South Fayette Township School District

The South Fayette Township, located outside of Pittsburgh, Pennsylvania, has embarked on a new chapter in its work with students, parents, and the community. It has earned regional and national distinctions for embracing student engagement in collaborative learning experiences that can also lead to purposeful change in the community. In 2021, the Pittsburgh Business Times named the district as western Pennsylvania's "District of the Decade," outpacing more than 100 public school districts across seven counties. The rating resulted from a detailed analysis of more than 300 data points and highlighted South Fayette's focus on computational thinking and literacy across all grade levels.

This transformational process—resulting in the school system's recognition as a 2023 AASA Learning 2025 Lighthouse District—places future-ready learners at the heart of every decision, program, and initiative. Its organizational culture now emphasizes five strategic goals, each of which resonates with the core values of being future-focused, student-centered, and innovation-driven. Demographically, South Fayette has four school sites with an enrollment of 3,433 students, a teacher-student ratio of 16:1, a graduation rate of 98%, and a minority population of 30%.

A controlling structural theme in South Fayette School District is the critical importance of problem design and problem solving as a controlling instructional priority. This emphasis is highly evident in the district's vertically aligned and nationally recognized K8 computer science program. Throughout the program, students are actively engaged in problem solving. They are encouraged to think logically, critically, and recursively. Rooted in research from the University of Pittsburgh and Clemson University, the program encourages equitable participation among girls and people of color—leading to its successful replication and implementation by schools throughout the country.

The South Fayette model for computational thinking and problem solving is integrated into its K-8 computer science, engineering, and design-thinking pathway for all students. This pathway embeds computational thinking into the curriculum, treating it as any other discipline. Learners move from block-based coding in elementary school to writing text-based code in middle school. They also use mobile apps to solve problems posed by local businesses, including completion of challenges involving robotics. All students are immersed in creative entrepreneurship, creating products and services for social good.

As students transition to high school, they extend and refine the skills they acquired in their K-8 CS Pathway. They are problem solvers and problem designers who have voice and choice in how they apply their computational thinking knowledge. For example, in every subject area and department, South Fayette High School prioritizes problem-based learning. Students put into action key concepts and principles, including shared experiences with global industry professionals, university professors, and premier social organizations and groups. Overall, the K-12 system ensures that from the K-8 CS pathway at elementary and middle levels to experiential learning and problem solving at the high school, all learners are propelled to maximize opportunities and experiences that can transform their futures.

According to Tom Vander Ark in Education Week (2017): “One suburban campus, South Fayette, is the best example of K-12 integrated computational thinking we’ve seen. Yes, Kids are learning to code, but more importantly, they are learning to attack complex problems, analyze data, and sprint in teams to public products.”

Overall, South Fayette classrooms cultivate curiosity and prioritize problem designing and problem solving across all grade levels. As a result, all learners are prepared for relevant, difference-making opportunities in multiple academic disciplines—key factors in promoting future-ready learners equipped for both post-secondary education and multiple career pathways. Through strategic partnerships with national businesses, leading universities, and socially conscious groups and organizations, students have multiple opportunities to effect change in their communities, positioning themselves for a lifetime of impact.

A few final examples exemplify the impact of South Fayette Township School District’s focus on preparing future-ready learners:

- In partnership with cookware manufacturer All-Clad, South Fayette students have solved multiple problems for the company, including developing and prototyping an automated box-folding workcell.
- For the Allegheny County Sanitary Authority, students determined the best way to communicate to residents the need to develop ways to reduce water overflows.
- For EAFab, students constructed a functioning model of an overhead crane to carry scrap materials.
- South Fayette students tracked the flow of electronic waste and plastic materials after consumers purchased them, determining business opportunities for Covestro Plastics that potentially will result in the construction of solar and wind energy generation.
- For Hennecke, learners created safer and more cost-effective drone methods instead of sending inspectors to assess chemical containers.

According to one South Fayette high school teacher: “We have kids who after graduating college come back to tell us that the work they did in South Fayette classrooms was more challenging, enriching, and beneficial than any project they did in college. These opportunities give them the space to come and grow and may land them internships and careers.”