Introducing Michigan's new K-12 Computer Science Standards

Michigan's vision for computer science education is that all learners will develop foundational computer science skills to solve problems and be constructive citizens. In doing so, students will:

- Learn new approaches to problem-solving;
- Harness the power of computational thinking; and
- Use computer science tools to create technology.

Learn more about computer science and why the need is urgent.

The State Board of Education recently adopted new K-12 Computer Science Standards making Michigan the 31st state to adopt a set of computer science standards. These comprehensive standards, guided by national frameworks, serve to outline learning expectations for Michigan's students and are intended to guide local computer science curriculum development.

How this looks in K-12 schools

Learning computer science concepts begins as early as Pre-K and a device is not required ("unplugged" activities). Pre-readers can master the foundations of early coding concepts through learning patterns, problem-solving, representation, and sequencing. Computer science contributes to developing social and emotional skills in young students. Through play with their peers and adults, students learn how to effectively communicate and work in teams.

Elementary and middle school students may be exposed to computer science in a computer class or during activities integrated into art, English language arts, math, science, social studies, and related curriculum. Through integration, students have exposure to both traditional subjects and computational thinking. Some districts have embedded computational thinking into elementary literacy blocks to develop transdisciplinary modules that include science, ELA, and social studies within a problem-based theme. Initial findings of these

50% of Americans

rank computer science as one of the two most important subjects of study after reading and writing.

transdisciplinary approaches integrating computer science show significantly increased literacy scores.[2] In high school, computer science courses are typically stand-alone. However, they may be taught by teachers from other departments. There are a wealth of professional learning resources available so teachers with no prior experience can teach it. Computer science delivery will be determined by school districts in ways consistent with their existing programming.

Teacher Qualifications

With the elimination of the computer science teaching endorsement, any teacher who is certified in the appropriate grade level can teach computer science. Educators who hold a computer science endorsement, have gone through specialized professional learning, or who teach other STEM-related courses may be best positioned to teach computer science at the high school level. There are also programs that pair industry experts with classroom teachers and can provide additional support for teachers who are new to computer science. In early grades, K-5 and 6-8, educational technology teachers may be good candidates for teaching computer science. Districts also can work with all educators to integrate computer science concepts such as computational thinking across the curriculum.

Assessment

There are currently no plans to include computer science on a state summative test. This provides flexibility at the district level to determine how to best implement the standards for their students, and how to best assess student learning.

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Department of Education