Perry Elementary School



Computer Science is Elementary

BLUEPRINT

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Introduction

Perry Elementary School began our journey with computer science during winter of the 2018-2019 school year. A group of teachers began meeting with the goal of creating a Makerspace in our building because we wanted to engage our students in critical and creative thinking while completing various challenges involving creating solutions to open-ended problems. During our work with creating a Makerspace, we found that many representatives in the group had a strong interest in computer science. This group came across the Computer Science is Elementary application and quickly decided that this was an opportunity that we wanted to be a part of!

A small team of administrators and teachers met to complete the application during Spring 2019. This team included the elementary principal and associate principal, several classroom teachers and the Director of Teaching and Learning for the district.

After receiving word that Perry Elementary had received the $50,000 award, we quickly identified a pilot team that would lead the work throughout the next few school years. Throughout all of our work, the focus has been on providing students at Perry Elementary School with a strong foundation of computer science and coding skills. This Blueprint will guide you through our process of rolling out computer science to our students and staff during the 2019-2020, 2020-2021, and 2021-2022 school years.

School Information

Perry Elementary School is a K-5 public school in Perry, Iowa. We are the only public elementary school in our community and serve around 750 students annually. Our community is approximately 30 miles northwest of Des Moines.

2021-2022 Grade Structure

Grade level	Number of sections
Kindergarten	6
1st Grade	6
2nd Grade	6
3rd Grade	5
4th Grade	5
5th Grade	5

Each section has 18-25 students

2021-2022 Demographics

Race / Ethnicity		Gender	
White	44.8%	Male	51.9%
Hispanic	44.6%	Female	48.1%
Black / African American	5.2%	Student Groups	
Multi-racial	2.9%	Free / Reduced Lunch	43.1%
Asian American	1.8%	Students with an IEP	17.8%
Native American	0.7%	ELL	21%
Hawaiian / Pacific Islander	0.0%	TAG	2.5%

Specialized Populations

English Language Learners

We work to fully support all of our EL learners on a daily basis. We employ 6 English Language teachers that serve primarily one grade level each. Our teachers use the National Geographic Reach Curriculum for our EL learners. We believe that computer science and coding will benefit our EL learners as they work to learn the English language. Our EL teachers are encouraged to use our computer science materials in their classrooms.

Students with an IEP

Perry Elementary School staff along with Heartland AEA staff work to identify students that may need special education services. We use a Multi-Tiered System of Support approach to identify struggling learners through general education intervention. Students that still struggle following our work in general education intervention are evaluated for special education. We employ 8 special education teachers to help meet the needs of our special education students through their individual education plans.

Persistently At-Risk / Not Proficient

Persistently at risk/non-proficient reading and math students are identified through FAST and ISASP testing. PaR and non-proficient students receive interventions from our Title 1 reading and math teachers. We employ 6 Title 1 reading and 2 Title 1 math teachers to help meet the needs of this group of students. We also have an Online Coordinator/Interventionist to help with student evaluations and groups. Our title 1 teachers utilize small group interventions throughout the school day. Groups are created based on data.

School Policies

Student Discipline

Perry Elementary School uses PBIS and Capturing Kids' Hearts to develop citizens of character. Our students are taught to be respectful, responsible, and safe in a variety of settings. We focus on rewarding/recognizing positive behavior in the school. We track inappropriate behavior through our SWIS program and analyze the data to determine problem areas in the school.

School Day

Our school day runs from 8:20 a.m. - 3:30 p.m. Reading, math, writing, science, and social studies are taught throughout the building. Computer science is taught within the subjects that we offer during the school day. Each student attends one 50-minute special (i.e., PE, Music, Art, Library/Counseling) each day.



Program Goals and Measurements

Our Computer Science Leadership Team of administrators and teachers initially created 5 educational goals for computer science while completing the application for the Computer Science is Elementary Award. These goals were shared with the CSE Leadership Team (more on that in the next section) during our initial Computer Science is Elementary Summer Camp which was held on August 5, 6, and 7, 2019 at Perry Elementary. Since then, the goals are continually reviewed by the team during monthly meetings in order to be sure that we are collecting evidence to determine progress toward each goal.

1 Establish a scope and sequence

Our team feels that a strong computer science program at our school must include a scope and sequence that clearly identifies the specific standards and learning targets taught at each grade level. Creating a scope and sequence allowed our team to organize lessons across grade levels and ensure alignment between the grade levels. The scope and sequence is revisited often and truly is a live document that can be changed or modified as needed.

One of the primary reasons we've found that causes us to revisit and revise the scope and sequence frequently is that our students are demonstrating understanding and proficiency in some computer science skills at younger and younger grades. For example, we originally had to understand the concept of an algorithm by the end of grade 2. Now by the end of kindergarten, students understand what an algorithm is and subsequent grades build on that understanding.

2 Integrate programming within all grade levels and content areas

Our belief is that computer science is best accessed through integration in the different classroom subjects. Our team continues to create/find and implement computer science lessons that are either taught as a computer science lesson or integrated with core subject areas of reading, writing, math, science, and social studies. Continued integration will be a focus as we build, expand and refine our computer science program each year.

3 Support students in critical thinking, communication, collaboration, and creativity

Throughout the implementation of computer science and coding activities, students are challenged in all of these areas. Our team believes that computer science lessons push students to improve in all of these areas.

4 Develop interests and talents of students using technology tools and software

Our students, K-5, engage with computer science and coding through a variety of programs including Tynker, Kodable, and Scratch among others. Block coding is a skill that all our students learn in our work throughout the grade levels. Several different devices, such as iPads, laptops, a variety of robots (e.g., Ozobots, Dash, Dot, etc.) and tools such as Makey Makey and Cublets, also push students as they develop their interests and talents with computer science.

5 Increase confidence, skills, and abilities, of all elementary teachers for teaching and developing lessons that embed computer programming fundamentals

Our team believes that all teachers in the building should be involved in engaging our students with learning computer science. Teachers have opportunities for professional learning, collaboration, and exploration with teams throughout the school year. Short professional development sessions to learn about different devices and coding tools have been offered by our instructional coaches. Throughout our first 2 years of implementation, our pilot team met monthly to keep a focus on computer science. We anticipate this continuing to expand in the years ahead as all teachers begin to implement computer science.

Leadership

Perry Elementary School will continue to embed computer science into our instruction. By implementing this into our instruction, it will allow all students to learn more about computer science in their daily instruction. Our goal is to equip students with a comprehensive computer science background while also gaining an understanding of future computer science career possibilities. This is intertwined with all the 21st century skills they will learn from computer science.

As we continue to embed computer science, we will allocate time to professional learning during our Wednesday schedule while also replacing and integrating new physical tools such as robotics to best serve our students.

Perry Elementary School leaned on our Elementary Computer Science Team which included: Rachel Cappel, Katie Hermann, Katie Hardy, Julie Elliott, Katelyn Whelchel, Cory Hochstedler, and Sam Elliott. Perry Elementary School also had two instructional coaches who also were key leaders in Nathan Horgen and Shaylena Bell. Administration also collaborated with teachers to successfully implement computer science. Our Director of Teaching and Learning Mr. Kevin Vidergar, Associate Principal Morgan Maharry, Middle School Principal Ned Menke, and Elementary Principal Ryan Marzen.

This team grew our computer science throughout our school. When asking staff about testimonials of computer science this is what some of our staff members said:

“Implementing computer science has been very rewarding! The students are highly engaged and are having fun learning. Most of the time, they don't realize that they are learning, because they are enjoying the projects too much!”

“I have really enjoyed learning about computer science over the last few years. One of the best benefits I see with computer science is how engaged and excited all students are to work with robotics, unplugged activities, and Kodable. Students have really enjoyed learning about computer science and how applicable it is.”

“The implementation of Computer Science in the classroom has equipped students with a strong foundation of technology skills for their future. Computer Science instruction allows students to develop critical thinking skills that will help

them become productive citizens. Students are excited and highly engaged throughout CS instruction. As a teacher, I love seeing students develop perseverance and leadership skills, while learning Computer Science across content areas!"

"At first I was really nervous about implementing computer science into my instruction. But once I saw how engaged and excited my students were I quickly saw the value in computer science. It has also allowed me to grow as a teacher"



Changing Landscape of Computer Science

2019-2020

When Perry Elementary School was identified as a "Computer Science is Elementary" awardee, we quickly began our work to identify different leaders in our school system who wanted to explore, learn, and lead computer science in their classrooms. Once our team was identified, we began our work researching computer science to develop a better understanding of how we can implement computer science into our classrooms. We began with purchasing a few different robotics like Spheros, Dashes, and bee-bots and sampling different websites like Tynker, CodeCombat, and Kodeable. This gave us an opportunity to explore as a team what resources we preferred. In addition to this, we began to look at our infrastructure to see how and where we could store our computer science resources and what would be the system to check out resources.

In January of 2020, we began looking at ways to embed computer science into our content areas and what steps we could take to get more of our staff on board with computer science.

In the Spring of 2020, our school shut down due to the Covid Pandemic. This placed us on hold for the remainder of the 19-20 school year.

2020-2021

In the fall of 2020, our school district decided to shorten our in-person day to 2:00 P.M. The remainder of time was to be allocated for online instruction to our online students. During this time, our school district placed all district initiatives on hold such as: Professional Learning Communities (PLC), Capturing Kids Hearts (CKH), and Computer Science is Elementary (CSiE). However, during this time, several teachers continued to integrate computer science into their curriculum.

By Spring 2021, administrators felt good about reviving the Computer Science Leadership Team and resumed team meetings. The Computer Science Leadership Team met for a full day to renew a focus on computer science as well as develop plans for the 2021-22 school year. During this day, the team reviewed and revised the scope and sequence of computer science standards, learning targets, and vocabulary for K-5 as well as began creating curriculum maps. The curriculum maps show

when during the school year each computer science standard is taught along with the activities, vocabulary and other resources. This team discussed the importance of embedding professional development for all staff to ensure that every student gets an opportunity to participate in computer science.

2021-2022

In the fall of 2021, we encourage all staff to participate in one computer science activity of their choice to expand their computer science background. The expectation was that every student needed to be exposed to a computer science activity by fall parent teacher conferences. After parent-teacher conferences, we began to expand on including unplugged lessons and embedded unplugged activities into instruction. Computer science committee members are focusing on CS vocabulary at their grade level and providing guidance to other grade level members on how to incorporate this vocabulary in their lessons.

In the spring of 2022, we looked at different web based applications such as Kodable and Tynker to incorporate into instruction. This gave our teachers another tool in addition to robotics, unplugged lessons, and web-based applications to implement Computer Science before we finalized our blueprint to submit to the state. This gave us a better understanding of our capacity to embed computer science into our instruction.

Stand Alone or Embedded

Perry Elementary School decided to both embed and use stand alone computer science activities to explore and learn about the different ways we can intertwine computer science into our school day. The reasoning behind this was to get a better understanding of how we can fit computer science into our daily schedule. Initially, during our first two years, we had a lot of staff members use stand alone computer science activities during different content areas. This helped our teachers develop a deeper understanding of computer science and how they can incorporate it during different times of our day. During our third year, we began to find ways to embed different activities into our content areas. As we move forward, we will have to decide which stand alone resources we want to keep and continue to develop different ways to embed computer science into our content areas. Our computer science team feels that this will be the best direction for our staff and students to learn about computer science.

Implementation

Year 1 As presented in our grant application, the first year focused on learning about computer science and coding among the leadership team. This included experimenting with teaching lessons and leading activities with students. We also wanted to introduce all staff to computer science, and let them know that everyone would eventually be integrating computer science into lessons.

Year 2 The second year focused on teaching all staff about computer science and coding, and engaging all staff in teaching at least one computer science lesson during each semester.

Year 3 The third year focused on staff integrating computer science across the building. For example, teachers in areas such as Art, Music, and Physical Education were supported in developing and teaching computer science lessons. Grade level teachers were supported in developing and teaching computer science lessons in reading, math, science, or Social Studies.

Identifying the Computer Science Leadership Team

The leadership team included 13 members: at least one teacher from each grade level K-5, our Elementary TAG teacher, one music teacher, both instructional coaches, the elementary principal, the associate principal, and the district Director of Teaching and Learning. All of these individuals had a strong interest in learning about and teaching computer science. Over the past two years, membership of this leadership team has changed, expanding to include almost twice that many members.

Kicking Off Professional Development

Our initial kick-off professional development occurred in August of 2019 over the course of 3 days. Our theme was “Perry Elementary Computer Science is Elementary - A Spectacular Start!”. Our goal was that by the end of that summer camp, the leadership team would 1) understand the Computer Science is Elementary Award, 2) create an initial scope and sequence of computer science standards, and 3) identify some of the tools/resources that they would like to explore using during the school year.

We began the camp with a close review and discussion of our Computer Science is Elementary Award, focusing on the five goals, evidence, timeline, and support for achieving the goals. The team learned about the CSTA K-12 Learning Targets and what is and what is not computer science. This session was facilitated by Wren Hoffman, Computer Science Consultant of the Iowa Department of Education. Using this new understanding, the team created an initial scope and sequence of standards and learning targets, along with a set of computer science-specific vocabulary terms, for the upcoming school year.

We also spent quite a bit of time exploring various computer science and coding programs and websites to utilize (e.g., Scratch, Code.org, Tynker, etc.) as well as resources such as Makey Makey, Ozobots, Dash and Dot robots, etc. Teachers began creating lessons to try out during the school year.

Gathering Initial Data

Early in the 2019-20 school year, we surveyed all staff and students using the Bright Bytes survey. Our goal was to gather evidence on what teachers and students thought about computer science and coding, their comfort level with it, and their level of interest. This evidence served as our baseline as we planned to give this survey each year during the award as one way to monitor progress toward our goals.

Visiting Loess Hills

Four members of our Computer Science Leadership Team visited Loess Hills Elementary School in Sioux City, Iowa to learn how they have fully integrated computer science into their elementary school. Our team of teachers had the opportunity to ask staff from Loess Hills questions about computer science. Following the visit, the team of four shared about their experience with our Computer Science Leadership Team.

Meeting as the Computer Science Leadership Team

Monthly meetings with our Computer Science Leadership Team occurred starting in September of 2019. Each meeting lasted 1 hour outside of contract hours, and staff were compensated for their time and efforts. We met from 4:00 p.m. to 5:00 p.m.

During a typical meeting, team members updated the group about ideas that their specific grade level teams were working on (importance of jumping in and trying

computer science, successful lessons, successes/struggles, etc.). The team reviewed the award budget and made purchase decisions for devices and programming. The team also planned two successful professional learning opportunities for staff to introduce them to the devices and programs the leadership team was using.

Things were proceeding relatively smoothly, and interest/excitement was growing among staff. For example, by November 2019, all teachers in grade 4 were using Code.org, all teachers in grade 3 were trying Tynker, and several teachers in kindergarten and grade 2 were trying computer science activities and lessons. Our leadership team of teachers was outstanding as they encouraged colleagues and friends to try different computer science and coding activities and lessons.

The Computer Science Leadership Team was looking forward to a strong finish during the second semester...then the pandemic began, and everything ground to a halt.

We were not able to hold a computer science summer camp during the summer of 2020. Due to the heightened concerns about safety and the uncertainty surrounding coming back to school during an international pandemic, the administrative team decided that the focus was simply on getting school back in session face-to-face and the focus on computer science was temporarily set aside.

During the 2020-21 school year, however, several teachers continued to integrate computer science into their curriculum. By Spring 2021, administrators felt good about reviving the Computer Science Leadership Team and resuming team meetings.The goal was to discuss how best to implement computer science into instruction. During this time, we also decided to have a computer science summer camp to continue our work with computer science.

For 2021-2022 the Computer Science team decided to meet at least once a month during professional development time and after school to discuss computer science as we finalize our CSiE blueprint.

Implementing a Week of Code

The Computer Science Leadership Team planned Week of Code activities during the month of December in 2019 and 2020. During this week, all computer science leadership team members led different kinds of computer science activities such as modeling lessons and activities, demonstrating what the various robots can do, etc. Other staff members were encouraged to participate as well. These weeks allowed computer science to be a focus and theme for all students and staff.

Holding a Computer Science Camp

On June 4, 2021, the Computer Science Leadership Team met for a full day to renew a focus on computer science as well as develop plans for the 2021-22 school year. During this day, the team reviewed and revised the scope and sequence of computer science standards, learning targets, and vocabulary for K-5 as well as began creating curriculum maps. The curriculum maps show when during the school year each computer science standard is taught along with the activities, vocabulary and other resources.

Next, the team discussed and designed professional learning focused on computer science and coding for the 2021-22 school year. Perry Elementary has an 'early out' every Wednesday for professional learning. During the first quarter of the school year, the first 30-40 minutes of each Wednesday will focus on computer science and provide time for teachers to learn about, design, and share lessons and activities for teaching computer science. The remainder of the time is for teachers to meet in PLCs. During the second quarter, a shift might be made to computer science every other Wednesday based on teacher feedback.

The team also designed a 'course' for teachers to learn more about computer science and earn a professional development credit while doing so.

The team reviewed and updated this blueprint as well as reviewed and discussed the data from the Clarity Survey, which showed that students and teachers were feeling more positive and confident about learning and teaching computer science.

Continuing Professional Development

To start the 21-22 school year, our elementary school utilized 2 hours worth of building level professional development time on September 8th to kick off computer science in our building. During this professional development time, we discussed the purpose of computer science, why it's beneficial for kids, and the expectation for our grade level teachers to implement one computer science lesson for all students before the end of October. Teachers were given time to create, discuss, and research a computer science lesson to implement within their classroom.

On October 29th, Mr. Marzen and Mr. Horgen presented some activities for CS which included unplugged lessons to incorporate into their instruction. Unplugged lessons from Kindergarten to 5th grade were provided from Kodable. Suggestions to incorporate into instruction were provided as well which included but is not limited to: morning work time, stations during guided reading and guided math, enrichment activities when students finish early, and utilizing M.O.R.E. time to have CS. Teachers and staff were then given the rest of the morning to either take a pre-made unplugged lesson provided by Mr. Marzen and/or research additional lessons to incorporate into instruction.

Following this presentation, our Computer Science team met with Mary Trent, Northwest Regional STEM Manager, to present our curriculum maps, blueprint, and other topic areas for discussion. At this time we accepted a visit from Dr. Ann Lebo, the Director of Education in Iowa, on December 7th, 2021 to visit multiple classrooms in regards to computer science.

Ongoing Work in the 2021-2022 School Year

For the third quarter of the 2021-2022 school year, Perry Elementary School will have a focus on computer science web based applications such as Tynker and Kodable. We will continue to provide professional development on how to embed this into instruction.

For the fourth quarter of the 2021-2022 school year, Perry Elementary School will finalize and submit their CSiE blueprint to the state.

Attached are some pictures and videos of computer science in action at Perry Elementary School! This along with our lesson plans and curriculum maps are always ongoing processes.

Teacher Capacity and Development

Professional Learning for Computer Science Leadership Team

Computer Science Summer Camp	Professional development for our Computer Science Leadership Team began with a 3 day summer camp in August of 2019. Time was focused on learning about the CSTA standards along with planning initial lessons to be used during the 2019-2020 school year.
Leadership Team Monthly Meetings	Our Computer Science Leadership Team met monthly to maintain progress and keep a focus on computer science. The leadership team discussed strengths and areas for improvement with our Computer Science is Elementary work. Purchasing decisions and curriculum decisions were made during these meetings.
Computer Science is Elementary Institute	We attended the Computer Science is Elementary Institute in September of 2019. Our team was able to learn from Brian Aspinall as well as collaborate with all of the other elementary schools that received the Computer Science is Elementary Award.
Loess Hills Visit	Four members of our team visited Loess Hills Elementary Computer Programming School in Sioux City, Iowa. Team members were able to collaborate with teachers and staff from Loess Hills. The team reported back ideas to implement at Perry Elementary School. Future plans include visits to Loess Hills during the 2021-2022 school year.
Computer Science Summer Camp	A summer planning session was held during the June of 2021 to prepare for the upcoming school year. Our team worked to align a scope and sequence of activities/standards, reviewed survey data that was taken over the course of the first 2 years of implementation, and began organizing a professional development map for the 2021-2022 school year.

Professional Learning for All Staff

Professional Development Sessions	All elementary teachers attended professional development sessions to learn about many of our computer science tools. Bee Bots, Makey Makey, Osmos, Ozobots, and other tools were set up in stations for teachers to learn and explore. Computer Science Leadership Team members assisted staff at each station as they learned how they could be incorporated into their classrooms. Teachers attended a session during the 2019-2020 and the 2020-2021 school year.
Week of Code	Our school participated in Week of Code activities during December of 2019 and December of 2020. All students were involved with coding activities created by the respective teams during the week. Activities were created and discussed during planning time. All staff will participate in Week of Code activities during December of 2021.
Continuous Professional Learning	All staff will participate in quarterly professional development opportunities throughout the 2021-2022 school year.



Curriculum Materials Selection and Refinement

Our team of teachers created a scope and sequence that allowed computer science to be integrated into different subject areas throughout the year. Some specific site licenses were purchased and other utilized sources were free. Several robots/devices were purchased as well.

Site licenses Our team determined that purchasing site licenses for Kodable and Tynker would be beneficial to different grade levels of students. Kodable will be used primarily with our K-2 students while Tynker will be used primarily with our 3-5 students.

Free sources Lessons and resources available at code.org have been used by all grade levels. This organization continues to add new and updated content that can be accessed for free. Scratch has been used as a platform to code and create.

Devices We have purchased many robots/devices to enhance our learning as well. Our team purchased Bee-Bots, Ozobots, Dash and Dot, Cubelets, Osmos, Root Robots, and Spheros. These robots are used to engage students in coding. Our students have worked primarily with block coding as they learned with these robots.

Alignment to Iowa's Computer Science Standards

Teachers are continuing to develop their curriculum maps. Each grade level is in the process of developing their map aligned to the CSTA standards and embedding vocabulary that was identified by each grade level into lessons.

Scope and Sequence

The scope and sequence for computer science was initially put together prior to the start of the 2019-2020 school year by our computer science leadership team. This scope and sequence will be revisited every year to ensure that it remains viable as we continue to update our plan. We anticipate that some changes will occur within it every year.

Curriculum Map Links

Kindergarten	First Grade	Second Grade
Third Grade	Fourth Grade	Fifth Grade

Vocabulary

Our Computer Science Leadership Team built a deck of key computer science vocabulary terms that are to be taught throughout elementary school. The vocabulary cards are available to staff throughout the building.

Learning Targets

The Computer Science Leadership Team met during several Wednesday professional development times as well as a full day on June 4, 2021 to vertically align CSTA Standards and allocate grade level responsibilities. This document CSTA Learning Targets shows the breakdown of standards and vocabulary.

Budget Plan

Perry Elementary School operated on a $50,000 budget for our Computer Science is Elementary Award. Initially, this award was to be spent over the course of 2 school years. Due to the COVID-19 pandemic, our budget was changed to a 3 school year plan. Our initial budget and our adjusted budget is listed below:

Initial Budget

Budget Categories	Year 1	Year 2	Total
Professional development	$6,000	$6,000	$12,000
Curriculum development	$10,000	$10,000	$20,000
Site visits	$5,000	$5,000	$10,000
District costs	$4,000	$4,000	$8,000
Total	$25,000	$25,000	$50,000

Our team found that purchasing learning tools (Ozobots, Bee Bots, Dash, etc.) along with site licenses (Tynker, Kodable) can be a great way to build your library of computer science tools. Site visits and professional development opportunities were very limited due to the COVID-19 pandemic. Our adjusted budget may have looked quite different in non-pandemic times.

Adjusted Budget

Budget Categories	Year 1	Year 2	Year 3	Total
Professional development	$6,000	$3,000	$4,600	$13,600
Curriculum development	$12,400	$8,800	$3,200	$24,400
Site visits	$600	$0	$1,400	$2,000
District costs	$4,000	$6,000	$0	$10,000
Total	$23,000	$17,800	$9,200	$50,000

Our final budget took into account our initial and adjusted budget plans. Through the course of this award we adjusted our budget each year with paying our teacher teams, professional development, resources, and site visits. We changed District

costs to Instructional supplies. This would include any supplies or robotics needed. We also changed the curriculum development to purchased services as this would be more representative of the services we purchased (Tynker, Kodable, etc.,)

Budget Categories	2020	2021	2022 (FYTD)	Total
Professional development	$5821	$3037	$1052	$13,600
Purchased Services	$2641	$0	$0	$24,400
Site visits	$537	$0	$0	$2,000
Instructional Supplies	$13,787	$8317	$13,938	$10,000
Total	$22,786	$11,354	$14,990	$49,131

For 2021-2022 we were able to use professional development time during contract time to help offset some of the professional development costs that go with paying teachers before or after contract hours. In addition to this, we also utilized ESSER III funds to purchased services (Tynker, Kodable, etc.,) and instructional supplies (iPads, Makey-Makeys, etc.,) to offset some of the costs.

Monitoring and Evaluation Plan

Perry Elementary School follows our district professional development calendar and reports all required student data to the State of Iowa. On top of this, we also have monitored our computer science program through the Clarity Survey. Our student achievement data is monitored throughout each individual school year.

Evaluation of our Computer Science is Elementary Award implementation is a continuous process involving our leadership team and administration. Additional data may be necessary to evaluate the effectiveness of our program.

Student Achievement Data

FAST Reading	Standards Referenced Reported Grades
FAST Math	Professional Learning Community Data
Common Formative Unit Assessments	ISASP
Daily Formative Assessments	ELPA 21

Positive Behavioral Interventions and Supports (PBIS) Data

Monthly SWIS data	Classroom Referrals
Monthly Bluejay Leaders	Office Referrals

Teacher Data

Walkthroughs	Staff Surveys
Formal Observations	Observation

Computer Science Interest and Implementation Data

Clarity Survey - Teachers	Clarity Survey - Students

Data Collected

We will be collecting data in different areas. We want to track usage of our different programs that promote coding and computer science, frequency of the checkout of our physical coding and computer science tools, and the frequency of teaching unplugged lessons and vocabulary that promotes coding and computer science.

We are collecting data in our Clarity Survey around the implementation of computer science in the school.

Tynker

Date	Number of Projects	Lines of Code	Completed Assignments per Student	Student Certificates
2018-2019	19	1696	4.30	27
2019-2020	4382	75662	48.97	1595
2020-2021	6325	111642	52.15	2379
2021-2022	7103	785,174	56.9	2772
Total	17329	1,064,174	40.08	6773

Computer Science Tool Checkout Frequency

Tool	Frequency	Tool	Frequency
Dash and Dot	195	Ozobots	55
Beebots	105	Makey Makey	41
Osmos	78	Sphero	32
Cubelets	81		

As of 5/2/22

Community

One of the ways we engage our families is showcasing different computer science robotics during parent-teacher conferences. We have around 97% of families come to parent-teacher conferences so this is an excellent opportunity to have our robotics out by the entrance where families enter and exit. Students often show their parents what they've been working on with computer science when they stop by robotics.

We have had multiple events at Perry Elementary School to showcase and engage. For example, on December 7, 2021 we showcased our computer science initiative to Dr. Ann Lebo, Department of Education, community partners, and other organizations. Attached is the agenda of our computer science.

In addition to this, on May 12th, we also had a technology job fair for students where we had some of our community partners attend. Attached is the agenda of our computer science technology job fair.

These are just a few ways we invite our community into our school to promote computer science.

Partners

CSiE Community Partnerships

As a school building we partner with local businesses. Opportunities for the partnership include but are not limited to business representatives visiting classes and sharing how computer science is involved in their business. The business partners share career pathways that involve computer science in their field. The teachers and businesses collaborate on an in class activity.

Challenges and Solutions

Challenge

Currently we have 70+ teachers on our elementary staff. This has made it challenging to disperse computer science information to our entire staff in a consistent way.

Solution

We have embedded time within our weekly professional development time from 3:30-4:30 to meet with our CS leadership team once a month. From these meetings, our CS leaders disperse information to team members. As administration, we also meet with all teams once a month which includes a CS update. Lastly, as administration, we have provided CS professional development as an entire staff through Zoom and/or in person presentation during our professional development days.

Challenge

Over the past few years we have needed to update and/or replace devices such as iPads, BeeBots, Spheros, and Dashes.

Solution

We utilized a portion of our CSiE award to update devices. In addition to this, we utilized other budgets such as our building budget, ESSER funds, and grants to update resources and devices. We will continue to look at these pathways to update and/or replace devices.

Challenge

Finding time to include Computer Science for Professional Development has been difficult. Currently district and/or building initiatives include: Professional Learning Communities (PLC), Capturing Kids Hearts (CKH), and Self Assessment of MTSS Implementation (SAMI).

Solution

We have embedded time within our weekly professional development time from 3:30-4:30 to meet with our CS team once a month. We have provided CS professional development as an entire staff through Zoom and/or in person presentation during our professional development days.

Challenge

Our administrative team had trouble finding computer science business partners within our community.

Solution

Discussed with our partner school, MOC-Floyd Valley, on how to incorporate business partners with our school. We also attended a "Virtual Coffee" on November 11, 2021, hosted by Mary Trent to explore different ways to incorporate businesses with our school. Administration got in contact with local community leaders through Rotary. Administration decided to find the business partners and the grade level teachers would select which business partner would align with their class, grade level, and content.

Challenge

Over the last few years we have had a higher mobility of teachers in our building. This has included our original computer science team. Getting teachers trained and comfortable with computer science has been a challenge.

Solution

We have continued to pay members of our computer science team to meet outside of school hours to develop our computer science program. In addition to this, we included two Teacher Leadership positions that can help support computer science and other technological needs for all staff members. Lastly, we have embedded time into our New Teacher orientation to get teachers familiar with computer science.

Sustainability

Perry Elementary School will look at the following options to sustain Computer Science for future years beyond our Computer Science is Elementary award. Our elementary school will look at the following options:

Building Budget

Perry Elementary School will allocate 5% of their building budget to Computer Science. This will allow students to have updated robotics and resources to sustain computer science. This may include, but is not limited to, licenses for Tynker, Kodable, updating and purchasing equipment such as iPads, and supporting team members with a computer science committee.

ESSER III Funds

Until September 30th, 2024 we will utilize ESSER III funds to support computer science resources. This may include, but is not limited to, licenses for Tynker, Kodable, updating and purchasing equipment such as iPads, and supporting team members with a computer science committee.

Grants for PD

Administration will look on the IowaGrants for any grant opportunities to provide financial assistance for computer science. These will be essential so our school can continue computer science for all students.

Specific Resources

The computer science team will continue to look at usage of specific equipment pieces and programming to make leadership decisions on which programs and resources we will continue and discontinue.

Next Steps

Perry Elementary will continue to implement and develop computer science within the educational setting by following the next steps that are provided below:

1. Continue to develop the curriculum maps that our computer science teachers have started. This will allow teachers to have resources at their fingertips to find and align lessons. It will also give future teachers a resource to review.

2. Continue professional development by providing resources which may include but are not limited to:
    - Speakers to provide professional development for our entire staff.
    - Computer Science Team meetings to engage with new resources.
    - New Teacher Orientation to review and explore computer science.
    - Computer science and technology exhibits, unconference sessions, and professional development by our computer science team.

3. Invite and involve community partners in CS lessons, celebrations, and CS week. Identify and grow our local business/organization partners which can extend beyond CS in the classroom.

4. Continue to support teachers and administration in computer science which may include but is not limited to:
    - Encouraging incorporating CS within professional learning plans.
    - Attending CS conferences that are offered virtually or in person.
    - Growing the computer science team beyond grade level teachers (i.e. including multiple grade level representatives, and/or incorporating teachers outside of the general education classroom such as EL and Specials teachers.

5. Continue to look at ways to sustain CS in our elementary school by seeking funding opportunities (i.e. ESSER III, Iowa Grants, and building budget allocation).

