BIG HOLLOW SCHOOL DISTRICT

STEM CURRICULUM MAP

GRADE 2

2024-2025

Curriculum

[PLTW-Project Lead the Way](#) and Computer Skills

In 2nd grade STEM, students will build on the technology and problem-solving skills they learned in 1st grade. They will explore new technologies, learn to think like engineers, and work on creative solutions to real-world problems. Through hands-on activities, students will learn to define problems and use the design process to find solutions.

This year, our projects will include coding a simple game on Scratch Jr., where students will create their own interactive stories and games. They will learn about the properties of matter as they use the design process to engineer a cooler that will keep an ice pop from melting. We'll also focus on using technology safely, responsibly, and respectfully. Through these projects, students will gain confidence in understanding how technology works and develop skills they can use in the future!

Connection to Standards Based Grading
(CSTA) Computing Systems:
- 1A-CS-01 Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use.
- Hardware & Software 1A-CS-02 Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware).

(ISTE) Digital Citizenship:
- 2a Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.
- 2b Students engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.
- 2d Students manage their personal data to maintain digital privacy and security and are aware of data collection technology used to track their navigation online.

(ISTE) Computational Thinker:
- 1A-AP-10 Develop programs with sequences and simple loops, to express ideas or address a problem.
- 1A-AP-14 Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.
- 5d Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

(ISTE) Innovative Designer:
- 4a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
- 4c Students develop, test and refine prototypes as part of a cyclical design process.
- 4d Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

(NGSS) Engineering, Technology, and Applications of Science:
- Asking questions, making observations, and gathering information are helpful in thinking about problems.
- ETS1.A Defining and delimiting engineering problems before beginning to design a solution, it is important to clearly understand the problem.
- ETS1.B Developing possible solutions designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.
- ETS1.C Optimizing the design solution because there is always more than one possible solution to a problem, it is useful to compare and test designs.

(NGSS) Science and Engineering Practices: Planning and Carrying Out Investigations
- Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.

Teachers at Big Hollow have worked to unpack and understand more deeply the learning targets that align with our goals of students grasping key mathematical concepts. Through this work teachers have prioritized standards, created learning targets, and developed proficiency scales aligned with each prioritized standard. This work enables learning to be more visible for student learning and allows students to be reflective learners. By students engaging in reflective practice they will be able to more accurately determine where they are in relation to the learning journey and develop goals to continue to improve their mastery of skills. These proficiency scales are linked below, as well as on our Teaching and Learning page. This is the "rubric" teachers use to report final grades.

Grade 2 Scope & Sequence

Unit	Standards	Trimester/Time Frame	Proficiency Scales
Unit 1: I can safely explore a variety of technologies that will help in my learning.	**(CSTA)** Computing Systems 1A-CS-01 Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use. **(ISTE)** Digital Citizenship 2a Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world. 2b Students engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices. 2d Students manage their personal data to maintain digital privacy and security and are aware of data collection technology used to track their navigation online.	1	📄 ELEM NEW STE…
Unit 2: I can use the design process to solve problems and write block based code that includes sequences, events, loops and messages.	**(ISTE)** Computational Thinker: 1A-AP-10 Develop programs with sequences and simple loops, to express ideas or address a problem. 1A-AP-14 Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops. 5d Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.	2,3	📄 ELEM NEW STE…

Unit 3: I can use the design process to collaboratively solve real world problems.	(ISTE) Innovative Designer: 4a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. 4c Students develop, test and refine prototypes as part of a cyclical design process. 4d Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.	3	📄 ELEM NEW STE...

Unit 1:
Approximate Time Frame: 7 weeks

DESIRED RESULTS		
Content Standards:	**Essential Questions:**	**Essential Vocabulary:**
Priority Standards: **(CSTA)** Computing Systems 1A-CS-01 Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use. **(ISTE)** Digital Citizenship 2a Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.	How can we use technology applications and tools to show our learning in a variety of ways? How can we stay safe and respectful online?	Google Classroom, keyboard, touch pad, cursor, keyboarding, wpm, accuracy, digital citizenship, personal information, cyberbullying

2b Students engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices. 2d Students manage their personal data to maintain digital privacy and security and are aware of data collection technology used to track their navigation online. **Supporting Standards:**		

Acquisition	
Knowledge and Understanding:	**Skills:**
Students will know and understand… ● How to use different technology applications and tools. How to stay safe and respectful online.	*Students will be skilled at (be able to do)...* ● Navigating and using a variety of tech applications and tools (ie: Google Classroom, typing.com). Being safe and respectful online.

Assessments	
☐ **Pre-Assessment** ☑ **Checks for Understanding**	☐ **Summative Assessment** ☑ **Performance-Based Task**

DESIRED RESULTS		
Content Standards:	**Essential Questions:**	**Essential Vocabulary:**
(ISTE) Computational Thinker: 1A-AP-10 Develop programs with sequences and simple loops, to express ideas or address a problem. 1A-AP-14 Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops. 5d Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.	Can I build a program with block based coding that uses sequences, events, loops and messages? Can I create and modify a game using block based coding?	Design process, bug, debug, events, loops, sequence, program, code, target, messages, program
Supporting Standards: Science and Engineering Practices: Planning and Carrying Out Investigations ● Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.		
Acquisition		
Knowledge and Understanding:	**Skills:**	
Students will know and understand… ● How to build a program with block based coding that uses sequences,	*Students will be skilled at (be able to do)...* ● Use the design process to build a program with block based	

events, loops and messages.	coding that uses sequences, events, loops and messages
Assessments	
☐ Pre-Assessment ☑ Checks for Understanding	☐ Summative Assessment ☑ Performance-Based Task

Unit 3:
Approximate Time Frame: 12 weeks

DESIRED RESULTS		
Content Standards:	**Essential Questions:**	**Essential Vocabulary:**
(ISTE) Innovative Designer: 4a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. 4c Students develop, test and refine prototypes as part of a cyclical design process. 4d Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems. **Supporting Standards:**	Can I design a model that solves a real world problem? What is the design process and how can it help solve a problem?	Design process, Ask, explore, model, evaluate, explain, prototype, test
Acquisition		
Knowledge and Understanding:		**Skills:**

Students will know and understand…	Students will be skilled at (be able to do)…
● What the design process is and the steps to design solutions.	● Using the design process to ask a real world question, explore ways to solve it, create a model (prototype) and evaluate (test) if it solves a real world problem. Lastly, they will share (explain) their model.

Assessments	
☐ Pre-Assessment ☑ Checks for Understanding	☐ Summative Assessment ☑ Performance-Based Task