Email address:
kim.harmon@fmcsd.org

Name of Individual Submitting Application:
Kim Harmon

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.

The vision of the Fort Madison Community School District is to foster an environment where technology is integrated as a natural part of the educational experience and where all learners are equipped with the skills to actively contribute, create, and compete in a digital world. We see an expanded elementary computer science program as a natural fit with this vision.

Over the past three years we have seen significant professional growth and positive momentum. The district has adopted the Professional Learning Communities framework and committed to train all teachers. As of October of 2018, 100% of certified staff have attended a PLC at Work Institute. All teachers work within collaborative teams to ensure quality instruction. Culturally we are building on the belief that ALL students can learn at high levels and we have a collective responsibility to ensure that it happens for each student.

Our vision draws from the work of multiple sources including the Computer Science Teachers Association K-12 Computer Science Framework, Loess Hills Elementary Blueprint, and the work of prominent researchers in the field. In support of our vision, a 60 Minutes news story on March 3, 2019 captured both the need and solution that we have identified. The story entitled "Closing the Gender Gap in the Tech Industry," interviewed Hardi Partovi, creator of Code.org. He stated, "In the U.S., there are half a million open computing jobs, but qualified candidates for them are overwhelmingly male." He goes on to state:

"In the current workforce, the gender gap hasn't changed. In fact, it's gotten slightly worse-- over the last ten years...many of the efforts to get women into computer science... start late... by the time somebody is 18 or 19, they have so many more pre-developed stereotypes and inhibitions and other passions that they've developed. College or even high school is way too late…And for computer science, they've not even been exposed to it at that young age in many cases. And that's when we need to start."

In the same story, Bonnie Ross, Microsoft executive stated: "Research that we've done at Microsoft of the girls we've talked to, 91% of them feel that they are creative, they identify with being creative. But when asked about computer science, they don't see computer science as creative... we do need to connect the dots. Because it is incredibly creative, it's just that we're not doing a good job of showing them what they can do with it."

The goal of the FMCSD Computer Science is Elementary program is to create a K-12 pathway of computer science instruction that builds from the early years. The K-3 focus is for all students, but especially our female and minority students, to experience computer science as a creative tool for self

expression while utilizing problem-solving processes. Our goal is to ensure that all students learn the fundamental skills of computer science and gain an understanding of the career possibilities for them in their futures.

Demographics

Points Awarded: / 10

10 points

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

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

What grades does the participant building(s) serve?
Grades PK-3

Provide the name, email address and phone number of the primary lead for the application.
Kim Harmon
kim.harmon@fmcsd.org
319-372-7252, ext. 1013

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

sandy.elmore@fmcsd.org

319-372-7252, ext. 1015

In what STEM region is the district/system/stand-alone non-public school located? (https://iowastem.gov/regions)
Southeast 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?
64%

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)?
1% Asian, 2.6% Black, 6.6% Hispanic, 8% 2 or more races

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?
Our goals identified for the CSE program include:
1. Strengthen overall literacy and math programming through integration of computer science
2. Build interest for all students but especially our female and minority students in computer science.
3. Increase student readiness for computer science and other STEM careers
4. Strengthen community and business partnerships through active, problem-based engagement
5. Increase K-3 enrollment by building an exemplary computer science program which will maintain our current enrollment numbers and draw in additional students.

How do these goals tie to the larger district/system/stand-alone non-public school goals, mission, and vision?
Our district goals directly support our plan: All students will learn through a rigorous curriculum with an emphasis on higher order thinking skills in order to solve complex problems. And All students will be prepared with the necessary life and social skills for success after graduation.

Providing students with programming grounded in computer science directly supports the commitment to a rigorous curriculum, higher order thinking and solving complex problems. It also creates advantages for students after graduation as they will exit FMCSD with skills and knowledge in computer science that will stage them for competitive jobs in the field.

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?
Measuring our goals will be done through:

Goal 1- Assessment data in reading, writing and math particularly as it compares to students not participating in computer science

Goals 2 and 3- Middle school interest survey and high school course enrollment data looking especially at subgroups by gender and ethnicity to measure interest and readiness for careers in computer science

Goal 4-Number of local businesses and industries that engage in project-based learning with our program students as well as the results of a survey evaluation tool partners will be asked to submit annually to provide feedback on quality of engagement experiences.

Goal 5-Enrollment and open enrollment number trends

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).

Currently no systemic program for computer science instruction exists K-8 for all students. The district is attempting to pass a bond to allow the building of a new elementary school to bring our two separate PK-3 elementary buildings together into one. If this is successful, the ultimate goal would be to integrate computer science throughout all grades in the new building.

Impact   **Sub-Section Points Awarded: / 10**

What is the plan for computer science instruction by July 1, 2020?

For 2020 the program would be initially implemented at Richardson Elementary as a school within a school with one classroom at each grade level, K-3, operating as a computer science classroom. Those four classrooms will integrate computer science into their reading and math curriculums utilizing the resources from Sioux City's Loess Hills Elementary, Code.org, and others that may be discovered in the planning phase.

Two-four teachers will be selected or recruited from current staff to form the team responsible for the implementation of the computer science curriculum in 2020-21. As a vertical team, they will work together to plan instructional progressions while also serving as thought partners to problem-solve challenges and questions that will arise as they plan and begin implementation.

Does the plan build on existing computer science instruction or launch a first-time initiative?

This will be a first-time initiative

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

Computer science will be integrated into the reading and math curriculum

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

Grades K-3

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

To expand the program, the preliminary plan is to integrate computer science into core content areas. Starting with a few teachers, we will create a team of "trainers" from participating classroom teachers and district Instructional Coaches that will be tasked with sharing their knowledge and experience with other teachers from 2021-22, 2022-23, and 2023-24 school years to increase the number of classes at each grade level that become Computer Science classrooms until all classrooms have integrated the instruction into literacy and math. This plan will be reinforced if a unified elementary is able to be constructed within the next two-three years. Building design will include spaces for collaborative learning for students and staff as well as infrastructure to support whole school computer science learning.

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?

We have started work in designing curriculum for general technology instruction but have not yet engaged in broad scale implementation. Our Instructional coaching staff have worked collaboratively with district media specialists to develop a draft document to cover general technology skills including keyboarding, digital citizenship, navigation, and coding. (FMCSD Technology Curriculum 2017-

2018). Planning year tasks would include revisiting the draft document and planning integrated lessons into core content.

Also included in the planning will be learning projects created in collaboration with our community partner organizations. The goal will be to develop age-appropriate, work-based projects that reinforce the computer science skills students are learning. When possible business professionals will be involved in facilitating projects, sharing about their careers, and demonstrating real-world applications.

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?

With the already integrated Professional Learning Community framework, staff routinely meet in collaborative teams to learn, review data, and plan for instruction. The core teacher team for the initial year of implementation will work during the planning year to create horizontally and vertically aligned curriculum that incorporates computer science skills into core content. This is a process that staff have worked on for the past three years and know and understand well. Adding the integration of CSTA K-12 Computer Science Standards into already aligned curriculum will provide an additional layer of depth to the curriculum.

It is expected that teams will study and understand the K12 Computer Science Framework adopting its vision where "students are informed citizens who can
• critically engage in public discussion on computer science topics;
• develop as learners, users, and creators of computer science knowledge and artifacts;
• better understand the role of computing in the world around them; and
• learn, perform, and express themselves in other subjects and interests." (K12 computer Science Framework, p. 10)

Professional Learning Plan:

Fall 2019
Participants-Guiding Coalitions (Leadership teams) Richardson and Lincoln Elementary
Providers-District Administration and Teacher Leadership Coordinator
Content-Explain and begin to build understanding and support of Computer Science is Elementary vision

2019-20 School Year
Participants-K-3 Computer Science school teacher team
Providers-Code.org Trainers, District Instructional Coaches
Content-Code.org curriculum, computer programming basics

Participants-K-3 Computer Science school teacher team
Providers-Team and district Instructional Coaches
Content-Learning together and curriculum planning and design for infusing computer science into reading and math curriculum

Participants-K-3 Computer Science school teacher team and community partners
Providers-Teacher Team and Business partners
Content-Learning together and planning of problem-based projects

2020-21, 2021-22, 2022-23, 2023-24 School Years
Participants-K-3 Computer Science school teacher team and district Instructional Coaches
Providers-Team and coaches
Content-Regular collaboration, data collection, analysis, and planning

Participants-All PK-3 Teachers (each year)
Providers-K-3 Computer Science school teacher team and district Instructional Coaches
Content-Build understanding and support of Computer Science is Elementary vision

Participants-PK-3 Teachers (2nd Cohort-2022-23; Final Cohort 2023-24)
Providers-Code.org Trainers, Computer Science school teacher team, District Instructional Coaches
Content-Code.org curriculum, computer programming basics

Community Engagement   **Sub-Section Points Awarded: / 10**

How will the community be engaged?
Community participation will be an important component in the planning and implementation of our
Computer Science is Elementary initiative. Two local business have committed to partnering in the
planning and implementation phases by collaborating with teachers in the design and presentation of
real-world problems to reinforce learning as well being resources for career exploration activities.

How will parents and a broader stakeholder group be involved in planning and implementation of the Computer Science is
Elementary initiative?
Working with our district's Marketing Specialist, we will utilize Open House, Parent-Teacher
Conferences, family events, online surveys and social media to share information with and gather
information from families to create the best plan for our initiative. The district's School Improvement
Advisory Committee which includes community members will provide feedback on the plan.

Who are or will be the community/employer partner(s) and what is the shared vision for engagement?
Steffensmeier Welding and Manufacturing, Inc. is a local business that has committed to partnering
with the district in support of the grant. Unique in its ownership by a female, their website proclaims:
Women-Owned, Solar Powered. As a cutting edge manufacturer in Southeast Iowa and a long-time
supporter of FMCSD, the partnership will provide ample opportunities to support our goal of
encouraging females in nontraditional fields and providing all students with project-based learning
opportunities.

Additionally, we are partnering with Fort Madison Community Hospital which has been a long-
standing partner with the school district and shares an organizational vision promoting partnership
with the community. Their reliance on technology on a day-to-day basis will provide opportunity for
building real-world learning experiences for students to expand and enhance our computer science
programming.

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.
See below

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	$ 16,000.00	$ 10,000.00	registration and travel costs for computer science training for core team	$ 6,000.00	registration and travel costs for computer science training for additional staff
Curriculum Development	$ 9,000.00	$ 6,000.00	Compensation for team planning and curriculum development	$ 3,000.00	Compensation for additional teacher planning and curriculum revision and ongoing development
Site Visits	$ 5,000.00	$ 3,000.00	travel expenses to visit Sioux City and other related sites	$ 2,000.00	travel expenses to visit Sioux City and other related sites
District Costs	$ 17,500.00	$ 12,500.00	hardware, software to cover implementation of computer science program	$ 5,000.00	additional hardware, software to cover implementation of computer science program
Staffing Support	$ 2,500.00	$ 1,500.00	secretarial and/or associate support for planning and curriculum development	$ 1,000.00	secretarial and/or associate support for planning and curriculum development
Other	$ -	$ -		$ -	
TOTAL:	$ 50,000.00	$ 33,000.00		$ 17,000.00	
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.

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

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

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?

Utilizing our already existing building Guiding Coalitions and grade level teams, existing PLC time scheduled within the contract day and planned early out and full day professional learning times, we will be able to sustain the Computer Science is Elementary work at the PK-3 level as well as expanding computer science into our middle school grades.

With a fully funded K-12 one-to-one initiative, ongoing costs to replace equipment and software will be covered within the current budget allocations. Ongoing professional development will be able to be sustained within current time and budgets available as well as curriculum materials beyond the initial implementation years.

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

March 25, 2019

To Whom It May Concern:

Fort Madison Community Hospital (FMCH) offers their full support of the *Computer Science in Elementary* initiative proposed by Fort Madison Community School District. We have a long-standing partnership with the district that continues to grow each year. I am excited to be able to expand our partnership into the elementary levels and support the integration of computer science into the curriculum.

As the local health care organization that relies on technology for day-to-day operations, we recognize the ongoing challenges of finding employees with the computer science skills to program, run and maintain our current technology. We recognize the ever-increasing need for these skills in the labor market and fully support the district's vision to provide opportunities for elementary students to develop an interest in the computer science field. Beginning early in the process and expanding throughout the educational experience will prepare them for careers that will benefit not only the health care industry, but also many others across the community and state.

We look forward to supporting the district in planning experiences for students that will deepen their learning and connect the classroom to the work world, planting the seeds of interest that can be cultivated throughout middle and high school.

Sincerely,

Shelby Burchett, Chief Operating Officer
Fort Madison Community Hospital
319-376-2449

March 28, 2019

To Whom it May Concern:

I am delighted to write this letter on behalf of Steffensmeier Welding & Manufacturing Incorporation in support of the *Computer Science in Elementary* initiative proposed by Fort Madison Community School District. We have a long-standing partnership with the district that continues to grow each year. I am excited to be able to expand our partnership into the elementary levels and support the integration of computer science into the curriculum.

As a local industry that relies on technology for day to day operations, we recognize the ongoing challenges of finding employees with the computer science skills to program, run, and maintain our current technology. We recognize the ever-increasing need for these skills in the labor market and fully support the district's vision to provide opportunities for elementary students to develop an interest in the computer science field that will expand throughout the educational experience and prepare them for careers that will benefit, not only our industry, but many others across the community and state. As a business owner of a predominantly male industry, I am an avid supporter of building interest in computer science for all students, but especially for female and minority students. I believe if given the opportunity, all students will benefit from this curriculum.

We look forward to supporting the district in planning experiences for students that will deepen their learning and connect the classroom to the work world, planting the seeds of interest that can be cultivated throughout middle and high school.

Sincerely,

Jennifer Steffensmeier
Owner/CEO

Reviewer Name:

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