Applicant: Pocahontas Area Community School–NW Region

Email address:

soehlertz@pocahontas.k12.ia.us

Name of Individual Submitting Application:

Susan Oehlertz

Executive Summary

In 500 words or less, summarize the school district's, non-public school system's or accredited, stand-alone non-public school's vision for your Computer Science is Elementary initiative.

ocahontas Area Elementary Schools vision for the Computer Science is Elementary initiative is to fuse computer science foundational skills with existing curricular content, technology tools, concepts, and resources in grades PreK-4th. We want to make authentic learning so intrinsically engaging they don't want to leave school. This initiative will further strengthen our charge to purposefully construct lessons that bring STEM concepts into our learning spaces. This will help every child develop essential skills such as logic, cause and effect, reasoning, problem solving, critical thinking, and executive functions as well as allow ample room for creativity and collaboration. These are all skills teachers, employers, and parents know need more fostering.

Our faculty currently incorporates interdisciplinary teaching and daily technology application through the creation of conceptual based units. We follow the UbD Framework where we decisively think about unit lesson planning and the big picture of each unit/lesson. We have spent years living in this space, and it ensures that we are teaching more effectively. With this award, our faculty will further dive into these units and incorporate CS Standards into their essential questions and learning plans. This initiative will provide us valuable professional learning opportunities, time, resources, and support to continue our charge for students to showcase mastery of the Iowa Core Standards, CS Standards, and model Iowa Core 21st Century Technology Literacy Concepts and Skills. This collaborative, multi-dimensional approach will give our students the knowledge, skill, and dispositions needed to be authentically college and career ready. Computer science is an important subject that all students should be exposed to throughout their career as a learner because it teaches resilience, sparks curiosity, engages and develops students' abilities to solve problems while learning through failures.

Specifically, Pocahontas Area Elementary Schools Computer Science curriculum infusion will include an emphasis on both unplugged and plugged concepts and activities centered around computer programming (the process of writing and maintaining the source code of a computer). Learning programming empowers kids. It addresses multi-disciplinary standards in language learning, mathematics, science, and even the arts. Additionally students immersed into computer science supports social/emotional learning (SEL). Coding puts children in control of the computer and through experimentation builds mastery in sequencing skills, counting, problem solving, logical thinking, cause and effect, and critical thinking. We want our students to be code literate so they can develop grit, a growth mindset, embrace "failing forward" and be engaged contributors and active creators in our digital society.

Demographics

Points Awarded: / 10

10 points

What is the name of the district, system or stand-alone non-public school making the application?
Pocahontas Area Community School

What is the name of elementary school(s) that will participate in Computer Science is Elementary?
Pocahontas Area Elementary School

What grades does the participant building(s) serve?
Pocahontas Area Elementary School serves PreK-6th grade students.

Provide the name, email address and phone number of the primary lead for the application.

Susan Oehlertz - soehlertz@pocahontas.k12.ia.us - 712-358-1907

Provide the name, email address and phone number of the fiscal agent or business manager who will handle reimbursement if awarded.

Diane Pattee - dpattee@pocahontas.k12.ia.us - 712-335-4848

In what STEM region is the district/system/stand-alone non-public school located? (https://iowastem.gov/regions)

Northwest STEM Region

Based on Student Reporting in Iowa (SRI) Oct. 1, 2018, reporting, what percentage of students in the participating elementary school(s) are eligible for free and reduced-price lunch?

74% of our students are eligible for free and reduced-price lunch.

Based on SRI Oct. 1, 2018, reporting, what percentage of students in participating elementary school(s) are underrepresented populations in the field of computer science (African-American, Hispanic, American Indian/Alaskan, Native Hawaiian/Pacific Islander)?

14% of our students are underrepresented.

Goals and Measurements

Points Awarded: / 20

20 points

What are the measurable goals for the Computer Science is Elementary initiative in the district/system/stand-alone non-public school?

1. Direct connections to computer science fundamentals and application will be emphasized to promote transfer of knowledge to prepare students for jobs in industry, business, and/or government.

2. Host student-led symposiums for our parents and community members showcasing student work relating to CS and the world of work.

3. Foster and observe a community of resilient and collaborative learners through hands-on critical and creative thinking activities.

4. Demonstrate knowledge and apply essential skills relating to CS standards, applications, and robotic tools to nurture independent learners.

5. Build continually on faculty efficacy to remain current in the discipline.

How do these goals tie to the larger district/system/stand-alone non-public school goals, mission, and vision?
As teachers, we aspire to establish a lifelong love of learning in students. CS touches on a host of valuable essential skill sets that have broader applicability in the pursuit of learning. The groundwork laid in our PreK-4th classrooms will help cement foundational habits of mind and critical higher-order thinking skills. This is an invaluable skill set that transcends and integrates into all discipline areas to maintain a climate and culture that ensures our community of learners reach a high level of academic, social, emotional, and physical growth. We must empower proactive engaged digital learners with experiences that reinforce the democratic way of life.

How will the district/system/stand-alone non-public school measure the success of the plan using student data, with an emphasis on achievement and engagement?
Informal surveys centered around our CS initiative will be given throughout the year which will give insight into the climate and culture of our building. Administrative walk through data will show increased engagement. SWISS data will show less behavior referrals due to increased student engagement. Student goal sheets will show an increased academic achievement on local and state assessments. Teachers and students will also use digital portfolios such as Seesaw to capture their learning and growth throughout the year

Plan

Points Awarded: / 40

40 points

Describe how the plan will be launched or built upon an existing computer science education in the proposed participating elementary school(s).
Pocahontas Area Elementary School has pockets of existing computer science education integration taking place. Currently, a Makerspace is utilized by a small population of students during the day. Students have the opportunity to conquer the space during their noon recess so “time” is limited and the “space” is only available three days a week due to faculty schedules and responsibilities. Our district annually participates in the Hour of Code activities where students experience a variety of unplugged and plugged activities during a class period. A full-time technology integrationist brings technology purposefully into classrooms and works with numerous teachers to transfer STEM and computer science activities into their curricular venues. To support these existing efforts, we were awarded a few STEM grants with valuable resources. We also have established a few business partnerships that generously gave seed money to purchase some tangible robotic devices. Our faculty have had opportunities to explore, collaborate, and make curricular connections during designated professional development days with our assortment of STEM related tools and technology. This has sparked a lot of conversation, and our teachers have buy-in to move to the next level of incorporating and applying computer science foundational skills and activities into our core content. This award will guide computer science away from the fortunate few to an opportunity for all students.

Impact

Sub-Section Points Awarded: / 10

What is the plan for computer science instruction by July 1, 2020?
Our Computer Science Plan will roll into motion in July of 2019. At this time, we will officially form our CS Team comprised of the elementary principal, technology integrationist, science curriculum

coordinator, and at least one teacher at each of the PreK-4th grade levels. Our plan is to focus heavily on professional development (explore Tynker, tangible robotic tools, unpack CS Standards, and revise curricular UbD units/lessons) the first year so our teachers feel confident and prepared to begin August 2020 with full implementation of our CS Plan.

Extensive research has preceded this application in terms of "finding a viable computer science curriculum". We have chosen Tynker to be the thread running through the targeted classrooms because this platform fully supports our S.M.A.R.T goals of our CS Initiative. Tynker also allows for growth with our expansion plan (add 5th and 6th grade) in the years to follow.

Tentative Timeline:

1st Semester - August 2019 - December - 2019
-Half-Day Tynker Professional Development by Tynker Employees
-PD by AEA and/or Tech Integrationist Unpacking CS Standards
-Site Visit to Loess Hill Computer Programming School
-Conferences and/or event opportunities relating to computer science
-In-House Grade Level Tynker PD led by the district's Technology Integrationist where teachers make connections with alignment to CS and Common Core Standards
-In-House Grade Level professional development exploring our coding tangible tools (Cubettos, Blue Bots, Dot/Dash, Ozobots, Sphero Bolts, Drones) and tool specific lesson plans and resources for curricular connections

2nd Semester - January 2020 - May 2020
Curriculum Development -
-Grade level collaborative sessions working on scope and sequence plans for CS Standards and integration into core curricular areas

Logistical and Instructional Talking Points During Curriculum Meetings:
-How will it be streamlined into the day - time frame - learning block etc.?
-What resources, materials, or technology is needed?
-What CS Standards will be covered?
-How lessons and information will be provided?
-What instructional strategies can/will be used?
-What do you want your students to know and be able to do?
-How will the needs of different learners be addressed?
-How will students demonstrate their learning?

Begin infusing CS Standards and curriculum into our current UbD units and Lessons

August - 2020 - May - 2021
Full Implementation of our CS plan in our PreK-4th Grade Classrooms

Does the plan build on existing computer science instruction or launch a first-time initiative?
Pocahontas Area Elementary School has pockets of existing computer science education integration taking place. Currently, a Makerspace is utilized by a small population of students during the day. Students have the opportunity to conquer the space during their noon recess so "time" is limited and the "space" is only available three days a week due to faculty schedules and responsibilities. Our district annually participates in the Hour of Code activities where students experience a variety of unplugged and plugged activities during a class period. A full-time technology integrationist brings technology purposefully into classrooms and works with numerous teachers to transfer STEM and computer science activities into their curricular venues. To support these existing efforts, we were

awarded a few STEM grants with valuable resources. We also have established a few business partnerships that generously gave seed money to purchase some tangible robotic devices. Our faculty have had opportunities to explore, collaborate, and make curricular connections during designated professional development days with our assortment of STEM related tools and technology. This has sparked a lot of conversation, and our teachers have buy-in to move to the next level of incorporating and applying computer science foundational skills and activities into our core content. This award will guide computer science away from the fortunate few to an opportunity for all students.

Will computer science be integrated into other subjects or delivered as a stand-alone discipline?

Pocahontas Areas CS Plan will not be stand-alone. Our Computer Science team of teachers will work closely with the elementary principal in analyzing their individual classroom schedules to designate a time frame where each teacher can give purposeful instruction on the CS lesson. Then non-departmentalized classroom team teachers (PreK-2) will work collaboratively during their common planning period each week to infuse and apply the direct CS instruction lessons into their reading, math, social studies, and/or science blocks at least once a week. Our departmentalized teachers (3rd-4th) will each apply CS concepts into their specialized core content areas weekly. This new wave will give teachers the opportunity to rethink classroom design to ultimately facilitate a community of collaboration, critical thinking, creativity, and communication.

What grade level(s) of students and teachers will be included initially?

Our Computer Science is Elementary plan will initially impact our PreK-4th grade classrooms. The landscape of digital devices available to students include iPads in PreK-1st Grade classrooms and 1:1 Chromebooks in grades 2nd-4th.

What is the plan for expansion to all students in all grades in your school?

During our first full implementation year (August 2020 - May 2021) for PreK-4th, our 5th and 6th grade teachers will be provided numerous opportunities for peer observation and collaboration with our full implementation teachers. Our 5th and 6th grade teachers will be given professional development time and resources to visit exemplar schools engaged in computer science instruction, explore the Tynker software platform, dive into our robotic tools, and begin their CS curriculum writing journey. This pd time will model our PreK-4th grade progress timeline. Our 5th and 6th grade expansion plan will complete our plan of all student receiving computer science instruction by fully implementing within these classrooms starting in the Fall of 2021.

Curriculum

Sub-Section Points Awarded: / 10

What is the plan to identify, revise or write high-quality computer science curriculum aligned to the Iowa Computer Science Standards, 21st Century Skills, Universal Constructs and career exploration?

As mentioned earlier, our focused and dedicated curriculum development phase will roll into motion second semester. Tynker will be the cornerstone for our CS curriculum because it can be integrated across the curriculum with Tynker's STEM courses. These courses have over 200 lessons hitting on English, Social Studies, Math, Earth, Life and Physical Science with topics like metaphors and similes, order of operations, fractions, the water cycle, mitosis and meiosis to name a few. Our CS team and grade level teachers will create and revise a curriculum that combines authentic experiences with skill development to solve complex problems with computer science applications. We will be combining elements of Tynker with our tangible coding tools and resources to fully align with our CS Standards, 21st Century Skills, and Universal Constructs. For the past several years, our district has devoted time and resources for our faculty to work on designing and writing conceptual based units that are aligned to the Iowa Core and 21st Century Standards. Our expansion work will be to unpack the CS Standards and find purposeful, authentic, and engaging ways to incorporate these standards in their existing units. Reflecting back on first semester, teachers will assess how

these tools and resources can be used to enhance their instructional strategies and engage learners on a deeper, more meaningful level. In addition, direct connections to computer science fundamentals and application will be emphasized within lessons to promote transfer of knowledge to jobs in industry, business, and/or government. We will invite industry and community leaders to our classrooms to further strengthen these connections. Our Student-Led Spring Symposium Showcase will tie student projects to discipline specific fields.

These targeted grades will focus on sequencing, algorithms, debugging, and computational thinking using a mixture of unplugged, plugged, and tangible resources which creates opportunities for students to see knowledge in action.

Professional Learning

Sub-Section Points Awarded: / 10

What is the plan for professional learning in years one (fiscal year 2020) and two (fiscal year 2021), including participants, providers, timeline, instructional pedagogy, curriculum connections, alignment to Iowa standards and school community/employer partner connections?

Fiscal Year 1 - (July 1st, 2019 - June 30th, 2020)

Professional learning will impact all PreK-4th faculty including the elementary principal. Providers who will help us reach our CS vision include Prairie Lakes AEA, Tynker Employees, local ISU Extension Office, Technology Integrationist, Science Curriculum Coordinator, and IT Director. Our timeline is below:

1st Semester - August 2019 - December 2019
-Half-Day Tynker Professional Development by Tynker Employees
-PD by AEA and/or Tech Integrationist Unpacking CS Standards
-Site Visit to Loess Hill Computer Programming School
-Conferences and/or event opportunities relating to computer science
-In-House Grade Level Tynker PD led by the district's Technology Integrationist where teachers make connections with alignment to CS and Common Core Standards
-In-House Grade Level professional development exploring our coding tangible tools (Cubettos, Blue Bots, Dot/Dash, Ozobots, Sphero Bolts, Drones) and tool specific lesson plans and resources for curricular connections

2nd Semester - January 2020 - May 2020
Curriculum Development -
-Grade level collaborative sessions working on scope and sequence plans for CS Standards and integration into core curricular areas

Logistical and Instructional Talking Points During Curriculum Meetings:
-How will it be streamlined into the day - time frame - learning block etc.?
-What resources, materials, or technology is needed?
-What CS Standards will be covered?
-How lessons and information will be provided?
-What instructional strategies can/will be used?
-What do you want your students to know and be able to do?
-How will the needs of different learners be addressed?
-How will students demonstrate their learning?

Begin infusing CS Standards and curriculum into our current Common Core Conceptual Based Units and Lessons

Fiscal Year 2 (June 30th, 2020 - July 1st, 2021)

August 2020 - May 2021
-Full Implementation of our CS plan in our PreK-4th Grade Classrooms
-Peer observation and collaboration (5th & 6th grade team with 3rd-4th team)
-5th & 6th professional development
--Tynker software and coding tangible tools
--Site visit to Loess Hills Elementary to observe upper grades
--Unpack CS Standards
--Revise UbD units/lesson to incorporate CS Standards and activities

We have made connections with two businesses: - Pocahontas Community Hospital and the ISU Extension and Outreach. These partnerships will provide excellent resources through on and off site visits, extended networking connections, potential monetary streams to sustain the program, and career exploration booths tied to our Spring Symposium.

Community Engagement

Sub-Section Points Awarded: / 10

How will the community be engaged?

Computer Science is currently under represented. Computer science and the technologies it enables now lie at the heart of our economy, daily lives, and scientific enterprise. Our community must have opportunities to acquire deeper understanding of the fundamentals of computer science. Therefore, communicating an awareness of our CS vision is a critical component to its success and sustainability. We will reach out to our Chamber of Commerce to make direct connections with area businesses and industry and share our CS vision. We will utilize our social media outlets such as Twitter, Facebook, School District Website, and local advertising agencies to blast out ongoing awareness. We will frequently showcase through visuals, testimonials, and engaging content what is happening in conjunction with our CS initiative. These efforts will give community members, administration, and school board members a window into our classrooms.

How will parents and a broader stakeholder group be involved in planning and implementation of the Computer Science is Elementary initiative?

Parents will be involved in planning and facilitating our Winter and Spring Symposiums. Our elementary principal sends out a month newsletter. This information piece will be another great way to communicate with parents and invite them into the planning and implementation process. We have parents whose line of work connects directly to computer science. We will invite these parents to our leadership team meetings to help us shape our curriculum work. We also have several parents and grandparents who volunteer in our classrooms who will be a part of our instructional goals, as well as an active Elementary Booster Club who will advocate for our cause. Consistent board meeting share outs will also take place to highlight the CS implementation successes. This will encourage support to keep our program sustainable.

Who are or will be the community/employer partner(s) and what is the shared vision for engagement?

We have made connections with two businesses: - Pocahontas Community Hospital and the ISU Extension and Outreach. These partnerships will provide excellent resources through on and off site visits, extended networking connections, potential monetary streams to sustain the program, and career exploration booths tied to our Spring Symposium.

All applicants must have at least one community/business partner. Please include at least one signed letter of commitment (in PDF format) on employer letterhead from a community/business partner. Up to 10 employer letters may be added. This must be done in order for the application to be considered complete.
ISU Extension and Pocahontas Community Hospital letters of support are included.

Budget

Points Awarded: / 20

20 points
Please include the amount and a brief explanation of the use of funds per cost category not to exceed $50,000 over two years. Allowable expenditures may include the following categories:

Budget Category	Total Request	Year 1	Explanation of Funds	Year 2	Explanation of Funds
Professional Learning	$ 1,500.00	$ 1,000.00	Tynker Essentials: 2 hour online workshop - $500 This premium online training is designed to bring staff up to speed with Tynker quickly. The training covers basic setup, student import, assigning lessons, and running classes; and then goes beyond into creating their own lessons, tracking mastery and measuring outcomes. Educators can feel confident knowing they will be able to help students with the Tynker creativity tools suite, and the interactive lesson modules. Spring Symposium - $500 Bringing in experts from the field	$ 500.00	Spring Symposium - $500 Bringing in experts from the field
Curriculum Development	$ 29,460.00	$ 22,600.00	Tynker Premium Elementary Site License - $2600. - Professional Development (Tynker, Coding Robotic Tools, and Curriculum Writing) Includes teacher stipends for outside contract hours and sub pay during school hours - $20,000	$ 6,860.00	Tynker Premium Elementary Site License - $2600 - Curriculum Writing to include Grades 5 & 6 Includes teacher stipends for outside contract hours and sub pay during school hours - $4,260
Site Visits	$ 2,500.00	$ 1,500.00	Travel expenses to Loess Hills, Sioux City	$ 1,000.00	Travel expenses to Loess Hills, Sioux City for 5th & 6th Grade Team
District Costs	$ 16,540.00	$ 14,225.00	Prep - Cubettos - Classroom pack $1150 Kindergarten - Blue Bots Hive (2) - $1500 + tactile reader (2) $260 First Grade - Ozobots - (Classroom Set) - $1800 Second/Third/Fourth Grade - Dash Robots - 12 (6 packs) @ 720 - $8640 Fourth Grade - Drones - Parrot Jumping Drones - 11 @ $55 - $510 Battery 3 Pack - 4 @ $30 - $120 (for drones) Storage Units (Dash Robots and Drones) 7 @ $35 - $245	$ 2,315.00	Dash Accessories Dot Creativity Kits - 8 @ $65 - $520 Launchers - 8 @ $30 - $240 Grippers - 12 @ $40 - $480 Parrot Mambo Drones - 15 @ $60 - $900 Storage totes for Dash Accessories 5 @ $35 - $175
Staffing Support					
Other					
TOTAL:	$ 50,000.00	$ 39,325.00		$ 10,675.00	
TOTAL VERIFICATION:	$ 50,000.00				
(Formula Written to Sum totals from Year 1 and 2)					

Cost Sharing (may include in-kind or cash from partners or other education funding streams)

Anticipated cost share over the two-year funding period.

$46,720

Year 1 anticipated cost share (in dollars). Please provide a brief explanation.

$14,360: District approved computer refresh purchases PreK-1 - $18,000 - for iPads Grade 2 - Acer Spin R751TN

Year 2 anticipated cost share (in dollars). Please provide a brief explanation.

$14,360: Grade 2 - Acer Spin R751TN

The expectation for the Computer Science is Elementary award is that the plan uses primarily existing school revenue sources to execute a plan. After year two of the award, what is the plan for sustainability using existing or any additional funding sources?

We will have support to sustain this CS initiative. Our administration and school board have pre-approved the Technology Department's refresh computer plan to purchase Chrome devices every year in grades 2, 6, and 10. We have a very supportive Elementary Booster Club who is willing to provide monetary support for instructional tools. In the past, one of our business partners has given us funding to purchase some robotic devices. We feel confident this support will continue. With our administration approval, we are able to tap into Go Fund Me opportunities as well. Recurring expenditures such as our Tynker site license, replacement robotic devices, and potential new technology tools will be supported by our elementary principal.

Computer Science is Elementary Model Network

Points Awarded: / 10

10 points

To be eligible for the award, participation in the Computer Science is Elementary Model Network is necessary. By checking this box, the district/system/stand-alone non-public school is willing to participate in a Computer Science is Elementary Model Network including, but not limited to, hosting visits and sharing best practices, challenges, opportunities and successes with colleagues across the state.

I agree

IOWA STATE UNIVERSITY
Extension and Outreach

Pocahontas County
P.O. Box 209
305 North Main Street
Pocahontas, Iowa 50574-0209
712 335-3103
FAX 712 335-3104

March 25, 2019

To Whom It May Concern:

The ISU Extension and Outreach Pocahontas County would like to continue their partnership with the Pocahontas Area Community School. I feel we can offer support to many of the goals the school wants to accomplish in the computer science area, and we will be able to assist with the winter and spring Symposium that the school will host. Our mission is to "Empowering youth to reach their full potential through youth-adult partnerships and research-based experiences" aligns well with the goals of the computer science team. We currently have a partnership with the PAC elementary and PAC MS/HS using DASH robots, tablets, and EV3 Mindstorm robots. The school has used our equipment and taught their students programing and basic robot builds. Our organization will do everything in our power to assist getting students ready for jobs in the computer and technology fields.

I look forward to the opportunity to work with Susan Oehlertz and the Pocahontas Area Community School staff to implement this program.

Sincerely,

Lisa Zeman

Lisa Zeman

County Youth Coordinator

Pocahontas Community Hospital

An Affiliate of UnityPoint Health

606 NW 7th St.
Pocahontas, IA 50574
Office: (712)335-3501
Fax: (712) 335-4745
www.pocahontashospital.org

March 28, 2019

To Whom It May Concern:

I am writing this letter in support of the Pocahontas Area Elementary School's vision for the Computer Science in Elementary Initiative.

Pocahontas Community Hospital has partnered with Pocahontas Area Elementary in a variety of ways over the years and we feel that the Computer Science in Elementary Initiative would go a long way in setting the stage for these young people as it relates to the computer dependent world we live in today. Over the last 27 years at Pocahontas Community Hospital, I have witnessed first-hand the evolution of technology that has led us to where we are today. Today's hospital employees, both clinical and ancillary, must be knowledgeable in computer skills for them to be successful. We now work in a healthcare world that has fully electronic medical records, computerized imaging and lab machines and computer software that controls every aspect of our heating and cooling systems. Moving forward, we need our next generation of healthcare workers to possess computer skills that will go far and beyond what we are even experiencing today.

I feel that providing access to our younger elementary aged students will allow these skills that I mentioned above to begin to be learned at a much earlier age which will ultimately lead to increased success down the road. Providing computer science curriculum in the elementary will also ensure that all children within our school district will have access to computers at an early age. In today's society, regardless of where you live, not all children have the same opportunities and access to computers or technology that others do. By incorporating computers in the early elementary classes it will ensure that all children are given that same access.

In closing, our hospital and the other businesses in our region are relying on our local school districts to set the table for success for our children as they grow into the next work force available to us. The need for computer related skills will not decrease into the future, so that is why the Pocahontas Community Hospital is in full support of the Computer Science in Elementary Initiative.

Sincerely,

James Roetman
CEO
Pocahontas Community Hospital

Reviewer Name:

Reviewer Signature: **Total Points Awarded:** **/100**