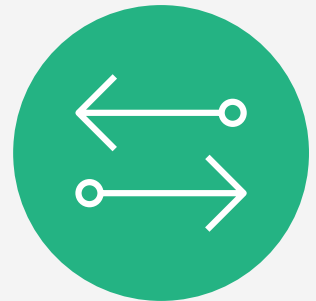
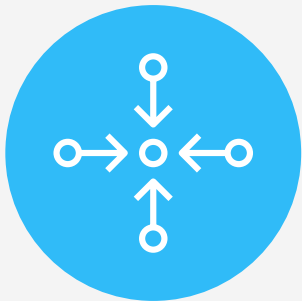


CS Policy

to Practice:

Understanding Emerging Approaches to
State-Level Computer Science Education
Policy Design in the United States



IN PARTNERSHIP WITH:



About CSforALL

CSforALL is the national hub of the computer science for all movement, with a mission to make high-quality computer science an integral part of K–12 education in the United States. Our work spans national and local levels to provide equitable and accessible K–12 computer science education to every student. We engage with diverse stakeholders leading computer science initiatives across the nation to support and facilitate implementation of rigorous, inclusive, sustainable computer science. For more information, see www.csforall.org or follow us on Twitter: @CSforALL.

About the Expanding Computing Education Pathways (ECEP) Alliance

ECEP is an NSF-funded Broadening Participation (BPC) in Computing Alliance that focuses on increasing the number and diversity of students in computing through state-level CS education advocacy and policy reform. The ECEP model emphasizes building state-level capacity to address the diverse and intractable contextual factors that have stymied efforts to expand computing education pathways. ECEP collaborates with broad based teams in 22 states and Puerto Rico to develop and test interventions focused on systemic change. Interventions include: developing tools and resources for state-level support, defining BPC indicators and measuring state BPC goals.

About SageFox

SageFox is a research and evaluation firm located in Amherst Massachusetts. Our work is based on values of collaboration, transparency and meaningful contribution to the education community. Projects have focused on retrospective studies to uncover the long-term impacts of education programs, aggregating knowledge across programs and/or states and understanding emerging needs in STEM education. In CS education projects we address policy reform, teacher professional development, curriculum, research-practice partnerships, shared data collection and pathway development.

Acknowledgements

We would like to thank, first and foremost, the state, district, and school leaders who took the time to share their approaches and experiences supporting computer science education. Special thanks goes to Katie Hendrickson and Liz Gauthier from Code.org for their invaluable contributions to our methodology and for feedback on the final report. Kim Scardino and David Byer of Apple and Allyson Knox of Microsoft Philanthropies all provided context on state CS policy and feedback on our initial frameworks.

Support

Support for this project was provided by the Charles and Lynn Schusterman Family Foundation. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the Foundation.

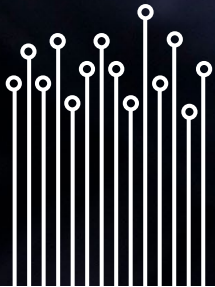


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Suggested Citation: Santo, R. & DeLyser, L. (2020). *CS Policy to Practice: Understanding Emerging Approaches to State-Level Computer Science Education Policy Design in the United States*. New York, NY: CSforALL.



In the United States, there is currently an unprecedented call for the inclusion of computer science (CS) education within K–12 school systems for all students. This computer science for all movement has resulted in funding, an increased focus by industry and nonprofit organizations, an increase in the number of educators teaching and students experiencing CS education, and policies aimed at broadening participation in K–12 pathways that lead to post-secondary study and eventual careers. At the same time, there is a call for critical evaluation and reformation of systems within the United States to reduce racism and bias, increase equity, and open blockades that have long prevented equality in society, and, importantly for this report, access to academic achievement.

State-level policies enacted to define and support instruction and learning are key drivers for achieving equitable education systems in the United States. The field of computer science education is increasingly focused on putting in place such policies, ones that encourage, and in some cases require, CS instruction in K–12 school systems. In this report, we offer an examination of state-level computer science (CS) education policies and the ways in which those policies are experienced by state and school system leaders in their efforts to broaden participation in computing and provide equitable experiences in CS education.

This report seeks to document progress, make recommendations, and highlight questions at the intersection of accountability, alignment, and data related to state CS education policy.

We build on existing scholarly work in educational policy, and share explicit examples, interview quotes, and case studies for readers to apply in their work as state leaders, school or district leaders, teachers, or advocates. Throughout the discussion, we include community voices and examples of equity goals and outcomes, explicit connections to current policies in a variety of states, and frameworks that synthesize examples for policymakers and advocates.

Educational institutions do not experience individual policies in isolation; instead, they must integrate any new policy within existing landscapes of overlapping policies. With this in mind, this report does not look at individual CS education policies in a vacuum, but uses community voices to reflect on the full landscape and the impacts policies can have when they intersect—sometimes in mutually reinforcing ways, and sometimes in ways that conflict.

In our efforts to strive for equity and anti-racism, we also acknowledge that earlier scholarship in educational policy and CS education has too often been grounded in colonialist systems mostly designed by white men—ones that presume that answers around what CS education should look like are held by actors outside historically marginalized communities. This leaves us to immediately acknowledge the risks of holding up privileged or mostly segregated school systems as models for success, and (2) conforming to educational institutions' definitions of high quality that do not respect or sustain historically minoritized communities' culture. In this report, we seek to be careful of the line between CS education goals in service to CS as a fundamental literacy and the daily trade off that school leaders

make to serve their communities with limited resources. Policymakers themselves, advocates, school and district leaders, nonprofit organizations, researchers, and community members all have a stake in the design and implementation of policy for CS education outcomes. CS education policies in any regional context will also intersect with the broader landscape of educational policy within each state, and the interactions of policies will require communities to find thoughtful approaches that adapt broad goals to individual values and contexts without losing focus on goals for equity.

Policy is an important tool that is designed to create consistency, sustainability, and ultimately equity in society. In its earliest stages, implementation of CS education was driven by advocates, the enthusiastic core of teachers, faculty, parents, community members, and professionals who recognized the value of CS education for today's youth, and individually worked to bring CCS education to the communities they could. The work to implement policy should codify movement goals of quality, rigor, and equity for continued implementation even when the spotlight of educational initiatives moves. We hope to highlight opportunities to support those early enthusiasts and sole adopters and advocates, while **enabling a landscape in which equity is not driven by the tireless actions of the few, but instead is a mutually agreed upon goal of the many.**

Key takeaways from the report include:

- **Early teacher advocates are key to building interest and momentum, but insufficient alone to move the mechanisms of power to reach all students.** Policy does not replace these individuals, but instead can support them and enable other actors to share the work.
- **Equitable policy outcomes require equity to be a core priority from the start.** Without clear goals, communication, and data routines around equity, policy may not produce desired results for all students, and it's harder to retrofit existing policies to make them more equitable than it is to design with equity at the center of policy in the first place.
- **CS education policy design should balance rules and incentives (accountability) with clarity on goals and supports for reaching them (alignment).** Too much accountability with too little support on the one hand, or substantial support with few modes of holding systems accountable on the other, are each likely to result in inequitable policy implementation.
- **In a strong accountability and high alignment environment, clear targets are more likely to be reached, resulting in equitable institutional implementation** no matter what individual preferences are, especially when there are competing priorities.
- **The CS education field should embrace the perspective of "accountability as collective responsibility for learning," rather than the more traditional view of "accountability as sticks and carrots."** This perspective views policy through a communal lens, as an expression of shared values, with accountability fostered internally within school systems and externally through communities and governance structures.
- **Clear and consistent communication is key.** For any policy, clear and consistent messaging that reaches all actors in the system, including administrators and decision makers, is key to reaching policy goals.
- **Policies must take into account, and directly support, the broader systems supporting classrooms and students.** Sustainable change needs to be woven into institutional structures in order to help set priorities and improve capacities to implement CS education—this is critical to reaching goals related to equitable learning. Strategic planning, funding, data, and the professional networks inhabited by teachers and administrators should all be considered as critical elements of systems that support equitable learning in CS education.
- **Policy needs to be adaptable to individual locations.** In order for state-level policy to apply across diverse geography and communities, the act of policymaking needs to include the voices of those who will be enacting the policies. Giving school and district leaders, teachers, parents, and community leaders a "seat at the table" can help prevent unintended consequences.
- **Policy-linked data needs to focus on improvement, not just accountability.** All education is in a state of continuous reflection and improvement. Policy and the data supporting the evaluation of the policy should look at multiple levels of equity, access, and implementation, and be used to iterate, not simply to evaluate and judge.