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Parkers Chapel School District

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Q7 Grant Level Proposal

Medium - $7,500 to $20,000

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 2016, our local community college partnered with Boyette Strategic Advisors to assess the skills needed within our community to gain employment. This study also indicates that business owners in our community feel as though our high school students are not being properly prepared in the field of computer science. This proposal attempts to combat these problems by creating a 3-tiered computer science emphasis program of study within our school. Parkers Chapel School District is a K-12 campus located in El Dorado, Arkansas in the Southwest region of the state. Currently, we are doing everything we can to create a Computer Science program that begins at the preschool level and will culminate in our students taking an AP Computer Science class. Currently, we teach the embedded standards in our lower levels, the coding block in 7th grade, and Programming 1 in our high school. I want to increase participation in these classes at the high school level by increasing teacher and student understanding of the principles that govern computer science education at the elementary and middle school levels. As excitement for CS principles increases within our elementary and middle schools, our ability to require more sophisticated tasks at the high school level will increase. One of the issues we have is lack of equipment-- while we receive excellent training from our cooperative on how to implement STEM tools across the curriculum, we still have a need to purchase equipment and controllers that can be placed directly in the hands of our students. My hope is to implement a program that will reach all students in our district and help to foster an interest in STEM and computer science beginning in their earliest years. If students are exposed to CS concepts and vocabulary at an early age, they are more likely to have the ability to complete the higher level tasks in high school that will make our school and, by extension, our state, highly competitive within the field of computer science. If funded, we will create a series of equipment labs that will cater elementary students in their media/library rotation, 7th grade and 8th grade students in their embedded coding block, and high school students in their computer science classes. The equipment that I want to purchase will be age appropriate at these three levels. We will teach professional development classes at each of these levels to increase teacher understanding within our elementary and middle schools of the new computer science standards and how they directly correlate to concepts they are already teaching. I also want to write curriculum that will better assist teachers in implementing these programs. I don't intend to just purchase a lot of equipment and leave these teachers to their own devices; I want to properly train teachers in conjunction with three co-workers who will have the most direct contact with students in the field of computer science.

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

Jan 2019, Purchase equipment for the new elementary computer science lab. This program will be meant to better enforce the computer science concepts and vocabulary embedded in our elementary classrooms. Giving students a lab like this will give them a creative outlet to see the inherent fun and the "play" side of coding that I fear many elementary education teachers feel as though they don't have to time to implement because of other curriculum constraints. Mar 2019, Partner with the 7th & 8th grade coding block teacher to develop curriculum that creates a connection for students between the fun they experienced in lower grades in computer science related activities & the ability to program using block-based coding programs. Apr 2019, Purchase equipment for HS computer science program. Partner w/ the high school computer science teacher to develop curriculum for Programming 1-4 and AP Computer Science. Train for the new equipment as well as development of student-led "paths" of emphasis in upper levels of HS CS. May 2019, Create a HS student coalition to discuss challenges and ideas for our computer science program. High school students will be able to run their own workstations dedicated to their personal goals in computer science. This coalition will be able to form an educative relationship with computer science students in lower grades, creating an environment where our older students mentor our younger computer science students in the programs created by this grant.

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

The greatest change in our district would be the creation of a feeder program for our upper level computer science programs. Right now, I have teachers that are working as hard as they can to meet multiple demands. They won't be able to implement these important standards without help and support. Too often at the high school level I encounter students that have no concept of the possibilities that await them in the field of computer science. My fear is that we are introducing the program too late and we are limiting their progress as a result. If students in lower grades are able to experience activities and labs that promote computer science, students at the high school level will be able to learn at a higher level of sophistication. I also believe that students will gain very important life skills as a result of mentoring and coaching younger students in the field of computer science. Students in lower grades will benefit from the relationship formed with an older student mentor.

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.

I am currently working with three teachers (elementary, middle, and high school) who will directly receive the equipment and professional development that they need to implement this proposal. Our district will provide them with any support needed in regard to curriculum and standards. Since the elementary level of this program will be embedded in their library rotation, all students K-6 will be impacted (459 students). At the middle school level, the entire 7th grade (55 students) and at the high school level, our computer science class and Makerspace lab interns (21 students). As you can see from the numbers presented, this proposal is extremely timely for our school. I hope that high school interest and competence regarding computer science will improve and generate even more interest in our upper level programs as a result of the competencies learned in our lower grade programs. Our community will benefit because we will be training students in the fields of computer science, programming, security, engineering, problem-solving, and robotics. El Dorado, AR is a city that has a need for skilled workers who can operate machinery with complex computer systems. We currently have a relationship with Lanxess, a chemical plant in our community. My desire to expand this relationship with other businesses in our city so that we can better equip students for the employment opportunities in our city.

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.

This program will create a district-wide plan for computer science instruction that will not only create interest for CS principles among students of all ages but will also equip them with the knowledge to progress to the highest levels of computer science education. The proposed grant is innovative in that it creates a school environment that values and supports computer science educators throughout all grades in the district. Implementation of a vertically aligned computer science curriculum K-12 is something we are only beginning to see within our state and is practically unheard of in our region of South Arkansas.   Another innovative part of this proposal involves our desire to create a student-driven lab/personal workspace environment in which students in the upper levels of our program gain the access and equipment necessary to drive their own curriculum based on their interests with teacher support and facilitation. It is these students who will shine as interns and mentors to lower grades through the portion of this program that will allow them time within their schedule to work in the K-6 and 7th/8th grade in an advisory teaching capacity.

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.

Our school is a rural K-12 school that experiences a lot of the same challenges regarding access and funding that many schools within our state face. We don't have the funding to create positions in curriculum and instruction directly related to computer science; if we want to established a solid vertical alignment strategy we have to do so using existing staff and programs. We have been able to co-opt many of the classes already in existence and use those pre-existing opportunities to facilitate a program of study that revolves around computer science from the earliest levels of education to the highest levels we provide. Other K-12 districts could easily implement our model using their existing structures with as long as they are willing to provide staff development training and build resources for proper vertical alignment. Hopefully, students of all ages will begin to value the type of algorithmic thinking and problem solving that accompanies our state's computer science standards. As CS based skills become a part of the natural thinking process of our students, classroom assessments and test scores will improve. There is inherent value in creating this type of self-sustaining program within schools similar to ours; if we create a cyclic system where older CS students are actively taking part in training and teaching younger CS students, students of all ages within our district will benefit.

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.

Parkers Chapel School District will routinely monitor the use of the materials funded and will assess the effectiveness of the program at the end of each school year by using the CS placement survey, which we will use as one measure of student growth in computer science at the 7th/8th grade & HS levels. In order to make students & parents aware of our computer science program, we will advertise in several ways. We will give every teacher a poster with computer science and coding terminology on it, along with our logo. In addition, at the end of each student's 8th grade year, we will have them tour our computer science classroom, meet with the teacher, & talk with current CS students. The goal is to get as many incoming 9th graders interested in the CS track, which will include AP Computer Science. Our Programming III/IV & AP CS students will be assigned a period to intern for Programming I/II classes, and will also be available to assist elementary classes in the library as well as 7th/8th grade computer science courses. This cyclical design will give younger students a CS mentor, and students in upper level computer science courses will be able to share their knowledge with novice learners of CS. Finally, in order to spotlight our computer science program & to raise awareness about it among the community, our students will be regularly featured on our website, local newspaper, & school social media pages with projects and activities they have completed in their CS classes.

Q15 Budget Proposal

Computer Science Grant Budget Proposal - Sheet1.pdf(81.3KB)

Elementary Computer Science Lab Implementation Equipment			
iPad Pro (Teacher)	1 @ $799		$799
iPad Mini 4 Storage Cases	5 @ $15		$75
iPad Mini 4	5 @ $399		$1,995
Storage Case for Sphero Mini	5 @ $12.00		$60.00
Sphero Mini	5 @ $42.00		$210.00
Parrot Mambo Fly Drone	5 @ $66.00		$330.00
Wonder Workshop – Dot and Dash Robot Wonder Pack	5 @ $280.00		$1,400.00
Makey Makey	5 @ $50		$250
7/8 Computer Science Lab Implementation Equipment			
iPad Pro (Teacher)	1 @ $799		$799
LEGO Boost Creative Toolbox 17101 Fun Robot Building Set	5 @ $160		$800
VEX IQ Classroom Bundle	1 @ $3850		$3,850
Micro Bits	10 @ $21		$210
LEGO MINDSTORMS Education EV3 Core Set	5 @ $411		$2,055
HS Computer Science Lab Implementation Equipment			
iPad Pro (Teacher)	1 @ $799		$799
Raspberry Pi Essentials Kit	3 @ $70		$210
Hummingbird	5 @ $159		$795
VEX EDR Classroom Bundle	1 @ $5300		$5,300
		TOTAL	$19,937
Outside funding for staff development and any intra-district trainings will be provided by Parkers Chapel School District			