Whitefish Bay
SCHOOL DISTRICT
An Exceptional Place to Learn

K-12 Whitefish Bay Schools Computer Science Curriculum Renewal and Design Report

May 25, 2022

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Introduction

During the 2021-2022 school year, a committee was formed to evaluate the current K-12 Computer Science program and to recommend potential curriculum renewal and design enhancements. In 2007, there was no specific computer science programming as it is defined today; however, the review was a part of the Career and Technology Education review process. In 2017, Computer Science was recognized as having separate standards and the Department of Public Instruction (DPI) stated that "Wisconsin students benefit from academic standards in computer science and information and technology literacy that help them understand fundamental concepts to further their skills in today's technological world" (Department of Public Instruction, dpi.wi.gov, 2022). The DPI went on further to state that in today's society, there are "trending skills and knowledge that students need for careers today and for those that do not yet exist" (Department of Public Instruction, dpi.wi.gov, 2022).

Background

In the fall of 2021, a committee was formed to evaluate the Computer Science programming and make recommendations for revisions and improvements. The committee consisted of nine team members, including teachers, library media specialists, the Coordinator of Instructional Technology, and administrators. The committee was co-chaired by the Director of Teaching and Learning, Dr. Jamie Foeckler and the Coordinator of Instructional Technology, Mr. Kevin Reitman. In alignment with School Board Policy #334, the committee was given the charge to:

- develop and adopt a vision, mission, and goals for Computer Science;
- review past and existing Whitefish Bay Computer Science practices, curriculum, and resources;
- review current research and evidence-based practices relevant to the committee;
- study contemporary curriculum, instruction, and assessment models to use in creating and implementing an improved K-12 Computer Science programming; and

- recommend next steps in the development of a design and renewal plan that is integrated with the Focus Plan for the District, the Department of Public Instruction's definition of Educational Equity, Wisconsin's Computer Science Standards, and the WFB Seven Thriving Dispositions.

Committee Membership and Work Team Process

In this section, a description of the committee, leadership, organization, and timeline of the program evaluation process are included. A collaborative and representative team of stakeholders in the District is vital in carrying out a reliable and valid program evaluation. Outlined in the charts below are the committee members as well as the work team process and timeline for the work during the 2021-2022 school year.

Committee Membership

Member	Role
Emily Hartford	Teacher at Middle School
Brittany Khatib	Librarian and Computer Science Teacher at MS
Alanna Koritzinsky	Special Education Teacher at Richards
Linnea Logan	High School Computer Science Teacher
Valerie Mallman	Library Media Specialist at Cumberland
Hannah Reed	Library Media Specialist at Richards
Kevin Reitman	Coordinator of Instructional Technology
Rebecca Salomon	Associate Principal at Cumberland
Erica Topps	Classroom Teacher at Cumberland
Jim Wong	Parent
Jamie Foeckler	Director of Teaching and Learning

Work Team Process and Timeline

Date	Meeting Purpose
11/4/21	We will: ● Set our vision, purpose, and timeline for the computer science review work. ● Synthesize the curriculum renewal and design processes in our district. ● Analyze the current state of computer science in WFB Schools. ● Understand the consensus-based decision making process for curriculum selection.
12/2/21	We will: ● Review the current state of computer science K-12 ● Determine the level of transformation (Transactional vs. Transformational) for the computer science review. ● Investigate evidenced based practices (Elementary, Middle, High) ● Analyze assessment results and their impact on the ideal state ● Begin to develop the ideal state of computer science at the elementary, middle, and high school levels
1/27/22	We will: ● Review the current state of computer science K-12 ● Finalize the ideal state of computer science at the elementary, middle, and high school levels ● Investigate evidenced based practices in curricular resources (Elementary, Middle, High)
3/17/22	We will: ● Investigate evidenced based practices in curricular resources (Elementary, Middle, High) ● Review vision and program goals as we develop a review action plan for year two.
4/21/22	We will: ● Review vision and program goals as we finalize the Renewal and Design action plan for year two. ● Review final program recommendations for elementary, middle, and high school. ● Review the focus of the TLC and Board Presentations and provide feedback.

5/11/22	The Teaching and Learning Council will review the final report and action plan developed as a result of the Computer Science Renewal and Design Process.
5/27/22	The Director of Teaching and Learning and Coordinator of Instructional Technology will present the final report and action plan developed as a result of the Computer Science Renewal and Design Process.
6/8/22	The Director of Teaching and Learning will present the final report and action plan developed as a result of the Computer Science Renewal and Design Process for School Board approval.

Vision of Teaching and Learning

Any renewal and design process is conducted with the vision of Teaching and Learning in mind which is focused on Robert Marzano's (2003) meta-analysis of research on effective schools. In Marzano's research, he identified a **guaranteed and viable curriculum** as having the following components:

- **Opportunity to Learn** – Students have the opportunity to learn the standards through an articulated and aligned curriculum. Students aren't left with holes in their curricular program based on their placement.
- **Time and Viability** – The content that teachers are required to teach can be both taught and learned in the amount of time allocated for that subject area.
- **Essential Understandings** – The curriculum identifies those skills and understandings that are essential.
- **Commitment to Essential Content** – Through a process of curricular design, assessment, professional dialogue, supervision and evaluation, teachers and administrators are responsible and accountable for implementing the curriculum.
- **Protection of Time for Instruction and Learning**– Schools make every effort to convey the message that class time is sacred time and should be interrupted for important events only.

Computer Science Mission, Vision, Goals, and Equity Guiding Beliefs

The Computer Science Review and Renewal Process was focused on the development and adoption of a mission statement that supports "every student" being "both an educated consumer of technology and innovative creator" in Whitefish Bay Schools. Wisconsin's Vision for Computer Science provides four goal areas linked closely to a vision intended to introduce the principles and methodologies of Computer Science (CS) to all students across the state. Below you will find the mission statement, vision, goals, and equity guiding beliefs that have been used to frame the learning and work of the CS team.

Mission Statement

Every student in Whitefish Bay Schools will be enabled to be both an educated consumer of technology and an innovative creator capable of designing computing systems to improve the quality of life for all people.

Vision and Goals*

Wisconsin's Vision for Computer Science is shaped by Wisconsin practitioners, experts, and the business community, and is informed by work at the national level and in other states. The overarching goal is to introduce the principles and methodologies of CS to all students across the state. Wisconsin's vision for K-12 Computer Science is to focus on the following broad goal areas:

1. Introduce the fundamental concepts of CS to all students, beginning at the elementary school level; Wisconsin Standards for Computer Science 9.
2. Present CS at the secondary-school level in a way that will be both accessible and worthy of a CS credit, or as a core graduation credit;
3. Offer additional secondary-level CS standards that will allow interested students to study facets of CS in depth and prepare them for entry into a career or college; and
4. Increase the knowledge of CS for all students, especially those from underrepresented groups in this field.

Equity Guiding Beliefs*

1. Every student has the right to learn computer science
2. Computer science instruction must be rigorous and relevant
3. Purposeful assessment drives computer science instruction and affects learning
4. Learning computer science is a collaborative responsibility
5. Students bring strengths and experiences to computer science learning
6. Responsive environments engage computer science learners

**Adapted from Wisconsin Department of PublicInstruction on 8.20.21*

Purpose of the Computer Science Renewal and Design Report

The following report will recommend modifications for the renewal and design of the Computer Science curriculum and instructional practices by:

a. developing and adopting a vision, mission, and goals for Computer Science;
b. reviewing past and existing Whitefish Bay Computer Science practices, curriculum, and resources;
c. reviewing current research and evidence-based practices relevant to the committee;
d. studying contemporary curriculum, instruction, and assessment models to use in creating and implementing an improved K-12 Computer Science programming; and
e. recommending next steps in the development of a design and renewal plan that is integrated with the Focus Plan for the District, the Department of Public Instruction's definition of Educational Equity, Wisconsin's Computer Science Standards, and the WFB Seven Thriving Dispositions.

Current State of Computer Science

In this section, a review of the current state of Computer Science instruction includes both aspects of the current program that are working well as well as some aspects of the current programming that are opportunities for growth. The review criteria below was used to evaluate the current state of Computer Science curriculum resources that support the Whitefish Bay School District's Focus Plan, identified DPI vision and standards, and the Seven Thriving Dispositions (Note: Adapted from Wagner's (2008), "Seven Survival Skills"). Additionally, all middle and high school students have access to the current course options listed in the table below:

Computer Science Course Options in Whitefish Bay Schools

Middle School Course Options

Grade	Course	Duration
6	Digital Business (and Scratch)	1 quarter (Scratch is 1 week) - Required
7	CS Discoveries	1 quarter - Required
8	App Creators	1 quarter - Elective
8	Innovators and Makers	1 quarter - Elective

Note: All middle school students take Digital Business as a part of the elective "wheel."

High School Course Options

Course	Duration	Credits
Computer Science Principles 1	Semester	1
Computer Science Principles 2	Semester	1
AP Computer Science 2	Year	2
AP CS A (JAVA)	Year	2

Note: All high school students are required to take 1 credit of Computer Science or Computer Concepts.

Whitefish Bay Schools Focus Plan and Computer Science Current State

The School District of Whitefish Bay, in partnership with families and community, is student-centered with a tradition of educational excellence. We will build upon this tradition by:

- Empowering students with the knowledge, skills, and character necessary to thrive in a changing, global society.
- Respecting the diversity of our students and engaging them as individual learners in an innovative learning community.
- Addressing the needs of the whole child in a caring, inclusive environment.

The vision and goal areas of the Focus Plan provide a basis for our Computer Science programming across the district. After reviewing the impact of the Focus Plan on Computer Science programming, it was clear that there were relative strengths in the course options that all students have access to at the middle and high school level and areas to continue to grow in with elementary programming that aligns with the middle and high school vision.

Criteria: Focus Plan	Current State
Every student will meet or exceed comprehensive learning standards to promote future success within our global society.	Elementary: ● Opportunity for growth - Not happening for every student - happening in pockets. Middle: ● Every student has the opportunity to take coursework with the "wheel" at the middle school ● CS Discoveries (gr. 7-8) - Code.Org does a great job expanding horizons and connecting us globally through the CS curriculum ● App Creators (gr. 8) - App design has a community focus to think outside self ● Innovators and Makers (gr. 8) - Every student that chooses to take this elective will have this opportunity (see criteria). High: ● Every student has the option of coursework (we need a clearer course path to see) ● Graduation requirement (1 semester) ● Computer Science Principles - Students with IEPs feel comfortable to have discussions with the full class and continue on to the AP Computer Science curriculum later in their high school years. ● AP CS Principles - Students can self select where to start.

Criteria: Focus Plan	Current State
Every student will experience a caring, inclusive learning environment that supports the development of the whole child with balanced attention to physical, social, emotional, and intellectual well-being (SEL).	Elementary: ● Computer Science is not in place yet Middle: ● CS Discoveries - globally inclusive curriculum that focuses on equity and reflects a healthy SEL framework. ● Some students view CS as for a specific type of kid, they think they know it all already (because they use computers). High: ● More and more students who are taking AP courses who have IEPs and 504s (accommodations provided). ● Computer Science Principles - Educational equity driven so that there is participation and continuation of CS class especially among historically marginalized students and the curriculum is designed to do this.

Current State of Computer Science Vision

Wisconsin's Vision Wisconsin defines Computer Science (CS) as "an academic discipline that encompasses the study of computers and algorithmic processes, including their principles, hardware and software designs, applications, networks, and impact on society" (dpi.wi.gov, 2021). The vision for K-12 CS standards and the CSTA CS Standards is intended to meet the standards listed in the table below. After reviewing the impact of the Computer Science Vision on Computer Science programming, it was clear that there were relative strengths in the alignment of computer science vision with middle and high school courses and programming and an area to continue to grow related to elementary programming.

Criteria: Computer Science Vision	Current State
Introduces the fundamental concepts of CS to all students, beginning at the elementary school level	Elementary: ● Not consistent across all grades and classes with pockets of instruction occurring ● Based on need of individual teachers ● Computational thinking and block coding (Ozobots, Botleys) ● Very "piecemeal" in terms of resource availability and delivery ● Lack of clarity about what computer science is and should be at the elementary level. Middle: ● Digital Business addresses basics of typing, email, ect. ● CS-Discoveries starts computational thinking, problem solving, basics of computing (input, output, storage, and process) High: ● Computer Science Principles - Introduces students to networks and sorting. It does not require a lot of algorithms for students to understand. This course does not speak to what is done at the elementary level. This course meets students at any level of abilities. The amount of prior math instruction students have had does not impact their ability to participate in the class. ● AP CS A (JAVA) - working to build this course so that it works for more learners. ● AP CS Principles - Fundamentals have been already introduced in earlier years in highschool as this is the next step in the computer science curriculum.

Criteria: Computer Science Vision	Current State
Presents CS at the secondary school level in a way that will be both accessible and worthy of a CS credit, or as a graduation credit	Elementary: ● NA Middle: ● We have a required CS course High: ● 3 courses offered ● Graduation requirement (1 semester) ● Computer Science Principles - This course is available for credit. ● AP CS Principles - This is available for CS credit and potentially college credit. ● AP CS Principles (first college CS course for non majors) ● AP CS A (JAVA) (first college CS course for CS majors)

Criteria: Computer Science Vision	Current State
Offers additional secondary-level CS standards that will allow interested students to study facets of CS in-depth and prepare them for entry into a career or college	Elementary: ● NA Middle: ● Medical Detectives, App Creators, and coding courses provide a good base. ● CS Discoveries - Students can see themselves as computer scientists. ● App Creators - students use the same program used at some universities. High: ● 2 AP classes offered (we could have a clearer pathway). Clear pathways are helpful for staff and students. ● AP CS - This is available for CS credit and potentially college credit. ● AP CS A (JAVA)

Criteria: Computer Science Vision	Current State
Increases the knowledge of CS for all students, especially those from under-represented groups in this field	Elementary: ● Opportunity for growth - Not sure who is the owner of this work and integration. Middle: ● All students take the CS Discoveries course (Through unit 2) ● CS Discoveries - Great representation and option to apply the concepts, ideas, and practice to their individual experiences ● App Creators - Only students who self identify as "computer science person" takes the course, but the curriculum itself helps all students see the application for themselves ● Innovators and Makers - Only students who self-identify as "computer science person" take the course, but the curriculum itself helps all students see the application for themselves. It historically has not been a diverse group of students who select this course. High: ● Overall, our courses are aligned with the CS vision. Some students are accessing these opportunities outside of school. ● Computer Science Principles - Students who have IEPS often take a part in this course. Roughly 40% are girls that are enrolled in the course this year. Students of color: roughly 1-2 students of color per semester, so it does not match the makeup of the overall school. ● AP CS Principles - 75-90 students are taking an AP computer science course each year. Close to 9% of students are enrolled in an AP computer science course each year. A third of the students in each graduating class have taken a computer science course.

Current State of Computer Science Standards

The Computer Science Teachers Association (CSTA) is a professional organization that supports and promotes the teaching of Computer Science. The 2011 CSTA K–12 CS Standards represented the consensus view across the computing profession, educators, and academia. The writing of these standards was informed by an interim draft made available during 2016, as well as a separate but related K-12 Computer Science Framework under development with the involvement of many other states.

The Wisconsin Standards for Computer Science share five overall conceptual strands listed in the table below. After reviewing the impact of Computer Science Standards on Computer Science programming, it was clear that there were relative strengths in the alignment of standards in the courses offered at the middle and high school levels with opportunities to grow related to the areas of Data and Analysis (High School) and Networks and the Internet (Middle School). Currently, programming at the elementary level does not match the Computer Science Standards.

Criteria: Computer Science Standards	Current State
The learning priorities and performance indicators contained within each set of CS standards consists of knowledge and skills specific to each of the five content areas: ● Algorithms and Programming ● Computing Systems ● Data and Analysis ● Impacts of Computing ● Networks and the Internet	Elementary: ● Opportunity for growth Middle: ● CS Discoveries - Does not include a section on Data and Analysis (we supplement AI for Oceans that discusses data and machine learning) ● There is a need for supplemental activities for Networks and the Internet ● Innovators and Makers - looking for ways to supplement in the area of "Data and Analysis" High: ● Current courses meet these standards ● Computer Science Principles - One day of the semester focuses on networking. Machine learning and artificial technology and study of Alan Turring is for roughly two lessons. ● AP CS Principles - Opportunity for growth in Computing Systems, Data and Analysis, and Impacts of Computing. Strengths in Algorithms and Programming and Networks and the Internet.

Current State of the Seven Thriving Dispositions in Computer Science

Whitefish Bay Schools has adapted Tony Wagner's (2008) work on the "Seven Survival Skills" in the form of "Seven Thriving Dispositions" from the book, *The Global Achievement Gap*. Within Wagner's (2008) book, he explains the competencies high school and college graduates need in order to be successful young professionals and global citizens in today's society. After reviewing the impact of the Seven Thriving Dispositions on Computer Science programming, it was clear that there were specific strengths in high school and middle school courses and in "pockets" at the elementary level.

Within the context of the high school CS courses, there were examples of strengths in the following dispositions: Critical Thinking and Problem Solving, Agility and Adaptability, Curiosity and Imagination, Initiative/Entrepreneurialism, Effective Oral and Written Communication, and Collaboration. Opportunities for growth at the high school include development in the disposition involving the ability to Access and Analyze Information.

Within the context of the middle school CS courses, there were examples of strengths in the following dispositions: Critical Thinking and Problem Solving, Agility and Adaptability, Curiosity and Imagination, Initiative/Entrepreneurialism, and Effective Oral and Written Communication. Opportunities for growth at the middle school include development within the following dispositions: Access and Analyze Information and Collaboration.

At the elementary level, there were some identified strengths in the disposition of Effective Oral and Written Communication which was focused on technology tools that were not specifically related to computer science. There are many opportunities for growth in the Seven Thriving Dispositions at

the elementary level when it comes to computer science which will be addressed in the adoption of a curricular resource and implementation plan.

Criteria: Seven Thriving Dispositions	Current State
Critical Thinking and Problem Solving	Elementary: ● Think, make, and improve (engineering process for kids) Middle: ● Students get to engage in the design process throughout middle school with design and modeling, green architecture, app creators, CSIM and CS discoveries. 6 steps - define, generate, develop, build/test, evaluate, present High: ● AP CS Principles - strengths in this area ● CS Principles - in the data unit students research meaningful and purposeful topics and then use computer science components within the project.
Agility and Adaptability	Elementary: ● Learning during the pandemic (CS problem-solving skills and tech skills) Middle: ● Students get to engage in the design process throughout middle school with design and modeling, green architecture, app creators, CSIM and CS discoveries. 6 steps - define, generate, develop, build/test, evaluate, present High: ● AP CS Principles - strengths in this area ● CS Principles - there is a lot of student choice built in to this program for students

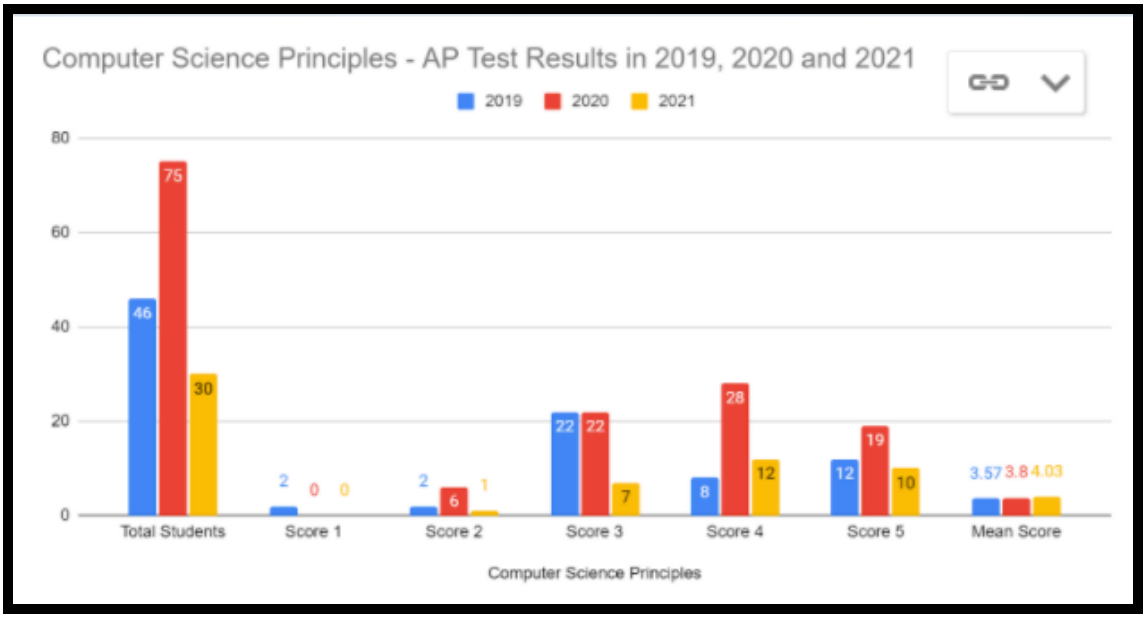
Curiosity and Imagination	Elementary: ● When students have a need, it is met individually. Opportunities are provided. Middle: ● Students get to engage in the design process throughout middle school with design and modeling, green architecture, app creators, CSIM and CS discoveries. 6 steps - define, generate, develop, build/test, evaluate, present High: ● AP CS Principles - strengths in this area ● Focus on designing and creating artifacts (apps or programs)
Initiative/Entrepreneurialism	Elementary: ● Opportunity for growth Middle: ● Students get to engage in the design process throughout middle school with design and modeling, green architecture, app creators, CSIM and CS discoveries. 6 steps - define, generate, develop, build/test, evaluate, present High: ● Focus on designing and creating artifacts (apps or programs) ● AP CS Principles - strengths in this area
Access and Analyze Information	Elementary: ● Use of databases for research ● Analyze information (accuracy of sources) - Google Suites Middle: ● Opportunity for growth High: ● AP CS Principles - strengths in this area

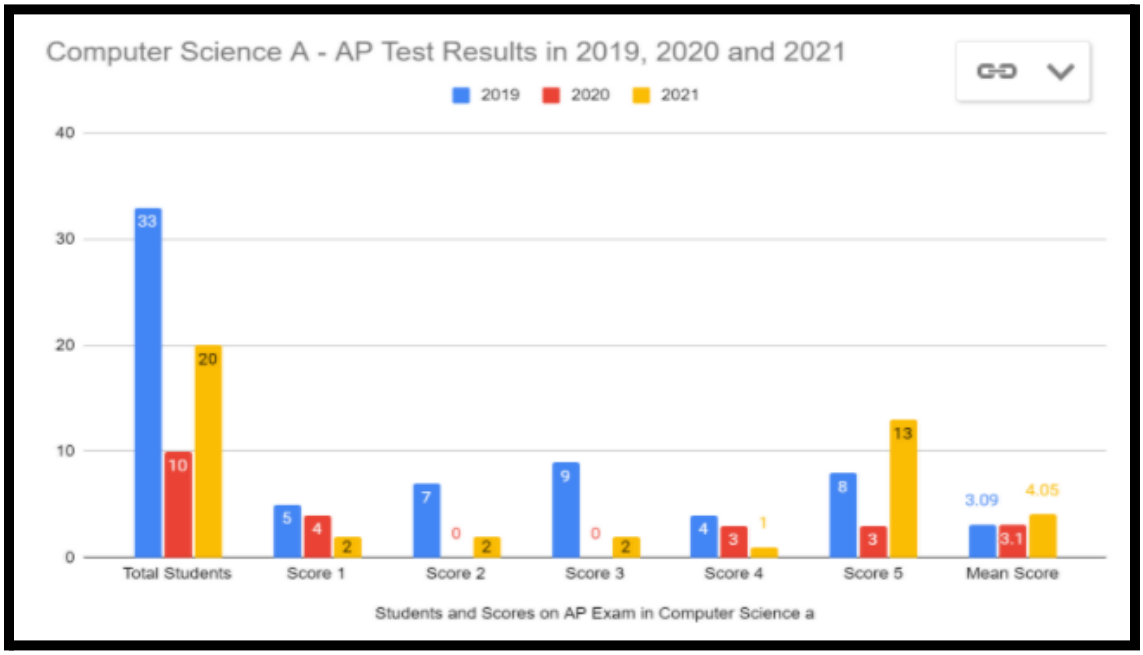
Effective Oral and Written Communication	Elementary: ● Tools to help proofread work (some teachers using Google Read and Write) Middle: ● Students get to engage in the design process throughout middle school with design and modeling, green architecture, app creators, CSIM and CS discoveries. 6 steps - define, generate, develop, build/test, evaluate, present High: ● AP CS Principles students submit a portfolio where they write about their work to the College Board ● CS Principles - Students write in notebooks a response to a prompt in their notebook multiple times throughout the school year. ● CS Principles - Students are required to do presentations about what they have completed. ● AP CS Principles - strengths in this area
Collaboration	Elementary: ● Teachers were finding digital tools for students to collaborate (during pandemic and post-pandemic) Middle: ● Opportunity for growth High: ● Articulated learning targets for collaboration ● CS Principles - Students share their written responses to the prompt with their elbow partners and then with their table group. ● AP CS Principles - strengths in this area

Computer Science Data Review

The Computer Science Renewal and Design process included a review of associated data available related to the Computer Science courses at the High School. Data included AP Test results of students in the Computer Science Principles and Computer Science A courses over the past three

years. The results of the tests showed growing mean scores on both AP exams resulting in an increase of .46 points (3.57 in 2019 to 4.04 in 2021) and an increase of .96 points (3.09 in 2019 to 4.05 in 2021). The AP exam scale ranges in scores from 1 to 5. An area for further discussion would include an analysis of the fluctuations to student enrollment over the past three years.





K-12 Computer Science Research Review

In any review of curricular resources and programming, it is important to begin with a review of current research and best practices. The Wisconsin Computer Science Plan highlights the importance of our school system continuing to evolve and provide opportunities for students in the realm of computer science as we examine current research. In the area of student learning related to computer science, "As our society becomes increasingly digital, our education system must also evolve. Students need to graduate with all the tools and skills necessary to thrive in a diverse and digital society" (https://dpi.wi.gov/computer-science/Wisconsin-CS-Plan, 2022).

The computer science committee took time to read and review related research and also examine new opportunities for multiple career pathways for students with a lens focused on educational equity for all students. The articles listed in the table below highlighted a wide variety of topics related to computer science as well as other relevant topic connections such as engineering, science, and math. The committee was also charged with summarizing or locating key findings related to the article and elementary, middle, and/or high school level.

Source	Summary/Key Findings
Vision for Computer Science	Elementary: ● Begin CS instruction at an elementary school level Middle: ● These are trending skills and knowledge that students need for careers today. Needs to be accessible and worthy to all students High School: ● CS for All, especially underrepresented groups. Accessible to all and in depth to prepare for college/career.

Equity: Wisconsin's Model to Inform Culturally Responsive Practices	Elementary: ● Want to ensure that we are equitable in providing instruction to all students. ● Stakeholder Questions to consider? What are the students telling us they need? What does the community tell us they need? Middle: ● Required classes add to the equity aspect High School: ● We have work to do to equitably reach all students, especially underrepresented groups of students.
DPI's Computer Science Definition	Elementary: ● Computer science focuses on algorithms and programming, computing systems, data and analysis, impacts of computing, and networks and the internet. Middle School and High School: ● Computer Science focuses on Computational thinking, including: ○ Algorithms and Programming ○ Computing Systems ○ Data and Analysis ○ Impacts of Computing ○ Networks and the Internet
Wisconsin's Standards for Computer Science (one pager)	Elementary: ● Computer science standards also support other standards in the common core. Including math and literacy and should be integrated into these content areas. Early learning should connect and expand as students progress through school. ● We are doing some of the standards already in library and tech usage instruction (p. 43) ● Disciplinary Literacy - "Students benefit from educators who understand computer science practices in order to link language skills to this complex content." (p. 48) Middle and High School: ● "Students demonstrate their content knowledge through reading, writing, listening, and speaking as part of a content-literate community." (p. 58)

Math Ties to Computer Science (2 pages)	Elementary: ● Application of if using x in math then relates to cs content area. At 5th grade, some tools and digit manipulatives in uses to model math (area model of fractions), web based resources to share with families (cs networking); Middle: ● Some of these are happening in CS Discoveries explicitly, but not in tandem with match courses.
Technology and Engineering Standards (pp. 26-30)	Elementary: ● Technology and STEM education should be interdisciplinary and prepare students to be successful in the 21st century.
2020 State of Computer Science Report	Elementary Schools and Middle School: ● Wisconsin does not have all 9 policies to help promote CS ● Similar findings to in Code.org article for state results. High School: ● WI has 4 of 9 state policies to help promote CS
Code.org WI State CS Fact Sheet (3 pages)	Elementary Schools and Middle School: ● Overview of article: Support CK in K12 as great demand for jobs that are well paying in. ● Some feel CS is as important as math & reading ● Data shows that HS students who take CS classes are 6 to 10 more likely to major in CS. Yet disparities exist with all groups of students. ● WI can do the following to boost CS access for all: ● Inclusive state plan, better fund CS, hire educational leaders at the state & local level ● Can use code.org for elementary as tools for students and as resources to lobby/advocate for change. High School: ● Teacher preparation programs in Wisconsin only graduated 4 new teachers prepared to teach computer science in 2018. (p. 1) ● WI AP Exam data: Only 2,051 exams were taken in AP Computer Science by high school students in Wisconsin in 2020 (782 took AP CS A and 1,269 took AP CSP). Only 21% were taken by female students (18% for AP CS A and 23% for AP CSP); only 118 exams were taken by Hispanic/Latino/Latina students (41 took AP CS A and 77 took AP CSP); only 29 exams were taken by Black/African American students (8 took AP CS A and 21 took AP CSP); (p. 1)

AP CS Data (1-2 pages)	Elementary: ● Gender and Ethnicity gaps are even more pronounced when looking at specifically Wisconsin data. Middle: ● The gender gap in CS is still very prominent, requiring classes might help all students see themselves as interested in computer science.
The Computer Science Teacher Landscape: Results of Nationwide Survey (1-2 pages)	Elementary: ● Preparation is needed as well as resources to be able to implement CS programs.
ISTE Computational Thinking Competencies (5 competencies areas)	All Levels: ● Focus on Computational thinking ● Equity leader - build confidence in CT for all students & manage bias ● Collaborating around computing/as it sounds, best practice ● Creativity & Design: authentic, real world, engaging ● Integrate computational thinking not just tools but build and develop CT. ● "The ISTE computational thinking competencies guide educators to integrate computational thinking across disciplines with all students" (p. 1).
Pre-College Computer Science Education: A Survey of the Field	Elementary: ● Must be implemented with an eye toward equity, or it will deepen inequities that already exist ● Partial or selective rollouts could potentially further inequalities ● Teachers must be trained, prepared, and supported ● "Self-guided exposure to computing without purposeful teacher or curricular facilitation results in little learning" ● Collaboration - research has shown that 70% of programmers' time is spent in collaboration, yet most CS courses have students working alone Middle: ● This quote stuck out to me: "Although there is much to celebrate and there are many success stories, our review found that the unintended consequences of the success of 'CS exposure' projects are that they might lead to less focus on sustained activities because they generate a false sense of how much it takes to teach CS Ed more broadly and deeply."

	Recommendations: 1. Create clarity around the different visions of CSEd 2. Make participation equitable 3. Ensure teachers are prepared and supported 4. Create continuity and coherence around learning progressions 5. Commit to ongoing and thorough research
Computational Thinking for a Computational World (pp. 4-28)	Elementary: ● There is a shortage of teachers that are able to teach this. Train teachers to be able to provide this instruction. ● Being a digital native today involves "knowing how things are made, breaking down and solving problems, designing systems, contributing through making, and understanding social and ethical ramifications." ● Computational thinking (p. 3) is a skill set for solving complex problems across the curriculum, a way to learn topics in any discipline and a necessity for fully participating in a computational world. Middle: ● As we consider career readiness, CS foundations will be essential ● "Computer science can help interrupt the cycle of inequality that has determined who has access to this type of high-status knowledge in our schools." (p. 12) High School: ● Computational Thinking, Computer Science and Coding represent three different but related competencies. Coding falls within the larger set of the other two.
Current Perspectives and Challenges in CS Education (30 pages)	Elementary Schools and Middle School: ● Google survey with Gallup of 7th graders - 12th graders & their parents plus educators and ed leaders. Survey conducted March of 2020 ● Findings: most parents want their kids to learn cs, especially African American parents. ● Teacher & admin data reveal that there are discrepancies about if cs is prioritized with Superintendents agreeing and teachers & principals less so. ● Student data reveals that kids are not impressed with learning CS (p. 7), stakeholders need to help students see this important skill set esp with girls. Again African American students see greater value in these skills then other groups. See charts in the article for data.

	High School: ● "For the purposes of this study, computer science includes learning about or doing things like: hardware and software design, programming a computer, writing and running computer code, machine learning and artificial intelligence Computer science does not include: simply using a computer, tablet or smartphone, conducting online research, creating documents or presentations on the computer" p. 2 ● "girls are less likely than boys to see computer science as something important for them to learn, and they are less likely to express interest in pursuing careers in this area" p. 29

Elementary Curriculum Resources Reviewed: Code.org and Google CS First

The Computer Science team reviewed the Code.org and Google CS First curriculum resources as two viable options to best meet the needs of our students. After analyzing both resources using the Instructional Materials Evaluation, the team found more benefits with the Code.org resource which provided content that was very structured and covered standards and material that bridges the gap between our current state and what is needed for students in 6th grade as an entry point to establish an appropriate computer science foundation of learning. Through the review of the Google CS First curricular resource, the team was not sure if the content provided a comprehensive enough approach for what we want to provide for the student experience and alignment with our current programming progressions at the middle and high school levels. Upon review of the ratings for each resource, the team rated Code.org higher than Google CS First in all of the identified categories in the table below:

Criteria Area	Code.org	Google CS First
Focus Plan	2.8	2.3
Educational Equity and Culturally Responsive Practices	3.0	2.75
Computer Science Vision	3.0	2.5
Computer Science Standards	2.4	1.7
7 Thriving Dispositions	2.5	2.0

*All ratings were completed on the following three-point scale: 1 = Does not meet expectations, 2 = Partially meets expectations, 3 = Meets expectations

Instructional Materials Evaluation with Focus Plan Ratings for Code.org

Criteria: Focus Plan	Rating and Evidence
Every student will meet or exceed comprehensive learning standards to promote future success within our global society.	**Grades K-2** 1 | 2 | **3** Evidence for the rating: Coding supports a global society by creating 21st century students. **Grades 3-5** 1 | **2** | 3 Evidence for the rating: Code.org covers all of the standards.
Every student will experience a caring, inclusive learning environment that supports the development of the whole child with balanced attention to physical, social, emotional, and intellectual well-being (SEL).	**Grades K-2** 1 | 2 | **3** Evidence for the rating: Teacher based, not necessarily curriculum lead, but there are a variety of backgrounds/ethnicities shown in the videos. They are also culturally relevant. **Grades 3-5** 1 | 2 | **3** Evidence for the rating: There are some unplugged activities that encourage inclusive learning and collaboration. These also focus on SEL standards. **Overall Rating = 2.8**

Educational Equity and Culturally Responsive Practices Ratings for Code.org

Criteria: Educational Equity and Culturally Responsive Practices	Rating and Evidence
"Educational equity means that every student has access to the resources and educational rigor they need at the right moment in their education, across race, gender, ethnicity, language, ability, sexual orientation, family background, and/or family income" (Online, dpi.wi.gov/rti/equity, February 2022). • **Become self-aware**: Staying alert to the ways identity and culture affect who we are and how we interact with learners and families; • **Examine the impact of systems, structures, policies, and practices on learners and families**: Analyzing who the system serves and underserves; • **Believe all learners can and will achieve at high levels**: Examining and intentionally pushing back on societal biases and stereotypes; • **Understand all learners have a unique world view**: Recognizing each adult and learner represents a complex blend of cultures, identities, and roles, with singular differences; • **Know and respect the communities**: Understanding and valuing the behaviors, beliefs, and historical experiences of families and community members served by the school; • **Lead, model, and advocate for equity**: Challenging prejudice and discrimination as barriers to equity and giving voice to those inequitably impacted by school and district decisions, policies and practices; • **Accept the responsibility for learner success**: Recognizing equitable outcomes depend on changing the school's and district's beliefs and practices, rather than fixing learners and families; and • Using practices, curriculum, and policies that respect the identities and cultures of learners and families served by schools.	**Become self-aware** 1 | 2 | 3 **Examine the impact of systems, structures, policies, and practices on learners and families** **1** | **2** | 3 **Believe all learners can and will achieve at high levels** **1** | **2** | 3 **Understand all learners have a unique world view** **1** | **2** | 3 **Know and respect the communities** **1** | **2** | 3 **Lead, model, and advocate for equity** **1** | **2** | 3 **Accept the responsibility for learner success** **1** | **2** | 3 **Using practices, curriculum, and policies that respect the identities and cultures of learners and families served by schools** **1** | **2** | 3 **Overall evidence for the ratings:** Equity and cultural responsive teaching is central to Code.org. You can se this in their values, their accessibility statement, and th equity strategies. **Overall Rating = 3**

Computer Science Vision Ratings for Code.org

Criteria: Computer Science Vision	Rating and Evidence
Introduces the fundamental concepts of CS to all students, beginning at the elementary school level	**Grades K-2** 1 | 2 | 3 Evidence for the rating: Students start exploring the drag and drop coding, and the concept of "this line of code controls this." Start the concept of incremental coding (one step at a time) **Grades 3-5** 1 | 2 | 3 Evidence for the rating: If taught to all students, all of the computer science standards are addressed through both "plugged" activities and unplugged activities.
Increases the knowledge of CS for all students, especially those from under-represented groups in this field	**Grades K-2** 1 | 2 | 3 Evidence for the rating: If all students are required to complete the levels, it will increase confidence in basic computing skills (especially for drag/drop general practice) **Grades 3-5** 1 | 2 | 3 Evidence for the rating: If it is provided to all students then it will be able to make sure all groups are equitable. **Overall Rating = 3**

Computer Science Standards Ratings for Code.org

Criteria: Computer Science Standards	Rating and Evidence
The learning priorities and performance indicators contained within each set of CS standards consists of knowledge and skills specific to each of the five content areas: • Algorithms and Programming • Computing Systems • Data and Analysis • Impacts of Computing • Networks and the Internet	**Grades K-2** **Algorithms and Programming** 1 | 2 | **3** Evidence for the rating: "Get Scratch to the acorn" requires students to use "if/then" statements to complete the levels **Grades 3-5** **Algorithms and Programming** 1 | 2 | **3** Evidence for the rating: All standards addressed in the lesson plans **Grades K-2** **Computing Systems** **1** | 2 | 3 Evidence for the rating: I don't believe there are any lessons on how a computer works, parts of the computer. It appears they only touch one standard under the K-5 computing systems. Still a need for hardware understanding (desktop, power on/off, input/out devices, components etc.) **Grades 3-5** **Computing Systems** 1 | 2 | **3** Evidence for the rating: All standards addressed in the lesson plans **Grades K-2** **Data and Analysis** **1** | 2 | 3 Evidence for the rating: I think they may be too young to touch some of the standards under the K-5 except for sorting attributes.

Grades 3-5

Data and Analysis

1	2	3

Evidence for the rating:
All standards addressed in the lesson plans

Grades K-2

Impacts of Computing

1	2	3

Evidence for the rating:
CS Fundamentals Course B (internet safety, collaboration)

Grades 3-5

Impacts of Computing

1	2	3

Evidence for the rating:
All standards addressed in the lesson plans

Grades K-2

Networks and the Internet

1	2	3

Evidence for the rating:
Practicing passwords/internet safety

Still a need for physical networking/hardware understanding

Grades 3-5

Networks and the Internet

1	2	3

Evidence for the rating:
All standards addressed in the lesson plans

Overall Rating = 2.4

Seven Thriving Dispositions Ratings for Code.org

Criteria: Seven Thriving Dispositions	Rating and Evidence
Critical Thinking and Problem Solving Agility and Adaptability Curiosity and Imagination Initiative/Entrepreneurialism Access and Analyze Information Effective Oral and Written Communication Collaboration	5 to 7 Thriving Dispositions = 3 rating 2 to 4 Thriving Dispositions = 2 rating 0 to 1 Thriving Dispositions = 1 rating **Grades K-2** Select the rating below: 1 | **2** | 3 Evidence for the rating (list disposition and information as needed): Unlike CS First, Code.Org is great for younger kids, but a little more difficult to integrate. Awesome as a standalone CS Curriculum. **Grades 3-5** 1 | 2 | **3** Evidence for the rating (list disposition and information as needed): Unplugged Activities hit oral and written communication and collaboration. Other activities allow for critical thinking and problem solving experiences, allow students to learn how to adapt, increase curiosity and imagination when creating programming. **Overall Rating = 2.5**

Overall Noticings/Wonderings of Code.org as a Curricular Resource	
Grades K-2 Noticings ● Builds well and usable for students (can use multiple devices) ● Rated lower in certain areas, but not age appropriate **Grades 3-5 Noticings** ● It is very structured and covers a lot of material that bridges the gap between our current state and what is needed for 6th grade. ● Would provide a great entry point and establish a foundation for students moving to the middle school.	**Grades K-2 and 3-5 Wonderings** ● How do we implement this resource with allocated time? ● How would we map out a plan for alignment?

Instructional Materials Evaluation with Focus Plan Ratings for Google CS First

Criteria: Focus Plan	Rating and Evidence
Every student will meet or exceed comprehensive learning standards to promote future success within our global society.	**Grades K-2** 1 | 2 | **3** Evidence for the rating: The unplugged activity shows how homes are interconnected. **Grades 3-5** **1** | 2 | 3 Evidence for the rating: This particular curriculum is not a "curriculum." CS First aligns nicely to the general standards, but it is lacking comprehensive learning. This program would just be experiences versus a comprehensive learning program available to all students.

Every student will experience a caring, inclusive learning environment that supports the development of the whole child with balanced attention to physical, social, emotional, and intellectual well-being (SEL).	**Grades K-2** 1 | 2 | **3** Evidence for the rating: Teacher based, not necessarily curriculum lead, but there are a variety of backgrounds/ethnicities shown in the videos. They are also culturally relevant. **Grades 3-5** 1 | **2** | 3 Evidence for the rating: This CS First is not necessarily applicable for this program. The unplugged lessons include some social and collaborative components. These activities could have potential when incorporated with Caring School Communities. Specifically, teachers could do activities with their buddy classroom to solve a variety of problems. **Overall Rating = 2.3**

Educational Equity and Culturally Responsive Practices Ratings for Google CS First

Criteria: Educational Equity and Culturally Responsive Practices	Rating and Evidence
"Educational equity means that every student has access to the resources and educational rigor they need at the right moment in their education, across race, gender, ethnicity, language, ability, sexual orientation, family background, and/or family income" (Online, dpi.wi.gov/rti/equity, February 2022). • **Become self-aware**: Staying alert to the ways identity and culture affect who we are and how we interact with learners and families; • **Examine the impact of systems, structures, policies, and practices on learners and families**: Analyzing who the system serves and underserves; • **Believe all learners can and will achieve at high levels**: Examining and intentionally pushing back on societal biases and stereotypes;	Select the rating below: **Become self-aware** 1 | **2** | 3 **Examine the impact of systems, structures, policies, and practices on learners and families** **1 | 2 | 3** **Believe all learners can and will achieve at high levels** **1 | 2 | 3** **Understand all learners have a unique world view** **1 | 2 | 3** **Know and respect the communities** **1 | 2 | 3**

• **Understand all learners have a unique world view**: Recognizing each adult and learner represents a complex blend of cultures, identities, and roles, with singular differences; • **Know and respect the communities**: Understanding and valuing the behaviors, beliefs, and historical experiences of families and community members served by the school; • **Lead, model, and advocate for equity**: Challenging prejudice and discrimination as barriers to equity and giving voice to those inequitably impacted by school and district decisions, policies and practices; • **Accept the responsibility for learner success**: Recognizing equitable outcomes depend on changing the school's and district's beliefs and practices, rather than fixing learners and families; and • Using practices, curriculum, and policies that respect the identities and cultures of learners and families served by schools.	**Lead, model, and advocate for equity** **1** | **2** | **3** **Accept the responsibility for learner success** **1** | **2** | **3** **Using practices, curriculum, and policies that respect the identities and cultures of learners and families served by schools** **1** | **2** | **3** **Overall evidence for the ratings:** Lessons are built for any student to complete. However, there isn't as much intentionality when it comes to social biases and cultural connections addressed within the curriculum. **Overall Rating = 2.75**

Computer Science Vision Ratings for Google CS First

Criteria: Computer Science Vision	Rating and Evidence
Introduces the fundamental concepts of CS to all students, beginning at the elementary school level	**Grades K-2** 1 | 2 | 3 Evidence for the rating: Students start exploring the concept of developing coding language which contributes to the start of computational thinking.

	Grades 3-5 1 | **2** | 3 Evidence for the rating: It introduces the concepts of algorithms and programming but is lacking in many of the other computer science standards.
Increases the knowledge of CS for all students, especially those from under-represented groups in this field	**Grades K-2** 1 | 2 | **3** Evidence for the rating: As long as all students are given the curriculum and complete the same activities then this should be true. **Grades 3-5** 1 | **2** | 3 Evidence for the rating: No strong connections to under-represented groups. **Overall Rating = 2.5**

Computer Science Standards Ratings for Google CS First

Criteria: Computer Science Standards	Rating and Evidence

The learning priorities and performance indicators contained within each set of CS standards consists of knowledge and skills specific to each of the five content areas:

- Algorithms and Programming
- Computing Systems
- Data and Analysis
- Impacts of Computing
- Networks and the Internet

Grades K-2

Algorithms and Programming

1	2	3

Evidence for the rating:
Students explore the programming concepts of event block and then handler. If I do this then this will happen.
User -> process -> output

Grades 3-5

Algorithms and Programming

1	2	3

Evidence for the rating:
Creating an algorithm to program something. Creating different objects to move at a specific point in time.

Using a template to fill in the starter code and show what they want. To up sophistication can include source credit or their pictures.
Can include working in a group setting as well as individual assignments.

Creating loops, sequences, events and conditionals in the assignment that is in the create a presentation activity.

Students are able to decompose into smaller parts as a part of the interactive presentation.

Grades K-2

Computing Systems

1	2	3

Evidence for the rating:
Way too young to touch this concept

Grades 3-5

Computing Systems

1	2	3

Evidence for the rating:
No lessons are linked to these standards.

Grades K-2

Data and Analysis

1	2	3

Evidence for the rating:
Way too young to touch this concept

Grades 3-5

Data and Analysis

1	2	3

Evidence for the rating:
No lessons are linked to these standards

Grades K-2

Impacts of Computing

1	2	3

Evidence for the rating:
Could be included if the unplugged activity was modified - what would happen if one of these houses wasn't part of this pathway?

Grades 3-5

Impacts of Computing

1	2	3

Evidence for the rating:
No lessons or standards linked

Grades K-2

Networks and the Internet

1	2	3

Evidence for the rating:
The unplugged activity demonstrates networking and how neighborhoods are connected

Grades 3-5

Networks and the Internet

1	2	3

Evidence for the rating:
No lessons or standards linked

Overall Rating = 1.7

Seven Thriving Dispositions Ratings for Google CS First

<table>
<tr><th>Criteria: Seven Thriving Dispositions</th><th>Rating and Evidence</th></tr>
<tr><td>Critical Thinking and Problem Solving
Agility and Adaptability
Curiosity and Imagination
Initiative/Entrepreneurialism
Access and Analyze Information
Effective Oral and Written Communication
Collaboration</td><td>5 to 7 Thriving Dispositions = 3 rating
2 to 4 Thriving Dispositions = 2 rating
0 to 1 Thriving Dispositions = 1 rating

Grades K-2
<table><tr><td>1</td><td>2</td><td>3</td></tr></table>Evidence for the rating (list disposition and information as needed):
If these were used to introduce a concept or as part of a larger project, this could be moved to a 3. As stand alones, they are great starters.

Grades 3-5
<table><tr><td>1</td><td>2</td><td>3</td></tr></table>Evidence for the rating (list disposition and information as needed):
It has the opportunity to have curiosity and imagination and to be adaptive. We know that this is of high interest. Critical thinking and problem solving is involved if the program they create does not work and they need to be able to problem-solve this. Difficulty in determining how to support students when they get stuck. Some may problem solve through some problems that arise, but many may just become disengaged or begin to play around with other activities within the program. Collaboration can be hit if students are working together in a small group. Peer review and having a deadline to show work to their peers.

Overall Rating = 2</td></tr>
</table>

Overall Noticings/Wonderings of Google CS First as a Curricular Resource	
Grades K-2 Noticings ● Not appropriate for K-2 age level ● Did not build on previous learning (exposure, but not building on standards) **Grades 3-5 Noticings** ● Fewer opportunities for collaboration ● Felt more like an isolated activity. Would take more time to integrate.	**Grades K-2 and 3-5 Wonderings** ● Not sure if this provides a comprehensive enough approach for what we want to provide for our student experience and alignment (one off lessons) ● Fits better with digital literacy and not necessarily computer science principles

Overall Noticings and Wonderings of Curricular Resources

As a part of the review process and overall outcomes and expectations for the reviewed resources, the Computer Science Renewal and Design team engaged in an analysis and discussion about (1) noticings related to the current curriculum resources and what we want students to know and be able to do and (2) wonderings related to the current curriculum resources and what we want students to know and be able to do. The previous analysis was done with a lens on what the expectations are of our students related to computer science from Kindergarten to when they would graduate from the High School. Through the analysis below, the team found many strengths within the current curriculum resources, some of which included a clear focus on computer science standards and coverage of those standards and the middle and high school levels. Areas to continue to grow include the development of more open-ended projects for students, opportunities to provide a clearer "why" related to real-life connections and course content, and opportunities to continue to engage all students in the course offerings.

High School Noticings	High School Wonderings
● Based on equity, inquiry, and CS content (CS Principles I) ● Pillars are communication and collaboration (CS Principles I) ● Facilitator for PD and involved in National Science Foundation Grant ● 2 and ½ years of CS options at the HS ● Educational equity piece is shown through students with IEPs right now (exploring how we can do this with other underrepresented groups) ○ Black students, female students ● Provide more open ended projects and flexible deadlines	● How could CS Principles be a one year course? ● How can we make populations of all classes represent the population of the school?

Middle School Noticings	Middle School Wonderings
● Addressing all CS standards in all 3 classes ● When it is a required course, we get great engagement. As soon as the course becomes an elective, the engagement drops (fewer female students).	● How can we make populations of all classes represent the population of the school ● Need to focus on networks and the internet ● Could we include connections to real life situations/concerns (ie - things that make the world a better place). Provide a clear "why." Show the impact of technology on the world.

Computer Science Action Plan and Recommendations

Through the renewal and design process, the computer science committee was able to do a thorough analysis of the current state of computer science K-12. Through the process, the team found that there were great strengths in the current course offerings at the middle and high school levels and isolated instances of computer science opportunities at the elementary level. Moving forward, there will be opportunities to create units of study in the UbD (Understanding by Design) curriculum writing format to provide a more comprehensive alignment with the K-12 computer science curriculum.

The 2022-2023 year will provide the middle and high school teachers the opportunity to write the current units in the UbD format while also enhancing aspects of the current course offerings. Additionally, the 2022-2023 school year will provide our Library Media Specialists with the opportunity to engage multiple grade levels in lessons, write a UbD for the potential units, and align the units with what is already occurring at the middle and high school levels prior to implementation in the 2023-2024 school year.

The delivery of the elementary computer science curriculum will take place during a designated time in the library/makerspace with the Library Media Specialist. At the elementary level, there will be opportunities for future integration into other subject areas through the curriculum cycle process in years four and five where there is an analysis of program reconsiderations and adjustments. The following recommendations regarding the Computer Science Action Plan were developed by the Computer Science Renewal and Design team:

Computer Science Action Plan 2021-2026

Goal: From the 2021 to 2026 school years, the CS team will be involved and engaged in the development and/or refinement of the principles and methodologies of CS for all students in WFB schools within their K-12 experience in the following areas:

1. Introduce the fundamental concepts of CS to all students, beginning at the elementary school level; Wisconsin Standards for Computer Science 9.
2. Present CS at the secondary-school level in a way that will be both accessible and worthy of a CS credit, or as a core graduation credit;
3. Offer additional secondary-level CS standards that will allow interested students to study facets of CS in depth and prepare them for entry into a career or college; and
4. Increase the knowledge of CS for all students, especially those from underrepresented groups in this field.

Computer Science Action Plan 2021-2026.		
Action(s) *How will you and others make this strategy a reality?*	**Date(s)**	**Measure(s) of Progress**
1. The elementary LMS team and Coordinator of Instructional Technology will complete the curriculum writing process during the 2022-2023 year for implementation in the 2023-2024 year (Costs - Curriculum Rate for 30 hours, curriculum is online and free)	Fall 2022-Spring 2023	1. Timeline and Plan for curriculum writing process 2. Completed lessons for grades K-5 to teach in the 2023-2024 year (UbD framework) 3. Curriculum writers will engage in the Assessment for Learning and Curriculum Writing Class (District)
2. The elementary LMS team will engage in professional learning with the selected curricular resource (Cost - TBD)	Fall 2022-Summer 2023	1. Professional learning plan, feedback, and outcomes
3. The elementary LMS team will provide feedback after piloting lessons for the curriculum implementation in 2023-2024.	2022-2023 school year	1. Feedback themes and actions 2. Explicit instruction opportunities 3. Curriculum integration opportunities
4. The middle school team will complete a UbD document (curriculum map) for all of the current courses.	2022-2023 school year	1. Adjustments/refinements made to UbD based on curriculum review. 2. Development of more open-ended projects for students in courses. 3. Provide a clearer "why" related to real-life connections and course content for students 4. Continue to provide opportunities to engage all students in the course offerings
5. The high school team will complete a UbD document (curriculum map) for all of the current courses.	2022-2023 school year	1. Adjustments/refinements made to UbD based on curriculum review 2. Continue to provide opportunities to engage all students in the course offerings
6. The high school team will provide feedback after implementing curricular changes/refinements.	2022-2023 school year	1. Feedback loop and action plan refinements
7. The Computer Science team will update the "Technology for Global Education" standards to reflect the computer science standards for the 2023-2024 school year.	2023-2024 school year	1. After School Board approval in June/July 2023, update standards on the website
8. The elementary, middle, and high school Computer Science teams will be provided collaboratory time (1-2 days) yearly to discuss vertical alignment.	Yearly	1. Adjustments/refinements to UbD documents based on K-12 alignment of Computer Science Standards and expectations.
9. The elementary, middle, and high school teams will reconvene to review possible program reconsiderations.	2024-2025 school year	1. Program reconsiderations after implementation of new courses or revised courses

10. The elementary, middle, and high school teams will reconvene to review possible program adjustments.	2025-2026 school year	1. Program adjustments made after reconsiderations from implementation of new courses or revised courses

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