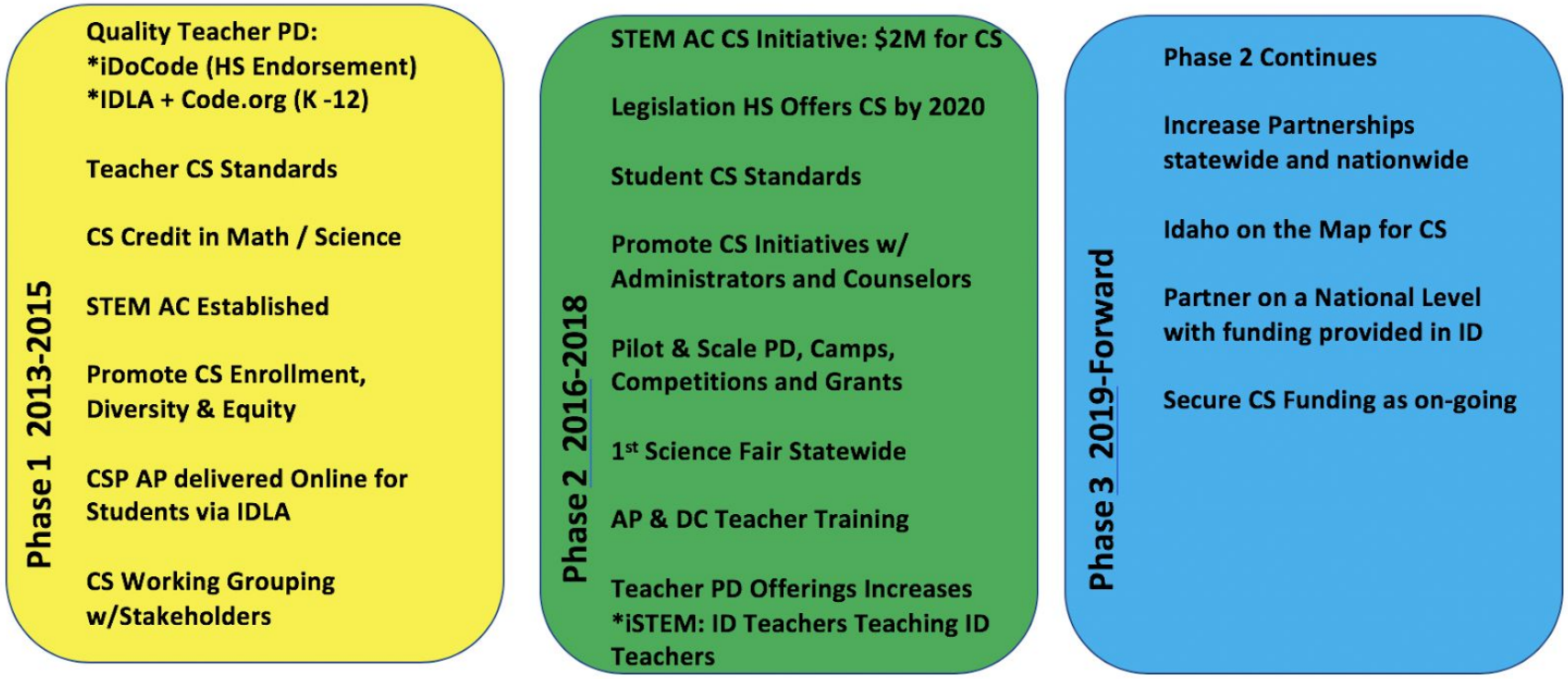
Idaho Computing Technology
K-12 CS State Plan



Idaho will be the leader among states in preparing its educators & students to succeed in today's knowledge-based economy, by providing equity & access to computing technology, education & training for all Idahoans.

Vision: Idaho will be a national leader in preparing its educators and students to succeed in today's knowledge based economy, by providing equity & access to computing technology, education, and training for all Idahoans.

This plan is the framework by which the leadership team will document both its strategic goals and the progress towards realizing them.

Admission Requirements - Allow computer science to satisfy post-secondary admissions requirements.
Certification and Licensure - Goals for endorsing/certifying every instructor teaching computer science in Idaho's schools.
Curriculum - Recommend courses and curriculum aligned to the state standards.
Diversity - Goals to increase the number of underrepresented groups passing the AP Computer Science Principles exam.
Funding- Secure funding from state and federal government, and private industries to pay for professional development, curriculum, and technology needs.
Knowledge Report - The Idaho KNOWLEDGE Report evaluates various key performance indicators for industries that are cognitive and complex. It considers a variety of factors that influence technology economic development, including wages, education, and public policy, giving Idaho policymakers and industry leaders valuable data to help them better understand how to shape and nurture Idaho's technology ecosystem.
Landscape Report - A survey of the current state of computer science education in the state of Idaho.
Outreach -Strategies to increase awareness of the current computer science work in the state, communicate the state plan, and receive feedback from a variety of partners.
Preservice Programs - Integrating computer science into every elementary education program at our institutions of higher education.
Professional Development - Strategies to establish qualified computer science instruction in every Idaho school.
Standards - Goals to develop voluntary standards with a resource guide to help district's implement the standards.
Strategic Goals - The list of top line goals that, when completed, will achieve the vision.

Landscape and Goals

Landscape Report					
Goals 1. Understand and measure the current state of computer science education in the state across a variety of areas to inform the state's goals and ensure successful outcomes.					
Strategies	**Start/End**	**Responsible Party/Partners**	**Progress**		**Specific Evidence of Success or Completion**
			Planning	**Acting**	
Build collaborative team to define data to collect, develop survey, collect data and write landscape report.	Fall 2018/ Spring 2019	Idaho Digital Learning, STEM AC, IETA, Higher Ed, SDE, OSBE, ITC	X	X	Team of 5 people identified as key leaders on landscape report development
High School Students					
Opportunity: Survey should include all computer science courses offered at each Idaho high school, listed in their course catalog, even if offered through a virtual entity (i.e. Idaho Digital Learning).	Spring 2019	Landscape committee	X	X	In 2018, the Idaho legislature enacted a bill requiring all HS in Idaho to offer CS in their catalogue, whether it is face-to-face or offered virtually (i.e. IDLA) by 2020.

Enrollment: Collect statewide data annually, by high school, of number of students enrolled in computer science courses, including student demographics i.e. (i.e. grade level, gender).	Spring 2019	Landscape committee	X		Survey deployed and participation for responses
Effectiveness: Collect statewide data annually to measure the effectiveness of courses taught including dual credit, AP, and CTE. Examples: How many students completed the course, by letter grade, by gender? How many students passed one of the two Computer Science AP exams? How many students received college credit for a computer science course?	Spring 2019	Landscape committee	X		Present data in landscape report
Middle School Students					
Opportunity: Survey should include the number of students receiving specific computer science instruction through computer science or integrated computer science courses (curriculum integrated into mathematics or science courses).	Spring 2019	Landscape committee	X		Present data in landscape report
Elementary School Students					
Opportunity: Survey should include the number of students receiving integrated computer science curriculum through media arts or computer lab time in every elementary school. Report should include an estimate of the number of instructional hours in a year-long period students receive.	Spring 2019	Landscape committee	X		Present data in landscape report
Teachers					

Opportunity: Survey should ask for number of teachers certified to teach computer science courses (i.e. AP certified, dual credit enrollment certified, State CS Standards certified, other)	Spring 2019	Landscape committee	X		Present data in landscape report
Outreach					
Effectiveness: Survey should ask questions to ascertain district's awareness of CS standards and curriculum, access to remote learning courses (IDLA), teacher development courses, STEM action center grants, and dual credit opportunities.	Spring 2019	Landscape committee	X		Present data in landscape report
Funding					
Survey questions should ascertain funding needed to close any gaps between the district's current state and the state's strategic goals.	Spring 2019	Landscape committee	X		Survey data from all districts
Create and deliver landscape survey to all districts in the state. IETA to deliver survey to superintendents and technology directors.	Spring 2019	Landscape committee/State Dept of Education	X		Survey data from all districts
Write report. Establish baseline from data and create metrics to evaluate goals and strategy.	Spring 2019	Landscape committee	X		A publicly available report that drives / enhances the state's strategic plan

Strategic Goals

Vision

By 2020, all High Schools schools in Idaho will offer computer science and have a qualified/trained computer science teacher. This can be offered face-to-face, blended, or online through entities such as Idaho Digital Learning Alliance.

By 2022, all Elementary and Middle Schools in Idaho will offer computer science to students K - 8.

By 2025, Computer Science is a stand alone High School graduation requirement.

The Computing Technologies Working Group envisions a future in which students:

- critically engage in public discussion on computer science topics;
- develop as learners, users, and creators of computer science knowledge and artifacts;
- better understand the role of computing in the world around them; and
- learn, perform, and express themselves in other subjects and interests.

(K–12 Computer Science Framework, 2016)

Goals	**Related Subsection of Strategic Plan**	**Start/End**	**Responsible Party/ Partners**	**Progress**	
				Acting	**Done**
Every high school will offer Computer Science Principles or an equivalent concurrent enrollment (DC) computer science course, either with local, certified teachers or through IDLA.	Curriculum/ Professional Development	Spring 2018/ Summer 2021	IDLA, STEM AC, LEAs	X	

Establish at least one teacher teaching either computer science or integrated computer science courses within science and/or mathematics in every middle school. Or determine how to offer virtually.	Professional Development	Spring 2017/ Summer 2021	LEAs, STEM AC, IDLA	X	
Establish at least one teacher teaching either computer science or integrated computer science courses within media arts or computer lab time in every elementary school. Or determine how to offer virtually.	Professional Development	Summer 2017/ Summer 2021	LEAs, STEM AC, IDLA	X	
All teachers teaching computer science will be certified or endorsed.	Certification and Licensure	Fall 2017/ Fall 2022	OSBE, SDE, LEAs, CTE	X	
Establish full certification and teacher endorsements for computer science.	Certification and Licensure	Spring 2017/ Summer 2017	OSBE, SDE, LEAs, CTE		X
Secure state-level funding dedicated to computer science professional development for existing teachers. Convert to ongoing.	Funding	Summer 2017/ Spring 2018	Legislature, STEM AC	X	X
Secure funding from federal programs, local and national industry and other funders.	Funding	Summer 2017/Summer 2019 and Ongoing	STEM AC, SDE, IDLA, CTE, OSBE	X	X
Allow computer science to satisfy a core admissions requirement at institutions of higher education.	Admissions Requirement	WHEN? Spring 2025?	Legislature		X

Double the percentage of students including underrepresented groups (females, diverse races/ethnicities, rural students, low SES) taking CS courses in high school.	Diversity	Summer 2017/ Summer 2024	LEAs	X	
Double the percentage of students including underrepresented groups (females, diverse races/ethnicities, rural students, low SES) passing the AP Computer Science Principles exam or receiving Dual Credit in CS.*	Diversity	Summer 2017/ Summer 2024	LEAs	X	
By 2022, all Elementary and Middle Schools in Idaho will offer computer science to students K - 8.	Curriculum/ Professional Development	Spring 2018/July 2022	OSBE, SDE, CTE, IDLA, STEM AC	X	
By 2025, Computer Science is a stand alone High School graduation requirement.	Graduation Requirement	Fall 2022/Fall 2025	OSBE		

* See https://research.collegeboard.org/programs/ap/data for data.

Teacher Pipeline

Professional Development

Goals

1. Establish at least one teacher teaching high-quality computer science courses in every high school.
2. Establish at least one teacher teaching either computer science or integrated computer science courses within science and/or mathematics in every middle school.
3. Establish at least one teacher teaching either computer science or integrated computer science courses within media arts or computer lab time in every elementary school.

Strategies	**Start/End**	**Responsible Party/Partners**	**Progress**		**Specific Evidence of Success or Completion**
			Acting	**Done**	
Create three regional hubs (North, Southwest, East) for professional development. Examples include, IDLA's Code.org PD and IDoCode at Boise State University (Southwest region).	Spring 2019	Higher education, IDLA	X		Three hubs exist to cover 100% of the state's teachers
Secure professional development funding through grants or other means. Inventory and communicate professional development opportunities to school district leaders at Superintendent's meetings and through STEM Action Center and IDLA newsletters.	Spring 2018	STEM AC, IDLA, Superintendents	X	X	Funding is accessible by districts for professional development and stipends. Multiple meetings held with CTE directors, principals, IDLA, STEM AC.
Host local, regional, statewide and/or online professional development trainings across the state	Summer 2017, ongoing	Higher education, STEM AC, IDLA	X	X	Multiple workshops across state that include teachers who

					can't attend in-person.
Create professional development provider selection rubric. Use the rubric to select high-quality statewide computer science professional development.	Fall 2018	STEM AC	X		Professional development rubric has been developed and grant award is open through STEM AC for providers via STEMworks; to be implemented by summer 2019
Create online endorsement options with post-secondary partners.	Fall 2018/Fall 2021	STEM AC, IDLA, Higher Ed	X		Creation of online endorsement option

Certification and Licensure

Goals

1. Establish full certification and teacher endorsements for computer science.
2. All middle and high schools teachers teaching computer science will be certified or endorsed.

Strategies	**Start/End**	**Responsible Party/Potential Partners**	**Progress**		**Specific Evidence of Success or Completion**
			Acting	**Done**	
Allow teachers to teach computer science under temporary approval after receiving professional learning.	Fall 2017/ Summer 2018	Certification at SDE/ superintendents, principals		X	A policy is created that identifies the requirements, provides an approval code, and sets up a publicly-accessible

					approval form allowing teachers to teach out of subject
Create computer science teacher standards.	Completed in Fall 2017	SDE, STEM AC, OSBE, IDLA, educators, higher education, industry		X	Teacher standards based on national models (including multi-state teacher cert exams) have been created
Create a secondary/high school add-on endorsement.	Completed in Fall 2017	Certification at SDE, OSBE, higher education		X	A grades 7-12 endorsement for computer science has been added to the state's list of endorsements
Create a secondary/high school full certification pathway by developing requirements to guide initial computer science certification for preservice teachers.	Completed in Fall 2017	Certification at SDE, OSBE, higher education		X	The computer science certification pathway mirrors the initial full certifications in other areas and includes general education pedagogy, student teaching, methods, and content.
Adopt an assessment for teacher certification in computer science.	Spring 2016/Fall 2017	OSBE, SDE Certification,		X	A subject matter exam for computer science teachers, PRAXIS

Preservice Programs					
Goals 1. Integrate computer science education into all elementary education programs. 2. Develop computer science preservice programs for secondary educators at the institutions of higher education in the state that account for 75% of the state's new teacher graduates.					
Strategies	**Start/End**	**Responsible Party/Potential Partners**	**Progress**		**Specific Evidence of Success or Completion**
			Acting	**Done**	
Update existing preservice educational technology courses to include modern computer science content.	Spring 2018/Spring 2019	Higher education, OSBE, educators	X		A sample syllabus and course materials are provided to embed a unit on computer science and computational thinking.
Work with higher education partner to craft state expectations for computer science pre-service programs based on a nationally-recognized model.	Fall 2017/ Spring 2018	OSBE, CS State coordinator, Higher education	X		Recommendations are incorporated into the state's approval process for school of ed programs.
Set up approval process for preservice programs, including existing math and science programs.	Spring 2018/Summer 2019	OSBE, Higher ed	X		Schools of education are submitting approvals for STEM education

					programs that include a computer science offering and integrate computer science into other STEM areas.

Curriculum and Courses

Standards					
Goals 1. Develop a discrete set of voluntary standards at each grade level, with standards integrated into other subjects in elementary. 2. Create resources to guide district implementation of the standards.					
Strategies	**Start/End**	**Responsible Party/Partners**	**Progress**		**Specific Evidence of Success or Completion**
			Acting	**Done**	
Get board approval of development timeline and composition of development committee. Secure budget for development committee meetings.	Completed Spring 2017	Director of Curriculum and Instruction at SDE, CTE Coordinator		X	Board voted to move forward on standards development and approval of the committee.
Review existing Idaho Science standards for similarities/alignment with K-12 Computer Science Framework.	Completed Spring 2017	Director of Curriculum and Instruction at SDE, CTE, industry representatives; higher education		X	A crosswalk between Idaho Science Standards and K-12 computer science concepts and practices.

Set up public review period.	Completed Fall 2017	SDE and OSBE		X	A web survey with background, draft standards, contact info is shared with districts, advocacy groups, and teacher associations.
Revise standards based on public review and present to Board for adoption	Fall 2017/ Spring 2018	Standards committee		X	A revised draft with the major themes from the public review identified and responded to.
Standards added to school accountability system.	Fall 2018	Districts		X	Schools use the standards.
Revise standards based on accelerated revision cycle.	Spring 2021	Curriculum and Instruction at SDE, CTE	X		A set of revised standards

Curriculum					
Goals 1. Recommend courses, resources, and curriculum aligned to the state standards.					
Strategies	**Start/End**	**Responsible Party/Partners**	**Progress**		**Specific Evidence of Success or Completion**
			Acting	**Done**	
Publish assortment of resources on STEM AC's resources portal.	Fall 2018	STEM AC and IDLA	X	X	The STEM AC resources webpage includes curriculum resources and includes integration ideas for K-8 and lesson plans.
Create state level course codes and communicate them to LEAs.	Spring 2019	OSBE, SDE Curriculum and Instruction, CTE LEAs	X		Shared course codes between CTE and Academic pathways.
Publish curriculum alignment rubric for LEAs selecting curricula and update resources list with approved, suggested curriculum resources on the SEA's computer science web page	Summer 2019	Curriculum and Instruction at SDE	X		Revise computer science webpage to show alignment between recommended curriculum resources. Include alignment rubric.

Admissions Requirements					
Goals 1. Allow computer science to satisfy post-secondary admissions requirements.					
Strategies	**Start/End**	**Responsible Party/Partners**	**Progress**		**Specific Evidence of Success or Completion**
			Acting	**Done**	
Work with higher education to allow computer science to satisfy an admissions requirement	Spring 2017	OSBE, Higher education		X	Specific computer science courses satisfy core admissions requirements for Math and Science.

Outreach

Outreach					
Goals 1. Increase awareness of the current computer science work in the state, communicate the state plan, and receive feedback from a variety of partners, increase awareness of the need for CS education.					
Strategies	**Start/End**	**Responsible Party/Potential Partners**	**Progress**		**Specific Evidence of Success or Completion**
			Acting	**Done**	
Get feedback on draft plan from partners (teachers, district leaders, parents, researchers, etc.)	Summer 2017/Fall 2018	Computing Technologies Working Group; CS State coordinator, OSBE, SDE, CTE, educators and administrators, LEAs, industry	X		Arrange and hold at least XXX local or regional meetings to review the plan
Create computer science education portal/website/social media/PR presence to keep partners informed	Fall 2017/ Fall 2018	STEM AC, media, LEAs, higher ed, teachers	X		State or partner website page created to house all state computer science effort materials
Publish state plan on state computer science web page. Include information such as the state's vision, key implementation milestones, standards, certification	Fall 2018	State CS coordinator	X		State plan available on STEM AC website

requirements, advocacy materials, curriculum resources, and a constantly updated FAQ.					
Computing Technologies Working Group members will announce/discuss/request feedback on draft state plan at statewide conferences including: at statewide technology conference, superintendents and administrators conference, and statewide education association conference.	Spring 2019	CT Working Group Members	X		Event, press release, one-pager, and a video
Marketing to include school librarians and out-of-school programs as many now support CS activities.			X		
Create and offer an Idaho CS Summit.	Spring 2019/Fall 2019	STEM AC / IDLA	X		Educators throughout Idaho attend CS Summit
Increase the opportunities for internships, externships, mentorships, and apprenticeships for educators and students to connect education to industry.	Ongoing	STEM AC, WDC, Higher Ed, OSBE, SDE, CTE	X		

Funding

Funding					
Goal 1. Secure ongoing state-level funding dedicated to computer science professional development for existing teachers. 2. Secure funding from federal programs and local industry.					
Strategies	**Start/End**	**Responsible Party/Potential Partners**	**Progress**		**Specific Evidence of Success or Completion**
			Acting	**Done**	
Identify and work with legislative champions in the house or senate education committee to propose/support a bill/appropriation to secure ongoing funding for computer science professional development.	Summer 2017/ Spring 2019	Computing Technologies Working Group, Legislators	X		A bill signed by the governor providing ongoing funding for computer science initiatives including professional development.
Work with the state's economic development commission and workforce development council to provide funding for CS professional development.	Spring 2018/ Spring 2019	Computing Technologies Working Group,Economic development groups, WDC	X		A line item and/or grant in the economic development budgets for K-12 computer science initiatives.
Create a dual-coded CTE/academic pathway of four computer science courses, including an introductory course, AP courses, and a course in cybersecurity, robotics, or mobile app/game design.	Summer 2017/ Fall 2018	OSBE, CTE, SDE Curriculum and Instruction, other educational partners	X		Dual-coded pathway that allows funds to apply to computer science.

Work with the state's ESSA planning committee to include computer science funding in Title I, II, or IV.	Spring 2017/ Summer 2017	Computing Technologies Working Group, STEM AC, SDE	X		ESSA funding is provided to support CS professional development.
Partner with researchers and apply for various NSF grant to implement an introductory computer science course in districts with high rate of students receiving free and reduced price meals and/or to support CS professional development	Spring 2017/ Summer 2019	Higher ed, CS State coordinator	X	X	Secure a multi-year NSF grant.

Diversity

Diversity

Goals

1. Double the number of rural, female, African American and Hispanic students scoring 3 or higher on the AP Computer Science Principles exam by 2022.
2. Continue to provide and expand professional development opportunities to educators who serve traditionally underrepresented populations in STEM/CS.

Strategies	**Start/End**	**Responsible Party/Potential Partners**	**Progress**		**Specific Evidence of Success or Completion**
			Acting	**Done**	
Identify states that are working to identify successful strategies for increasing diversity in K-12 computer science education.	Spring 2017/Fall 2019	CS and SDE State coordinators	X	X	Gleaned 1-2 ideas from multiple states that can be incorporated
Identify and build partnerships with state diversity and equity initiatives to inform the development and implementation of the state plan.	Summer/Fall 2017	CS State coordinator, Diversity advocates	X		Partnerships built with state agencies that represent underrepresented groups
Identify the difference between statewide student demographics and current representation in computer science classes. Create district-by-district profile.	Fall 2017/Fall 2018	OSBE, CS State coordinator, Computing technologies workgroup	X		Strategic plan to increase equitable access to computer science in K-12

Create a district guide focused on recruiting underrepresented groups and train administrators and counselors at summer meetings.	Fall 2018/Fall 2019	STEM AC, Diversity advocates	X		Guide created, shared, and administrators and counselors trained.