Spotlight on statewide CS PD partnerships: Afrin Naz

Learn how Afrin Naz of West Virginia University built statewide partnerships for CS PD, and review her tips for other aspiring PD providers and applicants.

Afrin Naz received a Ph.D. in Computer Science from the University of North Texas in 2007. From 2008 to 2011, she was an assistant professor at the University of North Texas at Dallas. In 2011, she joined the Department of Computer Science and Information Systems at West Virginia University Institute of Technology and is currently an associate professor. Dr. Naz is an "Abet Ideal Scholar", and is also the founding director of Girls STEM Academy at West Virginia University Institute of Technology. During the past five years, she organized more than ten workshops for K-12 teachers and students, including four workshops funded by Google. She is the chair elect of the "Computers in Education" division of American Association of Engineering Education. She is currently serving on the STEM Advisory Council of the West Virginia Department of Education.

What advice would you give to an aspiring CS PD provider?

"Don't limit your PD to summer. Year-round activities and support are an integral part of the program as teachers apply their learning to the classroom.
Format your program around a hybrid method, face-to-face and online.
Make your materials as general-purpose as possible so that teachers can readily apply them in their teaching.
Make your workshop flexible, allowing your participants to learn at their own pace.
Ask for support from local school districts."

What advice would you give to an aspiring applicant?

"Give priority to a community of practice, where teachers own a collaborative forum to improve their teaching.
Establish partnerships with local school districts."

What issue(s) were you hoping to solve in your community, and how did you know that CS professional development for educators was an important solution?

"In West Virginia today, the foundation of K-12 Computer Science education is weak and most high schools do not offer computer science electives or AP courses. As a result, students are not as likely to major in CS at the college level, even though the demand for STEM related jobs is high. Our short-term goal is to help all high schools in West Virginia offer at least one CS class, so that every student would have an equitable chance to be exposed to CS. In order to improve access for all students, professional development is a vital solution. Teachers lack the adequate knowledge and training to teach CS. If professional development is prioritized, teachers will be able to offer CS classes at the K-12 level in West Virginia."

What were the first steps you took to start a local CS educator PD opportunity in your community, and how did you start your statewide work?

"Google's CS Educator Grant was pivotal to promoting local PD in West Virginia. In 2013, we began our first workshop with Google. We worked closely with local school districts and the office of superintendents in order to organize and facilitate our workshops. Each school district provides a coordinator to assist with organizing our workshop, recruiting teachers, and ensuring the PD meets their needs. In 2014, we began working closely with the West Virginia Department of Education, after they learned more about our CS PD work in the community. Recently, we are excited to learn that the Department of Education is promoting an initiative that focuses on CS education in WV high schools."

What are some of the challenges you've encountered when mobilizing a state around CS PD, and how are you working to overcome those challenges?

"Since CS education is not universal in West Virginia schools, it has been necessary to introduce our workshops by holding in-person meetings with teachers. Additionally, gaining interest from teachers to join our workshops was a challenge. We tackle these issues with university students, who offer online and on-site support for teachers to apply CS in their classroom. Providing resources and support to teachers has been beneficial because it minimizes the difficulty and barriers when teachers initiate CS courses. A systematic and efficient process to certify high school teachers to teach elective or AP CS classes has not been established in West Virginia, even though certification is critical for CS teacher confidence and identity. This is currently our primary challenge and we are working closely with the West Virginia Department of Education to address this hurdle."

How has your CS PD evolved over time, and why?

"Over time, our CS PD evolved in many aspects. First, the format of our workshop evolved from face-to-face, to entirely online, and finally to hybrid (that is, with both face-to-face and online formats). Second, our content has evolved; Java programming was initially our instructed content, and our participants were overwhelmed. As a result, we replaced Java programming with Scratch programming. Scratch is undoubtedly more user-friendly to teachers with little CS background. However, another issue emerged. In most counties of West Virginia, each high school student is equipped with an iPad, but Scratch is not compatible with iPads. Eventually, we shifted towards Snap programming and Python programming for our workshops.

Furthermore, our workshops have become more and more flexible over the time. At present, our program's course is available year round, and teachers can take it with their own pace. A large amount of materials are offered for teachers to select from; a teacher will pass the course after completing 25% of the materials, ensuring they find the content that's best for their classrooms. Lastly, over time we have strengthened partnerships within West Virginia. Since 2014, we gradually gained partnerships with several local school districts as well as West Virginia Department of Education."

What has been the most important element of your CS PD work, and why?

"The most important element of our CS PD work has been our partnership with local school districts. We identified this critical element through our first Google-funded workshop in 2013. To date, we have established solid partner relationships with several local school districts. The office of the superintendent is responsible for facilitating all aspects of our workshops, including recruiting teachers, helping teachers apply CS in their teaching, and assessing the impact of our workshops."