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Q1 LEA School/District Name

Fort Smith School District

Q2 LEA Contact Name

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Q3 LEA Contact Title

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Q5 LEA Contact Title

Technology Integration Specialist

Q6 LEA Contact Phone Number

479-784-8130

Q7 Grant Level Proposal

Large - $20,000 to $25,000

Q8 PROPOSAL DESCRIPTION (MAX 3000 Characters) - provide a narrative regarding the need for the proposed program/project, specific goals to be achieved, and how if funded the program is likely to achieve those goals.

In our district, there is a significant gap in awareness and integration of the AR Computer Science (CS) standards at the middle school level. At the elementary level, many students are exposed to CS tools and curriculum like Scratch, SpheroEDU, 3D printers, Dash and Dot, Ozobots and the Hour of Code, but this is not standard across the district. When students reach our junior highs, the teacher awareness of CS Standards and integration is limited to ETE and GATE classes and occasional after school robotics clubs. As a result, there is limited enrollment in high school CS, physics and upper level math classes, and even lower numbers of minority, lower socioeconomic and ethnically diverse students. With funding from this grant, we hope to have enrollment in these classes better reflect our district's diverse demographics. Socio-economically, we have 71% or our students qualifying for free and reduced meals while our population is quite diverse ethnically: 41% identify as white, 34% as latino/hispanic, 11% as black/African-American, 7% as bi-racial, 6% as Asian and 1% as other. By implementing middle school teacher training to increase awareness of the Arkansas CS standards, using free online coding curriculum and creating district-wide Community Coding Clubs, our district hopes to achieve the following: Increase enrollment, especially minority, lower socioeconomic and ethnically diverse students, in high school computer science, physics and higher math classes. Increase awareness within the school and local communities of computer science career opportunities, focusing education, healthcare, industrial robotics and the fine arts. Increase teacher capacity and understanding of computer science standards and encourage teacher involvement in statewide and national CS initiatives Research supports that strong teacher training positively impacts student achievement (https://learningpolicyinstitute.org/product/effective-teacher-professional-development-brief), so the majority of the funding of this grant (58%) will go toward teacher professional development in CS standards as they relate to specific content areas. Focusing on how CS can be used in a variety of content areas will equip teachers with instructional strategies and tools to effectively integrate CS standards into their everyday teaching practice. The remaining funding (42%) will be spent equally among elementary and junior high buildings to purchase appropriate tech tools. The collaborative approach of involving community stakeholders and local economic leaders, the incorporating job-embedded, active learning in our professional development approach and utilizing real-time communication and reflection in the form of video production and streaming to connect participants should ensure that these goals will be met if this grant is funded.

Q9 PROPOSAL TIMELINE (MAX 1500 Characters) - list major activities of your proposal with approximate target dates

Jan. 16, 2019 (alternative date Jan. 23, 2019) Teacher training Jan 23 - 30, 2019 - Teacher prep/build awareness and participation Feb. 4, 2019: Community Coding Club kickoff week Week of Feb. 11: Teacher Webinar on Ozoblockly / Club Intro to Ozobots Community Connection: Sparks Neurology (healthcare) Week of Feb. 18: Ozoblockly Community Connection: ABB - Baldor (global industry) Week of Feb. 25: Virtual and Augmented Reality - 3D Community Connection: Arkansas College of Osteopathic Medicine (healthcare/education) Week of Mar. 4: Teacher Webinar on Sphero EDU / Club Intro to Sphero Community Community Connection: UAFS CS Dept (higher education) Week of Mar. 11: Sphero Community Connection: Community School of the Arts (music/art/dance/theater) Week of Mar. 25: Teacher webinar on Hummingbird (micro:bit) Community Connection: Action, Inc (local industry) Week of Apr. 1: Hummingbird project (micro:bit) Community Connection: ARCBest (national industry) Week of Apr. 8: Teacher Webinar on Scratch / Club Intro to Scratch Community Connection: Arkansas Razorbacks baseball (sports) Week of Apr. 15: Scratch and Micro:bits Community Connection: UAFS STEM (higher education) Week of Apr. 22: 3D Printers Community Connection: NWA3D printing (local industry) Week of Apr. 29: Lego WeDo Community Connection: Fort Smith Public Library (community) Week of May 6 -17 - End of year Celebration Sponsor recognition, Giveaways and Drawing for Prizes

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Q10 PROPOSAL EXPECTED RESULTS (MAX 1500 Characters) - Describe the student outcomes, or changes, that will result if this proposal is funded.

With funding from this proposal, our district will see an increase in student enrollment in Computer Science (CS), physics and upper level math classes and an increase in student achievement in those areas, including AP CS and AP Physics scores. By providing a hands-on, relative, engaging learning experience for the student and integrating CS standards into content areas across the curriculum, academic achievement in these areas should improve. Community Coding Clubs will also provide an opportunity for students to use their voice to share CS expertise and to initiate collaborative relationships between teachers and leaders in our community. Reflecting, explaining and defending learning are difficult skills to teach and ones that are required on statewide assessments. Allowing students to master these skill via video should translate to higher scores on open response questions on the ACT Aspire and interim assessment tools. Using video to capture student voice also provides context for collaboration across various disciplines within education. As more universities and colleges create interdisciplinary majors that involve computer science, this program becomes even more vital to a student's future educational path. The program, perhaps more importantly, prepares students to use that collaborative voice in their future careers.

Q11 PROPOSAL EXPECTED IMPACT (MAX 1500 Characters) - Describe the estimated number of students, teachers, and/or community members that will be impacted and how they will be impacted if this proposal is funded.

Initial training will be open to twenty-five teachers, one educator from each of our elementary and junior high schools. After training, they will be equipped to provide job-embedded and staff wide professional development in computer science, potentially impacting up to over 1250 certified teachers. By providing online access to our weekly Community Coding Clubs, the number of students and families receiving CS instruction could ultimately reach our entire district of over 14,000 students. Although many of our families are without home internet access, our partnership with the public libraries in our city will create opportunities for students and their families to go online. Introducing twelve local, regional and national economic leaders via informative, career-focused videos during each coding session will impact hundreds of employees and community members across our area. Students will also create and share CS instructional videos with community partners, continually improving collaboration and communication between education and industry and potentially impacting a world-wide audience.

Q12 INNOVATIVE ASPECT (MAX 1500 Characters) - Describe why this proposal is creative and should receive funding as an out of the box way to support student growth/achievement.

The innovative use of video as a transformative tool for teacher and student reflection and growth sets this proposal apart. Using videos to increase communication and foster collaborative relationships between educational and industrial leaders allows for student agency and creativity not usually seen in traditional after school programs. Although many students and teachers create and watch videos socially, Community Coding Clubs will provide an academic context for video production. Each platform chosen for this program has an online community that allows teachers and students to post digital projects in a repository of lessons. During this process, students learn digital citizenship and critical thinking skills as they create their projects and videos. Students and teachers will also use video as a self reflection tool. By providing professional development to teachers using the Arkansas Computer Science Standards and educational video platforms, they will be better equipped to provide these same opportunities within their own classrooms, schools and online community of professional educators.

Q13 TRANSFORMATIVE POTENTIAL (MAX 1500 Characters) - Describe how this proposal if funded and implemented beyond your program has the ability to raise student achievement across the state.

Strong teacher training has proven to positively affect student achievement (https://learningpolicyinstitute.org/product/effective-teacher-professional-development-brief), but the professional learning experience should include certain factors to be successful: “training is content focused, incorporates active learning, supports collaboration, typically in job-embedded contexts, uses models of effective practice, provides coaching, offers opportunities for feedback and reflection and is of sustained duration.” This proposal incorporates all these success factors and can be easily replicated statewide. By mastering the skill of defending their learning using open-response, student achievement should improve by school, district and statewide on interim assessments and the ACT Aspire. When students are successful in Computer Science on the middle and high school level, our state should see an increase in enrollment in CS programs at local colleges and state universities. This increased enrollment should ultimately transfer into a higher literate, employable state population. By including the Community Connection piece, stakeholders can finally see the pieces of Computer Science all fitting together in a successful partnership. This Community Connection can be easily replicated across the state utilizing area Chamber of Commerce contacts and higher education connections.

Q14 FOLLOW UP and/or MARKETING/OUTREACH (MAX 1500 Characters) - Describe how your organization will follow up on this program after completed and/or how it will be marketed to and awareness raised within the community if the proposal is funded.

Our district’s community outreach advisor will contact twelve industry leaders and share our vision and expectations regarding their participation in the program. If funded, we would share the story with our community using traditional and social media and create a video showcase on our website highlighting the community connection videos and student/teacher reflections. Utilizing internal communication and social media would improve the awareness among school administrators of the state’s financial rewards for improved CS class enrollment figures and AP scores. We will also compare student participation in the program with enrollment figures in our middle and high school computer science, physics and math classes. Expanding this program into a multi-year effort is simplified by the choice of coding tools that allow for increased complexity of programming as the teachers’ and students’ skills sets improve. Teacher surveys for additional training and resource requests will be sent out at the end of the program in May, as well as a satisfaction and future needs assessment survey sent to families and community participants. At the end of the summer sessions at the public library, we will survey the participants for needs and next steps for the following school year. Alternative implementation may include creating elective classes on the junior high level that would mirror the format of the hour-long after school sessions, but integrated within the school day.

Q15 Budget Proposal

PDF of Budget (CS Grant).pdf (79KB)

Teacher Training: $14,500

Teacher training: 25 teachers @ $100 per person (includes sub pay and lunch for one 6 hour day of training during the school day) - $2500

Stipend for Coding Camp instruction: 12 weeks @ $37.50 per week (1.5 hours) = $450

25 teachers @ $450 - = $11,500

Stipend for extended summer learning at 4 public library branches: 4 teachers at 2 hours (1 hour of teaching and 1 hour collaboration time with branch librarian) per week 4 times in June/July

$50 x 4 sessions = $200 and 4 teachers at $200 = $800

Tech Tools for Teachers: $10,300

one Sphero Bolt @ $149, one Ozobot Evo @ $99, 8 micro:bits @ $15.00 = $120 = $368 plus tax/shipping $44 = $412 x 25 = $10,300

TOTAL grant request: $24,800

Outside lending resources:

Individual schools each have varying access via their school library to Sphero 2.0 and Sphero Sprk+, Ozobot Bits and Evo sets and micro:bits. Our science coordinator's lending library provides additional teacher access to Sphero Sprk+ classroom sets, Ozobot Bit classroom sets, Dash and Dot, BeeBots and Lego WeDo. Professional development office provides technology instructional specialists to support teachers through job-embedded PD using Sphero Sprk+ kits, Ozobot Evo classroom kit, micro:bits, Lego WeDo, Hummingbird and Raspberry Pi.

Outside incentives:

Community to donate giveaways (coding tools) for end of the year celebration. Community partners may donate waters and snacks or provide in-kind donations to support the after school clubs and end of year celebration.