Program evaluation and design go hand-in-hand in Tennessee

BY JOE ANISTRANSKI, KAREN HARPER, AND STEPHANIE ZEIGER

Educators and researchers often think of program design and program evaluation as separate endeavors, even intentionally creating a firewall between them. But what if designers and evaluators worked together, combining their insights to strengthen both the program and the study of it? In our work evaluating a statewide professional learning program in Tennessee, we have found this approach benefits everyone involved.

Since 2022, we've undertaken an ambitious task of evaluating the Reach Them All computer science initiative's professional learning for school- and district-level educators across Tennessee (see sidebar on p. 49). We have engaged in a collaborative evaluation design process that started at the beginning of the initiative to explore how the professional learning program works.

We made strategic evaluation decisions based on the program goals while continually integrating incoming information based on ongoing data collection that presented new opportunities for action. By gathering evidence from educators across the state, we're constructing a nuanced, actionable picture of how a program
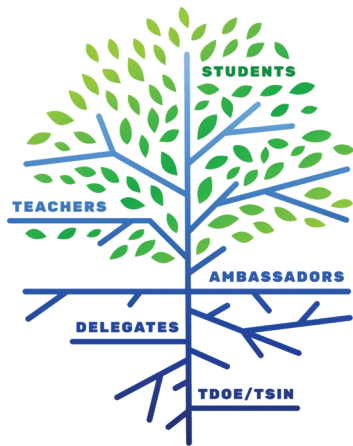
About REACH THEM ALL

Reach Them All launched in Tennessee in September 2022 to support Computer Science Education Law (Chapter 979 of the Public Acts of 2022). We designed the professional learning to build educators' computer science content knowledge while also growing their identity as teachers of computer science regardless of grade level or subject-matter expertise.

Reach Them All employs a train-the-trainer model that allows each district to select one computer science district delegate to serve as a program liaison between district leadership and school administrators. Computer science district delegates recruit computer science district ambassadors from within their districts to join them in providing high-quality computer science support. Ambassadors attend the same sessions as delegates and are responsible for redelivering engaging professional learning sessions to teachers and school leaders in their district.

Delegates and ambassadors engaged in professional learning from November 2022 to March 2023 and redelivered that learning to schools in their districts from April 2023 through fall 2023. These interactive sessions empowered schools and teachers to promote the integration of computer science into all Tennessee classrooms, understand new computer science legislation and expectations, and create a statewide network of best practices regarding computer science.

The Reach Them All timeline gave schools one full year for professional learning before requirements from state law would take effect beginning in the 2024-25 school year.

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gains a foothold in instructional practice and establishes processes to sustain high-quality teaching and learning.

In this article, we share strategies for a collaborative approach to evaluation, show how this approach is improving our ability to develop meaningful data collection tools, and conclude with three specific lessons for collaborative design. Because this initiative serves teachers who are not content-area experts in computer science, we believe our approach is applicable to evaluating professional learning in any content area.

HOW WE BEGAN

In 2022, the Tennessee General Assembly unanimously passed legislation requiring the teaching and learning of computer science in all grades statewide by the 2024-25 academic year. To implement professional learning at this scale, the Tennessee STEM Innovation Network — a public-private partnership between the Tennessee Department of Education and Battelle, a leader in STEM and workforce development programming — devised the Reach Them All program. The program is based on the network members' expertise and input from an advisory board of academic and industry experts.

Reach Them All is a train-the-trainer professional learning model in which core program representatives redeliver interactive, collaborative learning to educators within their districts. This is no small task in a predominantly rural state education system covering two time zones with more than 60,000 teachers and 1 million students (National Assessment of Educational Progress, 2022; National Center for Education Statistics, 2022).

To make data-driven improvements in this large-scale initiative, the Tennessee STEM Innovation Network partnered with NWEA, a nonprofit that provides evidence-based products and services to schools and districts, to undertake ongoing, formative program evaluation from the beginning of Reach Them All. This work is based on NWEA's expertise in evaluating professional learning.

ESTABLISHING EVALUATION DESIGN GOALS

During an intensive, three-day collaborative evaluation design session in Nashville, Tennessee, NWEA and members of the Tennessee STEM Innovation Network collaborated to construct an evaluation plan based on Thomas Guskey's evaluation framework (e.g., Guskey, 2000; Nordengren & Guskey, 2020; also see the article in this issue on p. 28). Guskey's framework is based on the work of Donald Kirkpatrick, who developed a four-level model for evaluating training programs in business and industry (Kirkpatrick, 1959).

We leveraged NWEA's previous experience working with Guskey to design and validate similar approaches in other professional learning contexts (Nordengren & Guskey, 2020) and welcomed the opportunity Reach Them All provided to apply Guskey's framework at scale.

We opened the first day of this process by facilitating an active discussion of goal development among all participants to ensure shared understanding of essential outcomes. This resulted in an evaluation strategy tied closely to three main professional learning goals:

1. Teachers develop a foundational understanding of computational thinking and computer science concepts.
2. Teachers discover connections between what they teach and computational thinking and computer science concepts. Teachers use these connections to integrate computational thinking and computer science concepts into their classrooms.
3. Teachers cultivate a mindset that expects all students to participate in computational thinking and computer science.

By collaborating to define what we needed to learn about the program, we streamlined the collection, analysis, and reporting of data connected to program outcomes. We generated a system of surveys, observations, and portfolios to gather multiple levels of evidence of the effectiveness of Reach Them All based on these goals.

DESIGNING SURVEYS

We concluded the first day of our design session by creating surveys to learn how program participants experienced Reach Them All. These surveys were designed to capture educators' reactions to professional learning, knowledge of state legislation, experiences of organizational support and change, and their need for additional support.

We needed a survey that would represent both the district-level program representatives (called delegates and ambassadors) who learned to facilitate professional learning and the school-level educators with whom those representatives worked. We knew that we needed sufficient information from two

distinct groups and that the data would be more meaningful if collected at more than one time point.

We also acknowledged the importance of balancing our need for data with real-world demands on educators' time, so we minimized the number of questions and the time required to complete surveys by maintaining a tight focus on the three essential outcomes of Reach Them All.

We optimized our collection of essential data by planning surveys at key program time points, using the calendar of professional learning activities. We collected information from delegates and ambassadors during their initial entry to the program and after their intensive two-day professional learning sessions.

When delegates and ambassadors redelivered learning in their districts, we surveyed participants at the end of their learning experiences. Then, we conducted a midyear follow-up survey of those participants to gauge what stuck with them from the learning and what additional support they would need. We worked as a team to determine essential reporting deadlines, and we planned for surveys to close with time to analyze data by those deadlines.

CREATING OBSERVATION AND PORTFOLIO RUBRICS

On day two, we created a classroom observation system focusing on educators' application of the knowledge and skills targeted by Reach Them All. To observe teaching and learning in such a large state, we needed a trustworthy tool that would reflect program goals in classrooms across the state and show consistency across different types of instruction (e.g., different content areas, grade bands). This took many rounds of revision, and we alternated between individual reflection and group revisions to refine our rubric.

After ensuring the rubric identified observable educator behavior aligned with professional learning goals,

we developed a plan for training delegates and ambassadors to serve as our data collection team, leveraging their connections in districts across Tennessee. We framed the observations as the basis for professional learning conversations about instructional practices. We viewed this as a key opportunity for our evaluation to build longer-term capacity in districts by supporting ongoing improvements in educators' practice.

Our third collaborative design day focused on student learning outcomes. We prioritized accessing what students do in their learning to assess how educator professional learning may have shaped students' experiences. We chose to collect classroom portfolios of digitally submitted artifacts and crafted a portfolio rubric similar to the observation rubric. This created an opportunity to understand how professional learning may be reflected across lessons or through specific activities within student work.

We refined the rubric through multiple rounds of collaborative revision, focusing on aspects of high-quality instruction emphasized in Reach Them All. Similar to our observation strategy, we relied on delegates and ambassadors to collect portfolio artifacts in their districts. We created a secure digital submission portal to for them to share these artifacts with us.

ADJUSTING EVALUATION PLANS IN REAL TIME

During the rollout of the program and its evaluation, we kept our design partnership active and used our collaborative design session as the foundation for responding to real-world needs as they unfolded. For example, we recognized an unplanned opportunity to check the consistency of our observation rubric before implementing it.

Concurrent with Reach Them All, the Tennessee STEM Innovation Network created a computer science video library by filming K-12 educators teaching lessons in multiple locations

across Tennessee. These videos proved to be a valuable resource for calibrating the observation rubric and training observers. This replaced our initial plan to pilot and calibrate the rubric with a small group of delegates and ambassadors, allowing us to complete the reliability calibration months earlier than anticipated and shift our focus to training observers.

In another example of real-time adjustment, we discovered an opportunity to analyze documents that participants were generating as part of the professional learning program. One focal point of Reach Them All is that districts have autonomy over how and when they redeliver professional learning based on their local context.

During their two-day training, delegates and ambassadors completed and uploaded a document detailing their plans for when and how they would facilitate professional learning in their local districts, which provided us with important information about the planned rollout.

From this, we learned that the professional learning schedule would extend beyond our anticipated time frame because some districts opted for a phased approach distributed across the entire academic year. We were then able to adjust the timing of our main evaluation components accordingly. We also learned how some districts added extra components to the program, such as using asynchronous learning opportunities.

LESSONS LEARNED

Data collection and analysis will conclude in spring 2024 with a full summary to follow in summer 2024. These data will yield valuable information about the results of the program for teacher practices and student learning. But we are already learning important lessons about the value of a collaborative evaluation approach:

- Collaboratively defining and refining the goals of a professional learning program

are instrumental in both the rollout of the program (e.g., in training and supporting delegates and ambassadors) and the evaluation. District delegates and ambassadors learned these goals during training, enabling them to tailor redelivery to our overarching objectives. Core goals can be a continual guide through program development, delivery, and evaluation, but it takes teamwork to stay tightly focused on these goals as experienced in Reach Them All.

- In the context of a complex, statewide professional learning initiative, it is essential to tailor evaluation to the realities of professional learning at the local level. Our partnership in Reach Them All revealed the importance of recognizing and embracing unexpected opportunities to make our evaluation more representative of what actually happened in professional learning. This allows us to look more deeply into how professional learning works in context, what additional questions we need to ask, and what next steps we need to take.

- The dynamic nature of professional learning requires in-the-moment adjustments to the evaluation plan and the professional learning program itself. Because we established our partnership at the beginning of the professional learning program, we were able to actively adjust our approach by working together to determine what additional evidence we needed to collect and use along the way. Our collaboration led to a nimble evaluation plan, which shows the true value of consistent collaboration and communication when evaluating professional learning programs.

Some discussions of evaluating professional learning encourage

evaluating the evaluation, and many evaluators choose to do so at the end of implementation. Based on our experiences in Tennessee, we believe it is better to reflect, assess, and adjust the evaluation process in an ongoing collaborative process.

We strongly encourage this model for states and districts launching new teaching and learning initiatives in a variety of content areas. Multiple perspectives are a tremendous asset that can strengthen both programs and their evaluations. Partners help each other stay focused on the core goals to adjust the program and evaluation so that all stakeholders can ensure the best possible outcomes for students.

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