Program of Excellence

Computer Science

OKLAHOMA STATE DEPARTMENT OF
EDUCATION
— CHAMPION EXCELLENCE —

Champion Excellence

Fundamental to the role of a champion is the capacity to envision potential. It is the belief in one's potential, the potential of our students and our colleagues, and the potential of our educational system that gives us cause to act with intentionality and to persevere when we are faced with challenges. In order to cast a shared vision that drives collective action that embraces and the collective wisdom of the education community across Oklahoma, the Oklahoma State Department of Education has collaborated with educators and school leaders to develop Programs of Excellence rubrics that envision and describe the characteristics of excellent disciplinary programs within a school.

The Programs of Excellence rubrics are **emergent**, in that they are co-designed with input from educators across the state and always in draft form; **aspirational**, in that they speak to an idealized, holistic vision of each program that may be impossible for one school to fully embody; and **flexible**, in that they respect the unique contexts of Oklahoma's schools whether that be in size, geography, or demography.

> "Every child deserves a champion, an adult who will never give up on them, who understands the power of connection, and insists that they become the best that they can possibly be."
> — Rita Pierson

Across disciplines, there are variations that bring perspective from the unique communities who shaped their contents, capturing real experiences, shared values, and a hope for well-rounded learning opportunities for all children in a safe and healthy school. Throughout the remainder of this year, the Programs of Excellence rubrics will continue to change and grow as the best attributes across the disciplines are shared and insights from stakeholders are taken into account.

Please help shape this vision for excellent programs that all children deserve by sharing your input at http://sde.ok.gov/ChampionExcellence.

OKLAHOMA STATE DEPARTMENT OF
EDUCATION
— CHAMPION EXCELLENCE —

Using the Program of Excellence Rubric

The responsibility of identifying a school disciplinary program as bronze, silver, or gold is placed on the school and its community. Through local evaluation and verification, a school can celebrate efforts and create strategic initiatives to improve. The OSDE will not verify each identification claim, but the school is expected to utilize the following process for reviewing and identifying its level of distinction.

1. **Review:** A school-based advisory committee involving external stakeholders as appropriate, will make recommendations for bronze, silver, or gold status. It *is not appropriate to assign the review process to an individual. The review process should be inclusive and transparent.*
2. **Verification:** The recommendation of the advisory committee must be signed off by each member of the committee and reviewed by the school principal. Upon verification by the principal, the recommendation will be submitted to the district school board and superintendent for review and verification.
3. **Submission (beginning summer 2020):** Only when each layer of review and verification is complete, the final self-identification will be submitted to the OSDE. Levels of distinction for Programs of Excellence will be valid for three years and will be visible on the school's accountability dashboard. *The remainder of this school year provides schools with the opportunity to select priority areas for which they will work to be ready to identify as bronze, silver, or gold in 2020.*

In this Program of Excellence rubric, each element of the rubric is provided as a characteristic of a bronze, silver, or gold program. **In order to be a bronze Computer Science program, every bronze element, or characteristic, must be true of the school's Computer Science program.** A school's Computer Science program may only be considered silver only when every bronze element **AND** every silver element is true. Likewise, a school's Computer Science program may only be considered gold when every bronze, silver, **AND** gold element is true.

The fidelity of the Programs of Excellence process hinges on the fair and honest local review. Please help protect this ambitious effort to celebrate the great work happening across Oklahoma.

Category 1 Instruction and Curriculum

Equitable learning experiences for all students must be based on a coherent system where instruction, curriculum, and assessments are aligned to the same goals.

A BRONZE program…
A. Ensures all computer science curriculum is aligned to the appropriate grade-level Oklahoma Academic Standards for Computer Science (OAS-CS) and ensures teachers are responsive to the learning progression and needs of all students through the use of: • frequent formative assessments of learning utilized to provide timely, specific, and actionable feedback to students and to adjust instruction; • differentiated instructional opportunities that extend and support student learning; and • meaningful and relevant curriculum experiences.
B. Employs at least one teacher who develops and implements OAS-CS aligned learning experiences using evidence-based pedagogy resulting in meaningful student engagement and achievement.

A SILVER program has all the elements of a BRONZE program and…
C. Offers a variety of computer science learning opportunities and courses that prepare students at all levels for college and/or career. Such opportunities and courses should incorporate at least one of the following features: • relevant real-world applications within the curriculum, including but not limited to STEM-related applications • exposure to applicable college majors and career fields that utilize computer science concepts that can be used to enable students recognize possible future career connections
D. Employs at least one computer science teacher within the school. This teacher must either hold a valid computer science teaching certificate or a recognized computer science endorsement or micro-credential focused on a particular course or curriculum.

OKLAHOMA STATE DEPARTMENT OF
EDUCATION
CHAMPION EXCELLENCE

E. Ensures all teachers of computer science implement research-based instructional practices for effective student mastery of all applicable OAS-CS, including:
- engaging, meaningful experiences that allow for flexibility in how students may demonstrate proficiency;
- regular formative assessments of student comprehension used to elicit student thinking and drive subsequent instruction, building on productive beginnings and addressing emerging understandings;
- standards-aligned summative assessments utilized for student reflection and goal-setting opportunities; and
- opportunities to extend instructional experiences through new integrations, applications, and challenges that promote deep understanding beyond the minimum requirements, while giving consideration to developmental appropriateness.

A GOLD program has all the elements of a BRONZE and SILVER program and…

F. Provides time for collaboration among administrators, teachers, and students to build purposeful real-world and academic connections into the computer science curriculum.

G. Offers opportunities for integration of computer science concepts into multiple subject areas.

H. Employs certified or credentialed computer science teachers in all computer science classrooms who work to promote an equitable, high-quality computer science program that, if possible, can extend instruction beyond the OAS-CS standards, while giving special consideration to developmental appropriateness.

I. Incorporates content-focused curriculum in which programming tools, equipment, and language act as vehicles for learning the concepts and practices, rather than being the focus themselves.

J. Provides support structures through which all students can engage in grade-level OAS-CS, including:
- opportunities for students to reflect on and evaluate their own learning, and for teachers to work with students to set academic goals based on classroom assessments;
- meaningful, content-rich opportunities for students to learn computer science concepts and engage in computer science practices;
- instructional support strategies that support struggling learners and those with disabilities; and
- authentic opportunities to create technology within socially relevant and culturally situated contexts.

Category 2 Student Access and School Culture

Equitable learning experiences are provided for all students in an environment that supports a climate conducive to computer science experiences.

A BRONZE program…

A. Provides **exposure** to computer science education for all students in order to introduce students to the basic foundations of computer science.
   • Elementary school students receive instruction in computer science through either integration in the general classroom or into an existing special (i.e., media arts or computer lab).
   • Middle school students have access to computer science curriculum through integration into math, science, or other subjects.
   • High school students have access to computer science concepts through integration into math, science, or other subjects or through an introductory course over the course of grades 9-12 and are supported to explore, when appropriate, connections between computer science and their Individual Career Academic Plan (ICAP).

B. Establishes a shared commitment to maintaining and growing a computer science program that provides equitable access to all students at the school. Efforts include a plan to provide equitable computer science access to all students regardless of race, gender, socio-economic status, English language proficiency, or disability.
C. Supports opportunities for all students to participate in real-world, hands-on computer science experiences beyond the academic day (i.e., clubs, field trips, internships, or mentoring opportunities) to provide quality access to computer science experiences.

OKLAHOMA STATE DEPARTMENT OF
EDUCATION
CHAMPION EXCELLENCE

D. Provides teachers of computer science with the instructional materials and computing tools that allow students to fully experience the content and process of quality computer science instruction, including but not limited to the following:
- hardware meeting the needs of all curriculum initiatives,
- software tools supporting instructional strategies, and
- internet access with bandwidth appropriate for meeting instructional needs.

A SILVER program has all the elements of a BRONZE program and...

E. Provides **moderate exposure** to quality computer science education for all students in order to enable students to go beyond the basic foundations of computer science.
- Elementary school students receive instruction in computer science through either through stand-alone or integrated activities at least once each week.
- Middle school students have access to at least one independent computer science class over the course of grades 6-8 and see the connections between computer science and future career and academic options.
- High school students have access to at least one rigorous computer science class that sufficiently addresses at minimum the OAS-CS Level 1 standards (i.e., computer science 1, computer science 2) over the course of grades 9-12 and are provided with opportunities that allow students to see connections, where applicable, between computer science and their Individual Career Academic Plan (ICAP).

F. Conducts ongoing evaluations of demographic representation in computer science classes and uses the data to create and implement a plan that is inclusive of all learners to improve access, engagement, and full participation in computer science as well as to inform decision-making to ensure course enrollment is proportionally representative of the school demographics.

G. Sponsors opportunities for students and members of the community to participate in real-world, hands-on computer science experiences beyond the academic day (i.e., clubs, field trips, internships, mentoring opportunities, or community nights).

H. Provides recognition for quality integration and instruction of computer science that encourages these teachers to serve as models for others. Examples of recognition might include:
- articles in school newsletters or school informational emails,
- peer recognition at faculty meetings,
- press releases, and
- project/assessment showcase.

A GOLD program has all the elements of a BRONZE and SILVER program and…

I. Provides **broad and deep exposure** to computer science education for all students in order to enable students to become strong independent users of the concepts of computer science.
- Elementary school students receive instruction in a stand-alone computer science class at least twice per week.
- Middle school students have access to at least two independent computer science classes over the course of grades 6-8. Students are shown connections between computer science and future career and academic options.
- High school students have access to at least two or more classes that address OAS-CS Level 1 and Level 2 standards over the course of grades 9-12 and which vary in regards to required entry-level knowledge, which must include at least two of the following:
  - courses that address OAS-CS Level 2 standards (i.e., Advanced Placement courses, IB credit courses);
  - career and technical preparation/endorsements;
  - concurrent and/or dual-enrollment opportunities; and/or
  - specialized courses (i.e., game design, cybersecurity, networking, robotics).

J. Employs administrators who provide support for the program by encouraging and helping to implement special school-wide and/or community computer science events to publicly share and celebrate student and teacher achievement in computer science. These events could be school-organized computer science showcase nights in which students can present or share work and parents/students can participate in computer science activities.

Category 3 Professional Learning

Effective educators and leaders belong to a learning community that supports a climate of growth. Ensuring effective educators and leaders requires a systematic approach addressing ongoing, job-embedded, professional development.

A BRONZE program…
A. Ensures the creation and implementation of an iterative and ongoing professional development plan for teachers and school leaders. This plan supports targeted professional development for teachers so they are able to deepen their foundation of computer science concepts and practices.
B. Supports teachers and school administrators by providing annual opportunities to analyze and understand OAS-CS and expectations for their grade level(s) as well as understand the learning progression with attention to coherence between grade levels.
C. Provides opportunities for teachers to participate in computer science professional learning communities to collaborate with peers, celebrate successes, share lessons learned, address challenges, and build support for computer science implementation.
A SILVER program has all the elements of a BRONZE program and…
D. Provides teachers with opportunities to partner with or complete externships with area businesses or other organizations to build understanding of fundamental computer science concepts and skills, as well as how to implement these concepts and skills across multiple content areas while building support for computer science implementation at the school.

E.	Provides multiple opportunities for teachers of computer science to network with other teachers of computer science and attend immersive exploration experiences specifically around implementation, instruction, and/or content related to the OAS-CS. This could include, but is not limited to: • face-to-face meetings, • virtual meetings • regional workshops, and • national workshops.
F.	Actively involves teachers in decision-making for computer science professional development programs, curriculum changes, and other activities that affect their practice in order to promote greater opportunities for engaging professional development experiences.
	A GOLD program has all the elements of a BRONZE and SILVER program and…
G.	Expects all computer science teachers to actively participate in at least one computer science-related professional organization (i.e., the Oklahoma Chapter of the Computer Science Teachers Association). At the elementary level, the school has at least one computer science instructional coach or ambassador who actively participates in at least one computer science professional organization.
H.	Establishes at least one community, state, or national computer science partnership (i.e., business, non-profit, educational organization, government, or Tribal Nation) to support teachers and students in computer science initiatives beyond school walls.
I.	Identifies at least one individual at the school as a computer science instructional coach, lead teacher, or master teacher who assists other teachers in designing learning experiences that make connections between computer science and other disciplines as well as with real-world contexts.