MENTORS in CS Program Guide

A Framework for Building Inclusive Mentorship in Computing Education

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Introduction

Why is mentoring needed in CS?

As K–12 computer science (CS) education grows across the U.S., so does the need to support the educators at its core. While the number of CS teachers is rising, many are entering the classroom without a formal background in the field. Around 75% of CS teachers lack a degree in computer science or CS education—a sharp contrast to other disciplines like math, where the majority of teachers have a relevant degree.

Most new CS educators receive only a brief, one-time professional development (PD) session, typically focused on delivering a specific curriculum. These workshops often prioritize content delivery over pedagogy, offering little to no time for practicing classroom strategies or receiving feedback. As a result, many teachers feel unprepared to manage the complexities of CS instruction, particularly in culturally diverse classrooms.

The gap becomes even more evident when you look at ongoing support:

- Few teachers report having access to mentors or coaches.
- Collaboration with peers is rare, especially within their own schools.
- Opportunities to rehearse and refine instructional practices are limited.
- Most PD options focus narrowly on curriculum implementation, with few avenues to continue learning or for building community.

This lack of sustained support contributes to isolation, decision fatigue, and burnout, especially for those new to the field. Teachers are often left to navigate a flood of inconsistent resources, with limited guidance on how to adapt CS for diverse learners.

Mentoring helps bridge these gaps. It offers a personalized, ongoing support system where CS teachers can:

- Build confidence in both content and pedagogy
- Collaborate with experienced CS educators
- Reflect on and improve instructional practice
- Receive guidance on equity-focused teaching
- Feel a sense of belonging in the CS education community

In short, mentoring creates a stronger, more sustainable pathway for teachers—and ultimately, for students—to thrive in computer science.

Centering Growth with the CSTA Teaching Standards

The mentorship program presented in this guidebook is grounded in the **CSTA Standards for CS Teachers**, a nationally recognized framework that defines what computer science teachers should know and be able to do to deliver high-quality, equitable instruction. These five standards guide professional growth and help build a foundation for effective CS teaching across grade levels.

While many existing professional development opportunities already focus heavily on **Standard 1: CS Knowledge and Skills**, this mentoring program takes a different approach. Our goal is to help teachers strengthen their **Standard 3: Professional Growth** by focusing on **classroom and instructional practice with an equity mindset** as defined by the following three standards:

Standard 2: Equity and Inclusion

We support teachers in building classrooms that are inclusive and welcoming to all students. Mentors help participants reflect on issues of equity in CS, use inclusive teaching materials, reduce barriers to participation, and represent diverse voices and perspectives in their lessons.

Standard 4: Instructional Design

Mentors guide teachers in designing engaging, student-centered learning experiences. This includes using pedagogical content knowledge (PCK) to meet diverse learning needs and build student confidence and creativity in CS through authentic problem-solving and expression.

Standard 5: Classroom Practice

We help teachers implement evidence-based teaching strategies that foster a collaborative and empowering classroom environment. This includes encouraging student voice, using inquiry-based learning, facilitating peer collaboration, providing meaningful feedback, and maintaining a positive class culture.

This focus helps move beyond surface-level content delivery, ensuring that teachers gain the tools, support, and reflection time needed to truly thrive in the CS classroom. Whether you're starting a new mentoring program or enhancing an existing one, grounding your work in these CSTA Standards can ensure alignment with national best practices.

Celebrating the Success of MENTORS in CS

MENTORS in CS was launched to fill critical gaps in CS teacher preparation, such as the lack of professional community, limited guidance on equity and pedagogy, and few opportunities for sustained development. With support from the **National Science Foundation**[1] **(NSF grants #2031314 and #2318232)**, we built a program that pairs experienced CS teachers (5+ years) with teachers who are just beginning their CS journey.

Each mentor-mentee pair meets at least twice a month throughout the school year, working together on three growth goals aligned to the **CSTA Standards for CS Teachers**. Mentors also participate in a **community of practice (CoP)**, where they learn and grow alongside their peers. Three times a year, we bring all mentors and mentees together in a shared CoP meeting to reflect, connect, and build collective knowledge.

Where We Started

We began in 2021 in **Wisconsin**, partnering with three organizations to develop and refine the initial mentoring model:

- **CSTA**, a membership organization that supports and promotes CS teaching by providing opportunities for K–12 teachers and students to successfully prepare themselves to teach and learn CS. As an independent, equity-focused, global organization, CSTA represents educators committed to the teaching and learning of computer science successfully via 80+ chapters and a membership base of over 38,000.
- **CSTA Wisconsin Dairyland Chapter,** a group chosen for its strong statewide presence and commitment to equity. With over 300 members from both rural districts and urban centers like Milwaukee and Madison, this chapter had already laid the groundwork for mentorship and professional collaboration.
- **WestEd,** a research and services agency with expertise in computer science education through their research on computer science pedagogical content knowledge of middle school and high school teachers new to the discipline, the development and analysis of student assessments, and external evaluation of informal computer science programs for youth.

Where We Are Now

Recognizing that teachers work in diverse educational and sociocultural contexts, we expanded the program in 2023 to:

- **New Jersey**, where CS is a high school graduation requirement and where schools serve a more diverse student population.

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[1] The opinions and findings are those of the authors and do not necessarily reflect the views of the NSF.

- The **CSTA Black Affinity Group** (BAG) is composed of members who identify as part of the African diaspora.

This intentional expansion to another geography-based group and to an affinity-based group allowed us to explore how mentoring and equity-focused practices operate in different systems, helping us adapt the program for various contexts. This diversity has enriched our work and taught us valuable lessons about how mentoring and program structures must be **responsive and equity-driven**.

How We Learn and Improve

This is more than just a mentoring initiative—it's also a research-practice partnership. We've adopted a **design-based implementation research (DBIR)**[2] approach. Through **Plan-Do-Study-Act (PDSA) cycles**, we continuously test and refine the program to make it more effective and scalable. Our goal is not only to support current teachers but to build a sustainable model that can work in a variety of settings.

The **MENTORS in CS** program has demonstrated promising outcomes in enhancing both mentees' and mentors' teaching practices and confidence. Key findings identified through surveys, interviews, and observations include:

Mentee Outcomes

☐ **Increased Confidence and Reflective Practice**
Mentees reported heightened confidence in their computer science teaching knowledge and pedagogical skills. They also developed a more reflective approach to their teaching practices.

☐ **Enhanced Equity and Inclusion Practices**
Participants showed an increased application of equitable and inclusive teaching strategies. However, some indicated the need for additional support to fully integrate these practices into their classrooms.

"I've focused on the diversity of skill sets…equitable [teaching] is like I'm able to provide resources to everybody that has different, I don't want to say capabilities, but just what they might need help with at a certain time." - Mentee

Mentor Outcomes

☐ **Sustained Confidence in CS Teaching**
Mentors maintained high confidence levels in their computer science teaching abilities.

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[2] To learn more about DBIR visit: https://www.colorado.edu/research/learn-dbir/

☐ **Growth in Mentoring Skills**
   Mentors developed greater skills and confidence in their capacity to mentor and support other teachers effectively.

"I definitely have felt like I have grown. I really appreciated the summer training and this experience, I have not done a lot like Exploring Computer Science and facilitating adults. But, if nothing else, I've grown in my confidence." - Mentor

How to Use This Guide

In this resource, we share how we designed and implemented the **MENTORS in CS** program—including our structure, tools, and activities—to help you launch your own mentoring program. While we outline our full setup, we recognize that every context is different. **We encourage you to modify the program** to meet the specific needs of your community, school system, or teaching population.

Our goal is to support your work in building a responsive, equity-driven mentoring experience for CS teachers in your own setting. Throughout this guide, we'll clearly indicate which components we believe are **essential to maintain** to preserve the core goals and impact of the program. Everything else is flexible—intended as a starting point, not a script.

Throughout the document, we discuss both the project and the mentoring program. **Project** refers to the components that support implementing the mentoring program. These involve tasks the planning team executes prior to and after each mentoring program year. The **mentoring program** refers to the suite of activities teachers participate in once accepted.

The following table shows the timeline we follow for the main project and program activities. The following sections of the guidebook will provide more detail on each activity.

Table 1. Timeline of Project and Program Activities

Month	Activities
Jan-Jul	Project Planning Participant Recruitment Participant Selection
Aug	Mentor Training
Sept	Program Kick-off
Oct-Dec	Mentoring Cycle 1: Standard 5: Classroom Practice
Jan-Mar	Mentoring Cycle 2: Standard 4: Instructional Design
Mar-May	Mentoring Cycle 3: Standard 2: Equity & Inclusion

Jun and forward	Program Close-out
	Project Close-out

Project Planning

In this section, we will walk through the planning steps that precede the launch of your mentoring program. We centered our planning of MENTORS in CS around a logic model. A logic model is a description of how the specific elements of a program work together to achieve your intended outcomes. Logic models typically contain five components:

- **Inputs:** Resources, or the people, places, and things, required to put on a program, including a description of the program participants.
- **Activities**: The actual interventions that are part of the program.
- **Outputs:** The direct, observable products of completed program activities.
- **Short-term Outcomes:** The effects of program activities within months or a year of participation in your program.
- **Long-term Outcomes:** The effects of program activities years after participation in your program.

The components of a logic model are seen as a series of conditionals. If the inputs exist, then the activities can take place. If the activities take place, then the outputs can be observed. If the outputs are observed, then the outcomes should occur. The logic model can be drawn as a simple table:

Figure 1. Logic Model Template

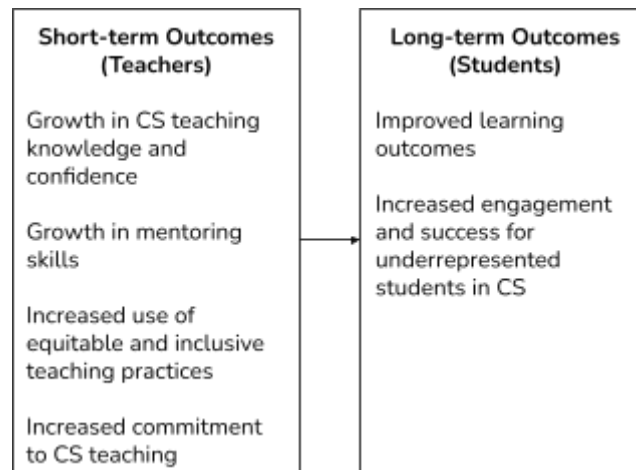| INPUTS	ACTIVITIES	OUTPUTS	SHORT-TERM OUTCOMES	LONG-TERM OUTCOMES

As we move through each planning subsection below, we will highlight how that section would inform your own program logic model.

Step 1: Establish Program Goals

We recommend starting with the end in mind. If your mentoring program were a success, how would you know? Deciding what you want your participants to achieve can help guide other decisions you make during the project planning phase. Keep in mind that goals are not permanent. The goals you set at the start of your program may evolve over time as you learn more about your participants during implementation.

Example

Figure 2. Outcomes for MENTORS in CS

Short-term Outcomes (Teachers)	Long-term Outcomes (Students)
Growth in CS teaching knowledge and confidence	Improved learning outcomes
Growth in mentoring skills	Increased engagement and success for underrepresented students in CS
Increased use of equitable and inclusive teaching practices	
Increased commitment to CS teaching	

Our outcomes for MENTORS in CS were based on the following assumptions:

- It takes time to see change in classroom practice. So, we only expected to see measurable change in participants' students in long-term outcomes.
- Each participant is unique, so their growth in the program will also be unique. For this reason, we do not target a specific amount of growth in the short-term outcomes.
- Both mentees and mentors can benefit from participating in the program. Aside from mentoring skills, we expect short-term outcomes to apply to all participants.

Activity

Host a brainstorming session with your project team and consider the prompts below. When you settle on your program outcomes, **add them to Short-term and Long-term Outcomes columns of your logic model**.

- What will participants know and be able to do months after the program? 2 years after the program?
- How will participants' attitudes be different? How will participants' classrooms look different?
- How will participants' professional activities outside the classroom look different?
- What else do you want to know about your participants and why?
- What evidence can confirm these outcomes? (The goal of this prompt is to help you focus on measurable outcomes.)

Step 2: Identify Project Tasks and Roles

Implementing a peer mentoring program requires various administrative and programmatic responsibilities. We structured our team using a design-based implementation research (DBIR)[3] model to bring together the perspectives of professional development providers, Computer Science practitioners, and educational researchers. In distributing tasks, we attended to the amount of time each member could realistically devote to the project.

- **Professional development providers** took on the roles of project director and program manager, focused on overseeing the project and implementing the program.
- **Practitioners** took on the role of community leads, focused on reaching potential participants, helping the team understand the context of their teaching communities, and facilitating some program activities.
- **Researchers** focused on gathering evidence to help inform the design of program activities and resources.
- We also drew on **administrative support** for completing contracts, managing expenses, and organizing travel to conferences.

Example

In Table 2 we list the roles we created for our MENTORS in CS team and the tasks assigned to each role.

Table 2. Project Team Roles and Tasks

Role	Tasks
Project Director	- Provide overall project leadership - Plan and facilitate project meetings - Manage project budget - Complete funder reporting - Disseminate project results - Oversee program activities
Program Manager	- Plan and facilitate participant training and meetings - Develop and refine program resources - Communicate with participants - Manage program applications - Monitor program progress
Community Lead	- Recruit participants - Support the matching of mentors and mentees - Provide advice on refining program activities and resources to meet the needs of specific communities

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[3] To learn more about DBIR visit: https://www.colorado.edu/research/learn-dbir/

	● Provide facilitation support during participant training and meetings
Researcher	● Design study plans and research instruments ● Collect and analyze research data ● Disseminate project results
Administrator	● Administer contracts and expenses ● Plan and manage travel plans to in-person events

Activity

Review the lists of tasks and identify who on your team has the experience and time to complete the tasks. Create roles based on the task groupings you made. Identify if your team will need to recruit additional support. **Add these roles to the Input column of your logic model.**

Responsibility	Person 1	Person 2	Person 3	Person 4	NA
Provide overall project leadership					
Plan and facilitate project meetings					
Manage project budget					
Complete funder reporting					
Disseminate project results					
Oversee program activities					
Plan and facilitate participant training and meetings					
Develop and refine program resources					
Communicate with participants					
Manage program applications					
Monitor program progress					
Recruit participants					
Support the matching of mentors and mentees					
Provide advice on refining program activities and resources to meet the needs of specific communities					
Provide facilitation support during participant training and meetings					
Design research instruments					
Collect and analyze research data					
Disseminate project results					
Administer contracts and expenses					
Plan and manage travel plans to in-person events					

Step 3: Organize Your Workspace and Communication Channels

Creating a structured workspace and communication channels can facilitate a project involving people from multiple organizations with varying backgrounds. For this step of project planning, you should attend to (a) document storage and permissions, (b) data sharing and, if needed, data sharing agreements, and (c) project and program communication strategies. As a general principle, we encourage standardizing your workspace and communication approaches so that all members of your team can easily find the information needed for their roles. You should also consider the following criteria when selecting tools and strategies for your workspace and communication channels:

Criteria	Guiding Questions
Accessibility	Can all partners access this platform across organizations and firewalls?
Ease of Use	How easy is it to navigate and organize content? Will training be required?
Permissions & Privacy	Can you control who sees/edits files? Are there data privacy controls if needed?
Searchability	Can users quickly locate documents, messages, or past conversations?
Integration with Other Tools	Does it work with your calendar, email, or existing platforms?
Cost/Availability	Is the tool free or already available to team members via organizational accounts?
User Roles & Notifications	Can you customize roles and notification settings for different types of users?

Example

For MENTORS in CS, we used the following strategies to organize our workspace and support communication across the project team and with program participants:

- Document Storage
    - Google Workspace for both Project & Program Management with organized folders
- Data Sharing & Agreements
    - Consent Forms signed by participants to clarify data gathering and sharing activities
    - Survey Monkey to gather participant surveys
    - The Institutional Review Board reviewed and provided approval of our research activities
- Communication
    - Slack for the Project team communication and Emails for participant communication
    - Launchpad for participants that houses all the materials needed for the program

Activity

Use the following checklist to guide your planning process for setting up an effective shared workspace and communication structure across partner organizations.

A. Document Storage and Permissions

- ☐ Choose a centralized location for storing project documents (e.g., Google Drive, SharePoint).
- ☐ Set a clear folder structure organized by project components or team roles.
- ☐ Assign and manage permissions based on access needs (view, edit, comment).
- ☐ Establish version control protocols to avoid duplication or confusion.

B. Data Sharing & Agreements

- ☐ Identify the types of data that will be shared across organizations.
- ☐ Determine whether a Data Sharing Agreement (DSA) is required.
- ☐ Clarify who will access sensitive data (e.g., surveys, interviews, budgets).
- ☐ Document procedures for securely storing and transmitting data.

C. Communication Strategy

- ☐ Decide on your primary communication tools (e.g., Slack, MS Teams, email).
- ☐ Define communication channels by purpose (e.g., internal team vs. participants).
- ☐ Clarify how participants will receive updates (e.g., via monthly email newsletters).
- ☐ Establish meeting norms: frequency, agenda planning, and follow-up responsibilities.
- ☐ Document your communication plan so all partners understand expectations.

Step 4: Set Project Budget

Budgets are critical for ensuring the necessary resources are available to support mentors, mentees, and the project team. Whether it's compensating participants, funding training events, or covering logistical costs, every aspect of your mentoring initiative relies on adequate and well-managed funding. Attending to your budget early in the planning process not only helps avoid disruptions later but also promotes sustainability and accountability, allowing programs to grow and adapt over time.

Example

Running MENTORS in CS required financial resources to support both project activities and program implementation. Related costs for our project included:

- Participant honoraria
- Project team honoraria and salaries
- Program materials (e.g., training materials, swag)
- In-person training (e.g., travel, facilities)
- Consultant fees (e.g., evaluators, advisory board)

We supported our project through grants received from the National Science Foundation. While government grants have been useful for MENTORS in CS and other related projects, they are not intended to provide long-term financial support to projects. For this reason, we encourage you to diversify your funding sources and consider multiple ways you can support the implementation of your project.

Activity

List all the costs you can think of for your project. Identify sources of funding and payment for each cost. Add your funding sources to the **Resources** column of your logic model.

Step 5: Study Your Target Participants

As we expanded MENTORS in CS into new communities, it was essential to adapt the program to the unique sociocultural and educational contexts of each site. Factors such as local CS education policy, teacher demographics, and support infrastructures varied widely across our three communities. For example, these differences influenced how we recruited participants and paired mentors and mentees within each community. Attending to contextual variation can help you identify ways to tailor your program so that it is inclusive, effective, and sustainable for participants working in diverse educational environments.

Example

We used a data driven approach to examine the sociocultural and educational contexts of our applicants and selected participants by gathering and analyzing the following data sources:

- **Student demographics** in the geographic regions served by our three communities[4]. This included: number of students, number of schools, number of students by ethnic and racial identity, number of low income students, number of students with disabilities, and percentage of schools in city, suburban, town, or rural locales.
- **Teacher demographics** of our three communities drawn from the CS Teacher Landscape Survey[5]. This included data on: years of teaching experience, years of CS teaching experience, CS courses taught, number of CS colleagues at their schools, opportunities for mentoring or coaching, and student demographics at their schools.
- **Educational policy reports** of the geographic regions served by our three communities[6].
- **Applicant profiles.** This included demographic information (i.e., gender identity, racial identity), years of teaching experience, years of CS teaching experience, percentage of their teaching assignment dedicated to CS, CS courses taught, other subjects taught, school and student demographics, and applicant status (i.e., applied, eligible, accepted).

Reviewing these sources allowed us to identify trends in our applicant and participant pools and compare our pools to the larger CS education teacher community. Analyzing these trends informed our discussion around recruitment strategies (e.g., how to reach more rural teachers), mentor-mentee pairing (e.g., which characteristics were most important for mentors and mentees to share), and program activities (e.g., what activities might best serve individual communities versus the whole group).

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[4] We used data from the National Center for Education Statistics: U.S. Department of Education, National Center for Education Statistics (NCES), Common Core of Data (CCD), "Public Elementary/Secondary School Universe Survey", Provisional Version 1a, and the NCES Education Demographic and Geographic Estimates (EDGE), "Public Elementary/Secondary School Universe - Geographic Data," 2015-16. Retrieved from: https://nces.ed.gov/pubs2018/2018052/tables/table_04.asp

[5] Koshy, S., Twarek, B., Bashir, D., Glass, S., Goins, R., Cruz Novohatski, L., & Scott, A. (2022). Moving towards a vision of equitable computer science: Results of a landscape survey of PreK-12 CS teachers in the United States. Retrieved from: https://landscape.csteachers.org.

[6] We reviewed Code.org's State of Computer Science Education report: https://advocacy.code.org/stateofcs

Figure 3. Excerpt of Our Applicant Profile Data Sheet

	Black Affinity Group				New Jersey				Wisconsin				All Communities					
	Applicants		Selected		Applicants		Selected		Applicants		Selected		Applicants		Eligible		Selected	
Total	21		8	38%	29		8	28%	24		12	50%	93		68	73%	28	30%
Years Teaching CS	Applicants		Selected		Applicants		Selected		Applicants		Selected		Applicants		Eligible		Selected	
0 (this would be my first year teachin	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
1-2 years	0	0%	0	0%	0	0%	0	0%	1	4%	0	0%	1	1%	0	0%	0	0%
3-4 years	3	14%	1	13%	2	7%	0	0%	3	13%	2	17%	10	11%	5	7%	3	11%
5-7 years	10	48%	4	50%	9	31%	1	13%	3	13%	2	17%	30	32%	21	31%	7	25%
8-10 years	3	14%	2	25%	5	17%	1	13%	5	21%	3	25%	19	20%	13	19%	6	21%
11+ years	5	24%	1	13%	13	45%	6	75%	12	50%	5	42%	33	35%	29	43%	12	43%
CS Course Experience	Applicants		Selected		Applicants		Selected		Applicants		Selected		Applicants		Eligible		Selected	
None	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
AP Computer Science A	4	19%	3	38%	23	79%	7	88%	13	54%	7	58%	53	57%	39	57%	17	61%
AP Computer Science Principles	15	71%	8	100%	19	66%	4	50%	18	75%	11	92%	67	72%	50	74%	23	82%
CS Discoveries	10	48%	3	38%	5	17%	1	13%	8	33%	4	33%	30	32%	21	31%	8	29%
Cybersecurity	3	14%	2	25%	9	31%	3	38%	8	33%	5	42%	28	30%	20	29%	10	36%
Exploring Computer Science	11	52%	5	63%	1	3%	1	13%	12	50%	7	58%	29	31%	22	32%	13	46%
Data Structures	0	0%	0	0%	5	17%	1	13%	1	4%	1	8%	8	9%	6	9%	2	7%
Digital Media	2	10%	0	0%	3	10%	0	0%	4	17%	2	17%	13	14%	8	12%	2	7%
Game Design	6	29%	1	13%	8	28%	2	25%	9	38%	5	42%	30	32%	23	34%	8	29%
Introductory CS / Programming	12	57%	5	63%	26	90%	7	88%	16	67%	8	67%	69	74%	50	74%	20	71%
Robotics	7	33%	3	38%	5	17%	1	13%	4	17%	1	8%	23	25%	13	19%	5	18%
Web Development	7	33%	2	25%	11	38%	4	50%	13	54%	7	58%	40	43%	30	44%	13	46%
Type of School	Applicants		Selected		Applicants		Selected		Applicants		Selected		Applicants		Eligible		Selected	
Public	16	76%	7	88%	27	93%	8	100%	20	83%	11	92%	76	82%	59	87%	26	93%
Public charter	2	10%	0	0%	1	3%	0	0%	1	4%	1	8%	8	9%	3	4%	1	4%
Public magnet	0	0%	0	0%	0	0%	0	0%	1	4%	0	0%	1	1%	0	0%	0	0%
Public non-traditional	1	5%	0	0%	0	0%	0	0%	0	0%	0	0%	3	3%	1	1%	0	0%
Private: religious / parochial	0	0%	0	0%	1	3%	0	0%	0	0%	0	0%	1	1%	1	1%	0	0%
Private: non-religious	1	5%	1	13%	0	0%	0	0%	0	0%	0	0%	1	1%	1	1%	1	4%

Activity

Conduct a landscape analysis of your potential participants, their demographics and contexts, and their school backgrounds. In reviewing the data with your project team, discuss the following prompts:

- Do any interesting trends stand out to you (e.g., are any numbers higher or lower than expected)?
- Are there any trends you want to attend to when planning your program (e.g., putting in extra effort to recruit in rural areas or inviting a rural educator to your project team)?
- Are there characteristics in your landscape analysis that you want to capture on your program applications?

Once you have a better understanding of your target participants and their working contexts, **briefly describe them in the Inputs column of your logic model**.

Summary

With a clear understanding of why mentoring is beneficial for CS educators and a solid foundation for planning your project—from establishing goals to building a team, securing funding, and understanding the communities you aim to serve—you are now ready to bring the mentoring program to life. The next section focuses on the heart of the initiative: designing and implementing the actual mentoring experience for participants. Here, you will move from preparation to practice, learning how to structure meaningful interactions between mentors and mentees, select and train participants, and guide their growth throughout the school year. This phase translates your planning efforts into concrete activities that support CS teachers in real and lasting ways.

Program Planning & Implementation

Program Structure

The MENTORS in CS program is designed to provide structured, sustained support for computer science teachers through a combination of mentorship and professional learning. The program begins with a recruitment and selection process to identify both mentors and mentees. Mentors are experienced CS educators with four or more years of classroom experience, while mentees are newer to teaching CS and seeking growth in content knowledge, pedagogy, and equity-focused practices.

Once selected, mentors and mentees are paired based on teaching context, goals, and areas of expertise. Each pair meets at least twice a month (mostly virtual) throughout the school year to work toward mentee-driven goals aligned with the CSTA Standards for CS Teachers.

In addition to one-on-one mentoring, mentors participate in monthly community of practice (CoP) meetings. These sessions provide ongoing professional development, collaborative problem-solving, and a space for mentors to reflect on and strengthen their support strategies. Three times a year, all mentors and mentees come together in larger CoP gatherings to build community, share learning, and deepen engagement with equity-focused teaching practices.

This layered structure, individual mentorship, mentor development, and community engagement ensure that both mentors and mentees are supported, challenged, and connected throughout the program.

At-a-Glance Annual Calendar

Month	Activities
Spring - Summer	Mentor & Mentee Recruitment Mentor & Mentee Selection
Aug	Mentor Training
Sept	Program Kick-off (First Community of Practice)
Oct-Dec	Mentoring Cycle 1: Standard 5: Classroom Practice & 3 Monthly COPs
Jan-Mar	Mentoring Cycle 2: Standard 4: Instructional Design & 3 Monthly COPs
Mar-May	Mentoring Cycle 3: Standard 2: Equity & Inclusion & 3 Monthly COPs
Jun and forward	Program Close-out

- ☐ Define your participation requirements (e.g., to make decisions over when someone might leave the program if they've missed half the meetings or can only join mid-year; to set expectations for participants from the start)
- ☐ Draft your program activities (use ours, adjust as needed, add as needed)
- ☐ Set Program Dates/times for the Year (evenings are best for working teachers; not scheduling in advance can be tricky, knowing at the start of the year can help teachers reserve time for meetings)
- ☐ Logic model: activities and outputs

Recruitment & Selection

Mentors (January - April)

In the **MENTORS in CS** program, we begin by recruiting mentors before recruiting mentees. Mentor recruitment and selection take place between **January and April**, following two cycles: the first from January to March, and the second from March through April or May, if needed. The selection process is guided by criteria approved in advance by the project team. These criteria shape both the mentor application form and the scoring rubric. Applicants are scored and categorized as Accept, Maybe and Reject. We notify the accepts to confirm and use the maybe pool as back up. We notify all applicants our decision including the maybe pool to let them know that we are considering them for next round. We also recommend sharing the Community of Practice dates and training schedule in advance to ensure that participants can commit to all required meetings.

Mentor selection is based on a variety of factors, including rubric scores, eligibility criteria, and overall fit for the program. For example, to be eligible for MENTORS in CS, applicants must be current high school teachers (per our NSF grant requirements and due to desired teaching contexts) and our desired mentees, have at least four years of computer science teaching experience, and be members of one of the communities named in the grant. When considering selection for mentors, you should consider the CS teaching context and how that will match up with the mentee pairing. For example, pairing a high school teacher with an elementary teacher could be a difficult pairing because of the level.

Samples

- [25-26 Mentor Application](#)
- 25-26 Mentor Application Rubric
- [25-26 Mentor Flyer](#)

Activities

- ☐ Set eligibility criteria

- ☐ Create a mentor application
- ☐ Create a mentor application rubric
- ☐ Have the project team approve the above materials

Mentees (March - August)

Recruitment for mentees begins a bit later than mentor recruitment, as it often takes closer to summer to finalize the participation of mentees. Many new or emerging CS teachers may not yet know their teaching assignments for the upcoming school year. Additionally, you may need to think creatively about how to identify and recruit new CS teachers, especially if they are not already part of your existing CS education network. For example, a large number of our participants learned about the program through word of mouth, direct outreach, and promotion at other CSTA events. If you are still building your network could also reach out to state, district, or school CS leadership.

Here are some strategies to help recruit mentees. Start by clearly communicating the benefits of the program, such as personalized support, practical strategies, and connection to a community of peers. Emphasize that the time commitment is manageable and designed to support—not add to—their workload. Streamlining the sign-up process can also make a big difference. Many new teachers are overwhelmed and may not prioritize opportunities that feel like "extra work," so framing the program as a form of built-in professional learning can increase buy-in. Finally, ask community leaders, or trusted colleagues to recommend the program directly to new teachers; personal encouragement from a familiar source can go a long way.

Samples

- [25-26 Mentee Application](#)
- 25-26 Mentee Application Rubric
- [25-26 Mentee Flyer](#)

Activities

- ☐ Set eligibility criteria
- ☐ Create a mentee application
- ☐ Create a mentee application rubric
- ☐ Have the project team approve the above materials
- ☐ Brainstorm ways to recruit new CS teachers to your program

Matching Mentors & Mentees (August)

Once mentees have been selected, the process of pairing them with mentors can begin. Pairing decisions are typically made by the community leader(s) and are informed by factors such as mentee preferences indicated in the application, geographic location, and the curriculum or courses they teach. This process can be refined over time as you begin to identify the characteristics that lead to strong, effective mentor–mentee matches.

Research

Did you meet your community targets?

As part of ongoing program evaluation and improvement, it's important to assess whether the mentoring initiative successfully reached its intended communities. This includes examining both **quantitative goals** (e.g., number of mentors and mentees recruited from each region or demographic group) and **qualitative alignment** with the program's goals for equity, inclusion, and diverse representation.

Some guiding questions to consider:

- Did we meet our recruitment targets for each community (e.g., state chapters, affinity groups)?
- Were the selected participants representative of the populations we aimed to serve (e.g., rural educators, teachers of color, schools with underrepresented student populations)?
- What strategies were most effective for reaching our target groups?
- Were there any communities that were underrepresented or harder to reach? If so, why?

Gathering and analyzing this data, through application tracking, and community feedback, can help your team reflect on how well your outreach strategies aligned with your goals. This reflection also provides a basis for refining future recruitment cycles and ensuring the program continues to evolve in ways that promote broad participation and impact. We used our Applicant Profile Data Sheet (see Figure 3) to examine how well our selected participants met our community targets.

Onboarding & Kick off

Mentor Training (August)

After selecting mentors, the next step is to begin planning a mentor training session to prepare them for their role. In the second year and beyond, consider offering two separate sessions: one for new mentors and another combined kickoff session for both new and returning mentors. These sessions are designed to review program expectations, introduce key tools and resources, build a sense of community among mentors, develop effective mentoring practices, and begin exploring equity in practice, a core focus of the program.

Program Kick-off (September)

The program kick-off typically takes place in September, marking the official start of the mentoring year. During this session, mentors and mentees are introduced to the overall structure of the program and begin building their relationships. A key focus of the kick-off is on setting a shared foundation for growth through the creation of **SMART goals** (Specific, Measurable, Achievable, Relevant, and Time-bound), which will guide the mentor-mentee work throughout the year. Participants are also introduced to the **Mentor Toolkit**, a

centralized resource that outlines program expectations, meeting templates, equity-focused reflection tools, and additional guidance to support effective mentoring. Following the kick-off, mentors and mentees schedule their first one-on-one meeting to begin working toward their goals and establishing a rhythm for regular collaboration.

Samples

[24-25 Mentor Toolkit](#)

Mentor Training Topics
1. Program Overview (History, Structure, Responsibilities, Research)
2. Effective Mentoring Practices
3. Mentorship Cycle Introduction (Four Phases)
4. Mentor Toolkit Training
5. Mentoring Phase Deep Dives
6. Equity in Mentoring
7. Community Building

Activities

☐ Review Sample Mentor Toolkit
☐ Decide on the content you want to guide and capture in your toolkit

Research

Research: Mentor training feedback

Did your mentor training leave mentors feeling prepared for their role? We encourage you to ask mentors about their reactions to mentor training and to assess the degree to which they feel prepared for their roles of supporting teachers new to computer science. This feedback can identify additional support you might need to provide to mentors during the year. In MENTORS in CS, we conduct a focus group with a subset of mentors shortly after the end of training. You could also gather this feedback by conducting polls or a brief survey as part of the training. Some questions you might ask mentors are:

- **Training Expectations:** What did you hope to learn from this training? Were those expectations met?
- **CS Teacher Standards:** Do you now understand the Standards for CS Teachers better? Do you feel ready to support another teacher with them? What further support would help?
- **Mentoring Practices:** Do you feel more prepared to apply best practices for mentoring? What additional support would be helpful?
- **Equity & Inclusion in CS:** Has your understanding of equitable and inclusive CS teaching improved? What further support do you need?
- **Training Resources:** Will the resources shared be useful? Any suggestions for improving them?
- **Training Format:** How did you feel about the training's delivery and timing?
- **Future Improvements:** If this training is repeated, what should we change or keep?
- **Mentoring Role:** What questions or concerns do you have about being a mentor?

Research: Pre-survey

What do participant outcomes look like at the start of the program year? In order to determine whether your program is impacting mentors and mentees, it can help to gather baseline data from participants related to your outcomes. Towards this end, we administer a survey at the beginning and end of the program to both mentors and mentees. Where possible, we have drawn from existing survey scales used by the CS education community. The survey includes items about: (a) confidence in equitable and inclusive CS teaching practices, (b) confidence in pedagogical content knowledge for CS, (c) use of equitable and inclusive CS teaching practices, (d) job satisfaction and commitment, and (e) mentoring experience and ability.

Samples

[Program Survey](#)

Mentoring Cycles

The MENTORS in CS program is structured around three mentoring cycles that span the academic year. Each cycle provides a clear time frame for goal-setting, regular mentor-mentee collaboration, and reflection. These cycles offer a structured yet flexible framework that supports teacher growth through intentional practice, dialogue, and equity-centered learning.

Each mentoring partnership meets at least twice a month throughout the school year. These meetings are shaped by the four phases of the mentoring cycle—**Preparing, Negotiating, Enabling Growth, and Retrospective**—adapted from Lois Zachary's The Mentor's Guide (2012). Partners begin each cycle by strengthening their relationship and co-developing a SMART goal. They then work collaboratively to implement strategies, reflect on practice, and assess their progress at the end of the cycle.

Each cycle is aligned with one of the CSTA Standards for CS Teachers to guide professional growth in targeted areas:

- **Cycle #1 (October – December)** focuses on Standard 5: Classroom Practice, supporting teachers in implementing evidence-based pedagogy, fostering student collaboration, and creating a positive, inclusive classroom environment.
- **Cycle #2 (January – March)** centers on Standard 4: Instructional Design, helping teachers design learning experiences that are rigorous, accessible, and relevant to students' backgrounds and interests.
- **Cycle #3 (March – May)** emphasizes Standard 2: Equity and Inclusion, guiding teachers in identifying and addressing barriers to access, representing diverse perspectives, and incorporating culturally responsive practices in CS instruction.

Mentoring Cycles

Cycle #1
October - December

Standard 5
Classroom Practice

Cycle #2
January - March

Standard 4
Instructional Design

Cycle #3
March - May

Standard 2
Equity and Inclusion
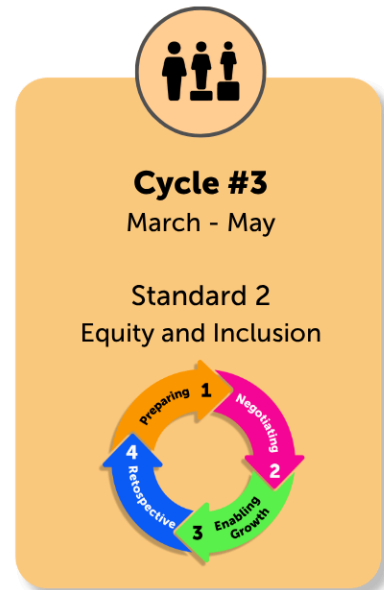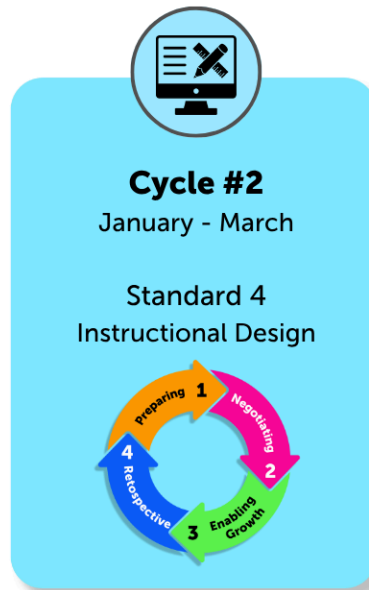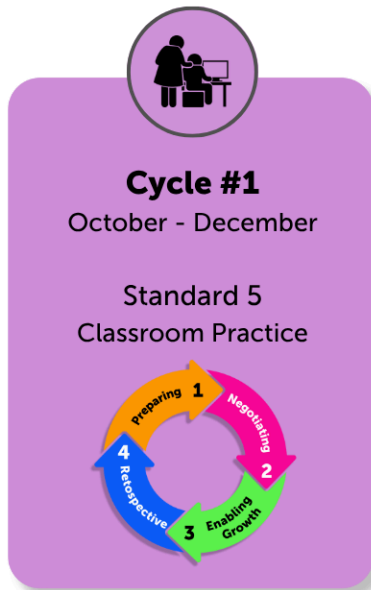
These cycles enable mentor-mentee pairs to grow in both depth and focus over time. Each mentoring cycle is aligned with the focus of the corresponding community of practice (CoP) meetings. There are three CoPs per cycle; the first CoP supports mentors in guiding their mentees to select a goal and topic for the cycle which is the preparing stage of one mentoring cycle. The mentor toolkit also guides the mentor and mentee meetings using the four mentoring phases throughout the cycle.

Samples

- [Classroom Practice Example Goals](#)
- [Instructional Design Example Goals](#)
- [Equity and Inclusion Example Goals](#)

Activities

- ☐ Determine the number of cycles your program will implement and their length
- ☐ Review [CSTA Teacher Standards](#)
- ☐ Decide what standards you will implement

Research

Research: Participant interviews

How are your mentors and mentees experiencing the program? In the middle of the year, it can be useful to talk with participants to better understand their individual experiences with the program and how the mentoring experience influences their teaching. This information can provide you with richer detail about program impact and identify possible areas of program improvement. When recruiting participants to talk to,

we encourage you to select teachers from a range of backgrounds and regions. In MENTORS in CS, we conduct individual interviews with a subset of participants during the spring semester. You could also consider conducting focus groups or structured self-interviews. Some questions you might ask are:

- **Background & Motivation:** What's your background in CS teaching? Why did you join the MENTORS in CS program?
- **Mentoring Experience:** What do you usually talk about during mentoring sessions? What's going well in your mentoring relationship? What challenges have you faced so far? How has your relationship evolved?
- **Equity & Inclusion:** What does equitable and inclusive CS teaching mean to you? Can you share an example of using inclusive practices this year? Has the program influenced your understanding or use of these practices?
- **CS Pedagogy:** Has your CS teaching approach changed since joining? Can you describe a time you tried a new CS strategy? How has the program influenced your CS pedagogy?
- **Growth as a Mentor:** How have you grown in this role over the past year? Can you share a moment that reflected this growth? What do you still want to work on as a mentor?
- **Program Impact:** Has the program affected anything outside of mentoring? Is there anything else you'd like to share about your experience?

Community of Practice

A Community of Practice (CoP) is a collaborative group of educators and mentors who share a common focus—such as teaching computer science—and who regularly engage to learn from one another, share strategies, and build collective expertise. Originally conceptualized by Jean Lave and Etienne Wenger in 1991, CoPs are defined by three essential elements: a shared domain, a sense of community, and a repertoire of shared practices that evolve through interaction. Within the CSTA MENTORS in CS program, mentors come together to participate in a monthly community-wide CoP event designed to reflect on teaching practice, set professional learning goals, address mentoring challenges, and collaboratively grow their pedagogical toolkit. Mentees also join three CoP's throughout the school year, one each for the beginning, middle, and end. This type of sustained, purposeful collaboration fosters a vibrant professional learning community; one where both new and experienced CS teachers continually refine their craft, deepen their instructional identity, and drive collective improvement.

Community of Practice Topics

This section outlines the recurring themes and discussion topics within the Mentors in CS monthly Communities of Practice. These monthly virtual gatherings bring together mentors and mentees (only three meetings) to strengthen professional relationships, improve mentor practice, and promote equity in computer science (CS) education. While the specific content may shift each month, most sessions include core elements such as reflection, community building, goal setting, and an equity-focused lens.

Orientation and mentoring structures. Early sessions focus on helping mentors and mentees understand their roles, explore the mentoring cycle, and begin developing partnership agreements. Time is provided for mentor-mentee pairs to meet, get acquainted, and align on expectations. The toolkit is introduced as a central resource for self-reflection and goal tracking.

Reflection and sharing of promising practices. These reflective segments provide participants with space to consider what is working well in their classrooms and mentoring relationships, identify challenges, and learn from one another. The sharing of practical strategies fosters a culture of collaborative problem-solving.

Goal setting and cycle planning are also prioritized. Participants craft and revise professional growth goals throughout the year, aligned to the mentoring cycle and their evolving needs. CoPs frequently include sample goals or time to revisit and revise goals, ensuring ongoing relevance and support.

The **Book Club and professional learning** segments offer opportunities to deepen understanding of effective mentorship and equity practices. Participants read selected texts and gather in small or large groups to discuss key takeaways and their applications. This ongoing learning cycle reinforces the growth mindset that underpins the program.

Another common topic is **mentoring with intention**, which focuses on relational trust and navigating the complexities of mentor-mentee dynamics. Scenarios and case studies allow participants to examine how to bridge cultural, experiential, or instructional differences in ways that strengthen mentorship.

Finally, the year concludes with **celebrations and closure**. Participants reflect on their growth, share advice for future mentors, and celebrate their collective impact. These culminating events reinforce the importance of mentorship and acknowledge the dedication of each community member.

Samples

- [24-25 CoP Agendas](#)
- [24-25 CoP Presentation](#)
- Book Club Books
  - Culturally Responsive Teaching and The Brain: Promoting Authentic Engagement and Rigor Among Culturally and Linguistically Diverse Students by Zaretta L. Hammond
  - Bridging Differences for Better Mentoring by Lisa Z. Fain & Lois J. Zachary
  - Coaching for Equity by Elena Aguilar
  - For Mentor Training and Reference:
    - The Mentor's Guide: Facilitating Effective Learning Relationships 3rd Edition by Lois J. Zachary& Lisa Z. Fain

Research: CoP Observations

What can you learn about the program and participants during CoP meetings? During CoP meetings, mentors often share feedback on the program and its resources as well as stories about their successes and challenges with mentoring. Attending to these conversations can provide useful insight into both potential programmatic changes that could better support participants and impacts on the program's outcomes of interest. In MENTORS in CS, we act as participant observers at these meetings. After each meeting, we complete a form to capture our observations and we use these to inform planning discussions we have with the project team.

Samples

Below is an example of a form that you could use to capture observations of the CoP meetings:

Date of CoP meeting	
Facilitator's name	
Number of attendees	
Topics covered	

Observations				
	What's working well?	What needs to be improved?	What needs to be removed?	Other comments
Resources				
1:1 mentoring meetings				
CoP meetings				
Progression of mentees				

Any other observations to share?	

Closing the Year

The end of the program year is a valuable opportunity to reflect, celebrate, and evaluate the impact of the mentoring experience. During this phase, mentors and mentees engage in final reflections, acknowledge their growth, and share lessons learned. This process not only reinforces the value of mentorship but also helps the community transition into future planning and sustainability efforts.

The program team reviews post-survey responses alongside observations and feedback gathered throughout the year. This evaluation offers a comprehensive understanding of the program's strengths and areas for improvement. Participant reflections often reveal promising practices and spark ideas to refine the mentorship structure and content.

As the program year concludes, facilitators and leaders begin planning for the next cycle. This includes identifying returning mentors, assessing support needs, and introducing new themes or resources to enrich the experience. Feedback from the current cohort plays a critical role in shaping future programming.

To ensure the program's longevity and broader impact, teams are encouraged to consider sustainability and scaling opportunities. These may include partnerships with local CSTA chapters, securing funding, or cultivating leadership pipelines within the mentor community. Capturing workflows, resources, and insights helps maintain quality and consistency across future implementations.

Finally, program leads revise materials and plans based on evaluation findings. Updates to toolkits, session agendas, and resource libraries ensure the program remains relevant, responsive, and engaging for the evolving CS education landscape.

Samples

Activity

Reflect on how the program will end the year. Consider:

- How will you celebrate and acknowledge mentors and mentees?
- What tools or activities will help capture meaningful feedback?
- How will you transition participants into next steps (e.g., alumni connection, return invitations)?
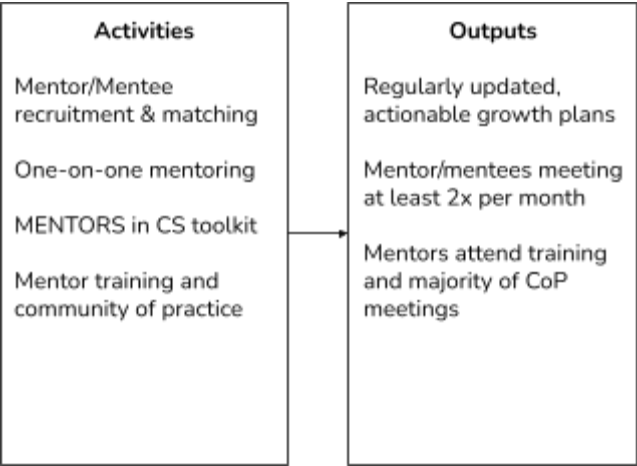
Research

Research: Post-survey

At the end of the year, administer the program survey that you gave to participants at the beginning of the year. See the [Research: Pre-survey](#) section in [Onboarding & Kick off](#).

Activities

Now that you have reviewed the program structure, go back and decide on the activities you want to add to your program. Also, add it to your logic model for Activities and Outputs.

Figure 4. Logic Model Example

Activities

Mentor/Mentee
recruitment & matching

One-on-one mentoring

MENTORS in CS toolkit

Mentor training and
community of practice

Outputs

Regularly updated,
actionable growth plans

Mentor/mentees meeting
at least 2x per month

Mentors attend training
and majority of CoP
meetings

LOGIC MODEL TABLE

INPUTS	ACTIVITIES	OUTPUTS	SHORT-TERM OUTCOMES	LONG-TERM OUTCOMES