study (POS), has already doubled as more students begin high school with prior CS exposure. This early experience supports greater persistence through the full sequence of CTE courses, ultimately leading to a higher number of program concentrators. Additionally, participants will be better prepared to earn tier three Credentials of Value, such as those from CompTIA, ISC2, and CIW, which are the culmination of many of these POS.

	2022-23	2023-24	2024-25
Students Enrolled in CS Foundations (C10H11)	7,963	10,095	22,233

As students' awareness of CS-related careers continues to grow, so does student interest in related CTE pathways. Despite rapid shifts in the technology landscape, the job market for students with CS and IT skills remains strong, both in Tennessee and nationally. Overall employment in computer and IT occupations is projected to grow much faster than the average for all occupations from 2023 to 2033. About 356,700 openings are projected each year, on average, in these occupations due to employment growth and the need to replace workers who leave the occupations permanently¹. Students will now enter high school with a greater vision for postsecondary options and be better positioned to have informed conversations with counselors and career coaches about their professional trajectory. This growth in knowledge and experience supports the Individualized Advising pillar and creates the opportunity for impactful planning based on student interest and goals.

Evolving Workforce Needs

While some careers have long required technical expertise, nearly every industry is now being transformed by advances in CS and related technologies. Employers across sectors increasingly seek candidates with skills in automation, data analysis, and digital tools, regardless of the specific job title. CS education provides a strong foundation for a variety of career opportunities and aligns directly with the department's four pillars.

In agriculture, farmers are adopting automation and drone technology to increase efficiency at both industrial and individual scales. Success in this field now requires not only knowledge of growing practices but also the ability to operate and maintain the tools that support modern production. In healthcare, patient data is critical to accurate diagnoses and is increasingly used to train artificial intelligence (AI) systems that support medical professionals. Understanding how to collect, manage, and interpret data will be essential for improving care and driving medical innovation. In manufacturing, automation continues to expand the need for employees who can troubleshoot, maintain, and program complex machinery. As factories become more digitized, workers must combine traditional technical skills with computer-based competencies to keep systems running smoothly.

To prepare students for this rapidly evolving landscape, Tennessee is exploring ways to embed CS concepts into additional CTE career clusters. Offering students opportunities to earn CS credit through industry-relevant coursework will not only increase flexibility for districts but also highlight the real-world application of CS skills across Tennessee's most in-demand fields. This adjusted outlook will also open more avenues for students to participate in WBL experiences with employers in the community.

Demand for employees with programming, cybersecurity, and data analysis skills is increasing across all industries.

¹ Bureau of Labor Statistics. "Computer and Information Technology Occupations," April 18, 2025. <https://www.bls.gov/ooh/Computer-and-Information-Technology/>.

In addition to strengthening CTE POS, CS programming aligns with the department's FutureReadyTN initiative and directly supports the Seamless Transitions pillar by preparing students for a variety of postsecondary pathways. Whether entering a four-year university, technical or community college, or moving directly into the workforce, students equipped with CS skills have a competitive edge. Foundational knowledge in computing, data analysis, and digital systems translates across fields and opens doors to high-demand programs in cybersecurity, software development, engineering, healthcare, and beyond.

Teacher Professional Development Initiatives

To support the growing number of educators teaching computer science, many of whom have transitioned from other subject areas, the department and TSIN have developed a wide range of PD opportunities. These programs are designed to strengthen foundational knowledge, build instructional capacity, and foster a statewide network of CS education leaders.

One of the earliest and most impactful initiatives was the Reach Them All (RTA) program, launched prior to the full implementation of T.C.A. § 4-1-232. RTA followed a train-the-trainer model, selecting CS District Delegates and Ambassadors to participate in professional learning and then re-deliver content within their schools and districts. This model established a network of skilled, locally embedded CS leaders who continue to drive instructional improvements today. Participating districts also received classroom sets of [BeeBots](#) or [Finch Robots](#) to support early algorithmic thinking and hands-on CS exploration. While the formal program concluded in Summer 2023, the RTA network remains an important part of CS implementation and innovation.

Ongoing support for educators continues through two major annual events. Each summer, TSIN hosts CS Accelerator Week in Middle Tennessee, offering in-depth workshops on CS standards, instructional practices, and course-specific content. While the event is primarily designed for classroom educators, it also draws participation from school and district leaders. In 2025, the event will be held in Smyrna from June 9–13 and is expected to serve over 100 educators. In December, TSIN hosts the Computer Science Momentum Expedition at Geodis Park in Nashville. This one-day event brings together CS educators for keynote sessions, department-led updates, and field visits to local businesses to observe real-world applications of CS in various industries. It also provides valuable networking opportunities for educators and industry professionals.

In addition to these large-scale events, the department provided both virtual and in-person workshops throughout the 2024-25 school year. In Fall 2024, the department hosted three webinars tailored to elementary, middle, and high school educators. These sessions focused on unpacking the CS standards, legislation, best practices, and instructional resources. Regional, in-person workshops were held in partnership with science, technology, engineering, and mathematics (STEM) Hubs in Johnson City, Cookeville, and Chattanooga, TN. Teachers participated in model CS lessons and evaluated instructional materials for alignment to standards and best practices. Counselors, school leaders, and district administrators received guidance on scheduling options, course offerings, and strategies for building investment in CS programming in their communities.

To ensure ongoing access to support, the department continues to offer bi-weekly office hours for educators and administrators seeking personalized guidance, clarification, or technical assistance related to CS legislation and instruction.

Goals and Next Steps

As Tennessee continues to implement CS education across all grade levels, the department remains committed to supporting educators, schools, and districts through data-informed strategies and responsive planning. At the conclusion of the 2024-25 school year, the department surveyed CS teachers statewide, receiving over 400 responses. These insights, combined with enrollment data, district participation trends, and outcomes from professional learning initiatives, will inform our priorities in the coming year.

Key Goals for 2025-26

1. Support Districts Without CS Offerings

The department will identify schools and districts that have not yet integrated CS courses into their schedules. Direct outreach and technical assistance will be provided to help align existing course offerings with state requirements. By the end of the 2025-26 school year, every school will have a clear implementation plan with progress tracked throughout the year.

2. Expand Teacher Capacity through the CSEP

The CSEP continues to be a cornerstone of the department's strategy for supporting CS implementation. The department aims to increase the number of endorsed teachers by at least 600 annually. This expansion ensures that schools have qualified staff to offer CS courses and supports consistent, high-quality instruction statewide.

3. Establish the Tennessee CS Academy

In collaboration with TSIN, the department is developing the Tennessee CS Academy, an online professional learning portal. The platform will provide asynchronous courses aligned to specific CS topics, tools for professional learning communities, curated resources, and a collaborative message board to connect CS educators across the state.

4. Strengthen CTE Alignment

The department will continue to explore new ways for students to meet the CS graduation requirement through CTE programs of study. While the Digital Technology career cluster already includes several qualifying courses, additional alignment opportunities exist in other pathways. This will increase flexibility for districts and emphasize the relevance of CS skills across industries.

5. Integrate AI and Emerging Technologies

To ensure students are prepared for a rapidly evolving technological landscape, the department is actively working to include more guidance on AI and machine learning (ML) in teacher-facing resources and professional development. Following the release of updated national Computer Science Teachers Association standards in Summer 2026, Tennessee plans to revise its own CS standards to reflect new industry demands and opportunities.

6. Strengthen Postsecondary Alignment

The department will continue working to align CS coursework with postsecondary programs and industry-recognized credentials, ensuring students can seamlessly transition from high school to high-demand fields. This includes identifying credential options and expanding partnerships with industry leaders. This will provide students with real-world learning experiences that include internships, externships, and mentoring programs as part of our WBL initiative that highlight pathways into high-demand postsecondary opportunities.

Final Thoughts

Tennessee's commitment to expanding CS education reflects a strategic investment in the future of its students, workforce, and communities. Through continued collaboration, data-informed planning, and educator support, the department is building a strong foundation for long-term success. As technology continues to evolve, Tennessee will remain focused on equipping all students with the skills they need to thrive in a rapidly changing world.

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