

Vermilion Local School District

Course of Study

K-12 STEM



Adopted July, 2023

VLSD Board of Education

Courses of study are created and adopted in accordance with VLSD policies listed below:

PO 2141-Assessment of Educational Resources

PO 2210-Curriculum Development

PO 2220-Adoption of Courses of Study

PO 2510-Adoption of Textbooks

PO 2520-Selection of Instructional Materials and Equipment

PO 2623-Student Assessment and Academic Intervention Services

This course of study is current as of the date above and is subject to change due to varying policy, law or curriculum material availability. Instructional unit sequence and length within classes is approximate and subject to change.

STEM - Kindergarten

Vermilion Local School District

UNITS (9/9 SELECTED)	SUGGESTED DURATION
<div></div> Unit 1: August/September	5 lessons
<div></div> Unit 2: October	1 lessons
<div></div> Unit 3: November	1 lessons
<div></div> Unit 4: December	1 lessons
<div></div> Unit 5: January	1 lessons
<div></div> Unit 6: February	1 lessons
<div></div> Unit 7: March	1 lessons
<div></div> Unit 8: April	1 lessons
<div></div> Unit 9: May/June	1 lessons

Unit 1: August/September

STEM - Kindergarten - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Welcome, Teacher introduction, and Classroom Expectations.
2. Macbook Introduction

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Done by direct instruction and question and answer discussion of expectations and what they look like in STEM.
2. Skills based practice is done using the Macbooks

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. Students will get to know the teacher and what is expected behavior wise in a STEM classroom.
2. Students will be able to log onto a Macbook, open Chrome browser, use up and down arrows, use the back arrow in Chrome, how to use the trackpad to move the cursor and drag and drop items on the macbook, and how to use my website to access needed content.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Student behavior in the STEM setting shows mastery of skill or need for remediation.

1.

1. This is done by observation during the lessons to make sure that students are able to do the expected skills

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Online Safety	
TS.4.6.3.7.11	
Understand the positive and negative effects social media sites can have on one's life.	
TS.4.5.2.5.11	
Evaluate whether sources/websites are safe to conduct research.	
TS.4.4.2.5.11	
Understand how to practice safe internet searches.	
TS.4.3.0.5.9	
Understand the importance of not sharing personal information online.	
TS.4.2.0.5.11	

Unit 1: August/September

STEM - Kindergarten - Last Updated on June 28, 2023

Understand how to be safe online and in a digital world.

TS.4.1.1.3.6

Use technology independently and with peers responsibly and make safe choices.

Ohio - Grade K-2 - Technology

K-2.ICT.1.a.

Develop basic skills for using digital learning tools and resources to accomplish a defined task.

K-2.ICT.1.b.

With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.

K-2.ICT.2.a.

Develop basic skills for locating information using digital learning tools and resources.

K-2.ICT.2.b.

Identify main ideas and details in information found with digital learning tools and resources.

Unit 2: October

STEM - Kindergarten - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Macbook Introduction
2. ABC and Typing Fundamentals

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Skills based practice is done using the Macbooks.
2. This is done using a variety of websites that introduce students to letters both capital and lowercase letters in preparation of learning where the letters are on the keyboard.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. Students will be able to log onto a Macbook, open Chrome browser, use up and down arrows, use the back arrow in Chrome, how to use the trackpad to move the cursor and drag and drop items on the macbook, and how to use my website to access needed content.
2. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. This is done by observation during the lessons to make sure that students are able to do the expected skills
2. This is done through observation during skill practice time.

STANDARDS

Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.2.b.
Identify main ideas and details in information found with digital learning tools and resources.
K-2.ICT.3.a.
Develop basic skills for gathering and organizing information from multiple digital learning tools and resources to build knowledge.

Unit 3: November

STEM - Kindergarten - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. ABC and Typing Fundamentals
4. iPad Skills

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. This is done using a variety of websites that introduce students to letters both capital and lowercase letters in preparation of learning where the letters are on the keyboard.
4. Students work on Starfall math games to further math fluency and practice iPad navigation.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to navigate the iPad independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during skill practice time.
4. This is done through observation during skill practice time.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.6.0.6.11

Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.

TS.10.5.0.2.8

Unit 3: November

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Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.1.0.3.8
Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.

Unit 3: November

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With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.

Unit 3: November

STEM - Kindergarten - Last Updated on June 28, 2023

Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.

Unit 4: December

STEM - Kindergarten - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. ABC and Typing Fundamentals
4. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. This is done using a variety of websites that introduce students to letters both capital and lowercase letters in preparation of learning where the letters are on the keyboard.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during skill practice time.
4. Assessment is done through observation during skill practice time

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.4.0.5.8

Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.

TS.10.3.0.3.8

Unit 4: December

STEM - Kindergarten - Last Updated on June 28, 2023

Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.

TS.10.2.0.3.8

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

Next Generation Science (NGSS) - K-12 - Engineering Design

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Ohio - Grade K-2 - Technology

K-2.ICT.1.a.

Develop basic skills for using digital learning tools and resources to accomplish a defined task.

K-2.ICT.1.b.

With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.

K-2.ICT.2.a.

Develop basic skills for locating information using digital learning tools and resources.

K-2.ICT.4.b.

With guidance, use digital learning tools to add audio and/or visual media to clarify information.

K-2.ST.1.a.

Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.

K-2.ST.1.b.

Unit 4: December

STEM - Kindergarten - Last Updated on June 28, 2023

Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.

Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

Unit 5: January

STEM - Kindergarten - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. ABC and Typing Fundamentals
4. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. This is done using a variety of websites that introduce students to letters both capital and lowercase letters in preparation of learning where the letters are on the keyboard.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during skill practice time.
4. Assessment is done through observation during skill practice time

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.4.0.5.8

Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.

TS.10.3.0.3.8

Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.

Unit 5: January

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TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.1.0.3.8
Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.

Unit 5: January

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Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.b.

Unit 5: January

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Identify and discuss functional aspects of everyday objects.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.

Unit 6: February

STEM - Kindergarten - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. ABC and Typing Fundamentals
4. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. This is done using a variety of websites that introduce students to letters both capital and lowercase letters in preparation of learning where the letters are on the keyboard.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during skill practice time.
4. Assessment is done through observation during skill practice time

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.4.0.5.8

Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.

TS.10.3.0.3.8

Unit 6: February

STEM - Kindergarten - Last Updated on June 28, 2023

Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.1.0.3.8
Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.

Unit 6: February

STEM - Kindergarten - Last Updated on June 28, 2023

Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.

Unit 6: February

STEM - Kindergarten - Last Updated on June 28, 2023

Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

Unit 7: March

STEM - Kindergarten - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing website with the emphasis placed on correct hand position.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.4.0.5.8

Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.

TS.10.3.0.3.8

Unit 7: March

STEM - Kindergarten - Last Updated on June 28, 2023

Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.1.0.3.8
Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.

Unit 7: March

STEM - Kindergarten - Last Updated on June 28, 2023

Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.

Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

Unit 8: April

STEM - Kindergarten - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing website with the emphasis placed on correct hand position.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.4.0.5.8

Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.

TS.10.3.0.3.8

Unit 8: April

STEM - Kindergarten - Last Updated on June 28, 2023

Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.

TS.10.2.0.3.8

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

Next Generation Science (NGSS) - K-12 - Engineering Design

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

Ohio - Grade K-2 - Technology

K-2.ICT.1.a.

Develop basic skills for using digital learning tools and resources to accomplish a defined task.

K-2.ICT.1.b.

With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.

K-2.ICT.2.a.

Develop basic skills for locating information using digital learning tools and resources.

K-2.ICT.4.b.

With guidance, use digital learning tools to add audio and/or visual media to clarify information.

K-2.ST.1.a.

Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.

K-2.ST.1.b.

Unit 8: April

STEM - Kindergarten - Last Updated on June 28, 2023

Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.b.

Identify and discuss functional aspects of everyday objects.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.

Unit 9: May/June

STEM - Kindergarten - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing website with the emphasis placed on correct hand position.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.4.0.5.8

Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.

TS.10.3.0.3.8

Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.

Unit 9: May/June

STEM - Kindergarten - Last Updated on June 28, 2023

TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.1.0.3.8
Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.

Unit 9: May/June

STEM - Kindergarten - Last Updated on June 28, 2023

Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.b.

Unit 9: May/June

STEM - Kindergarten - Last Updated on June 28, 2023

Identify and discuss functional aspects of everyday objects.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.

STEM - 1st grade

Vermilion Local School District

UNITS (9/9 SELECTED)	SUGGESTED DURATION
<div></div> Unit 1: September	26 lessons
<div></div> Unit 2: October	1 lessons
<div></div> Unit 3: November	1 lessons
<div></div> Unit 4: December	1 lessons
<div></div> Unit 5: January	17 lessons
<div></div> Unit 6: February	18 lessons
<div></div> Unit 7: March	23 lessons
<div></div> Unit 8: April	14 lessons
<div></div> Unit 9: May/June	1 lessons

Unit 1: September

STEM - 1st grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

- 1) Welcome, Teacher introduction, and Classroom Expectations
- 2) Internet Safety

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

- 1) Done by direct instruction and question and answer discussion of expectations and what they look like in STEM.
- 2) Students watch a video series called the SMART crew and are read aloud a variety of books that talks about age appropriate internet safety topics.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

- 1) Students will get to know the teacher and what is expected behavior wise in a STEM classroom.
- 2) Students should understand about sharing personal information online, not meeting people face to face from the internet, internet site reliability, telling a trusted adult if they see anything that makes them feel scared, sad, or uncomfortable, and a variety of other internet and technology safety topics.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

- 1) Student behavior in the STEM setting shows mastery of skill or need for remediation.
- 2) This is assessed by discussions in class and by an internet safety quiz on Brainpop Jr.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Online Safety	
TS.4.1.1.3.6	
Use technology independently and with peers responsibly and make safe choices.	
TS.4.2.0.5.11	
Understand how to be safe online and in a digital world.	
TS.4.3.0.5.9	
Understand the importance of not sharing personal information online.	
TS.4.4.2.5.11	
Understand how to practice safe internet searches.	
TS.4.5.2.5.11	
Evaluate whether sources/websites are safe to conduct research.	
TS.4.6.3.7.11	
Understand the positive and negative effects social media sites can have on one's life.	

Unit 2: October

STEM - 1st grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Internet Safety
2. Engineering Design- Problem solving and grit using puzzles
3. Engineering Design-spatial awareness and building to learn how things fit together
4. Typing
5. Computer Coding
6. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students watch a video series called the SMART crew and are read aloud a variety of books that talks about age appropriate internet safety topics.
2. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
3. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
4. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
5. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.
6. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. Students should understand about sharing personal information online, not meeting people face to face from the internet, internet site reliability, telling a trusted adult if they see anything that makes them feel scared, sad, or uncomfortable, and a variety of other internet and technology safety topics.
2. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
3. Students are expected to be able to build structures that show creativity and ingenuity.
4. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
5. Students are expected to be able to complete the coding challenges on the iPad independently.
6. Students are demonstrating their baseline ability to type.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. This is assessed by discussions in class and by an internet safety quiz on Brainpop Jr.
2. Assessment is shown by progress in the assigned puzzles.
3. Assessment is shown by presentation of the finished building project.
4. This is done through observation during typing skill practice time.
5. Assessment is done through observation during skill practice time.
6. Student WPM and accuracy score will be used to determine baseline.

STANDARDS

Unit 2: October

STEM - 1st grade - Last Updated on June 28, 2023

International Society for Technology in Education (ISTE) - Tech Skills - Online Safety	
TS.4.1.1.3.6	
Use technology independently and with peers responsibly and make safe choices.	
TS.4.2.0.5.11	
Understand how to be safe online and in a digital world.	
TS.4.3.0.5.9	
Understand the importance of not sharing personal information online.	
TS.4.4.2.5.11	
Understand how to practice safe internet searches.	
TS.4.5.2.5.11	
Evaluate whether sources/websites are safe to conduct research.	
TS.4.6.3.7.11	
Understand the positive and negative effects social media sites can have on one's life.	
Next Generation Science (NGSS) - K-12 - Engineering Design	
K-2-ETS1-1.	
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	
K-2-ETS1-2.	
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	
K-2-ETS1-3.	
Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	
International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking	
TS.10.2.0.3.8	

Unit 2: October

STEM - 1st grade - Last Updated on June 28, 2023

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.3.a.
Develop basic skills for gathering and organizing information from multiple digital learning tools and resources to build knowledge.
K-2.ICT.3.c.
Collect, record and organize observations and data during student explorations using digital learning tools and resources.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.
K-2.DT.3.a.
Describe how different technologies are used in various fields.
K-2.DT.2.e.
Communicate design plans and solutions using drawings and descriptive language.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.b.

Unit 2: October

STEM - 1st grade - Last Updated on June 28, 2023

Demonstrate the ability to follow a simple design process: identify a problem, think about ways to solve the problem, develop possible solutions, and share and evaluate solutions with others.
K-2.DT.2.a.
Observe and describe details of an object's design.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.a.
Identify and discuss differences between the human-designed world and the natural world.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.2.c.
Investigate how technology does (or does not) impact the way(s) one's family communicates.
K-2.ST.2.b.
Identify positive and negative ways of collaborating in digital and physical environments.
K-2.ST.2.a.

Unit 2: October

STEM - 1st grade - *Last Updated on June 28, 2023*

Communicate and collaborate using several digital methods.

Unit 3: November

STEM - 1st grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding
5. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.
5. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.
5. Students are demonstrating their growth in their ability to type.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time.
5. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and

Unit 3: November

STEM - 1st grade - Last Updated on June 28, 2023

numbers.
TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.5.0.2.8
Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.6.0.6.11
Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.

Unit 3: November

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With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.d.

Unit 3: November

STEM - 1st grade - Last Updated on June 28, 2023

Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

Unit 4: December

STEM - 1st grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding
5. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.
5. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.
5. Students are demonstrating their growth in their ability to type.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time.
5. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

Unit 4: December

STEM - 1st grade - Last Updated on June 28, 2023

TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.5.0.2.8
Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.6.0.6.11
Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.2.b.

Unit 4: December

STEM - 1st grade - Last Updated on June 28, 2023

Identify main ideas and details in information found with digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.4.c.

Unit 4: December

STEM - 1st grade - Last Updated on June 28, 2023

Identify and discuss examples of creativity found in everyday objects.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

Unit 5: January

STEM - 1st grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding
5. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.
5. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.
5. Students are demonstrating their growth in their ability to type

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time.
5. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

Unit 5: January

STEM - 1st grade - Last Updated on June 28, 2023

TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.5.0.2.8
Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.6.0.6.11
Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.

Unit 5: January

STEM - 1st grade - Last Updated on June 28, 2023

With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.

Unit 5: January

STEM - 1st grade - Last Updated on June 28, 2023

Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

Unit 6: February

STEM - 1st grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding
5. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.
5. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.
5. Students are demonstrating their growth in their ability to type

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time
5. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Unit 6: February

STEM - 1st grade - Last Updated on June 28, 2023

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.
TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.5.0.2.8
Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.6.0.6.11
Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.

Unit 6: February

STEM - 1st grade - Last Updated on June 28, 2023

Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.

Unit 6: February

STEM - 1st grade - Last Updated on June 28, 2023

Explain that a design process is a plan to find solutions to problems.

K-2.DT.2.d.

Demonstrate that there are many possible solutions to a design problem.

K-2.DT.4.a.

Identify and discuss the use of aesthetics in everyday objects.

K-2.DT.4.c.

Identify and discuss examples of creativity found in everyday objects.

K-2.DT.4.d.

Discuss and give examples of how changes in design can be used to strengthen or improve a product.

Unit 7: March

STEM - 1st grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding
5. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.
5. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.
5. Students are demonstrating their growth in their ability to type.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time
5. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

Unit 7: March

STEM - 1st grade - Last Updated on June 28, 2023

TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.6.0.6.11
Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.5.0.2.8
Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.

Unit 7: March

STEM - 1st grade - Last Updated on June 28, 2023

With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.

Unit 7: March

STEM - 1st grade - Last Updated on June 28, 2023

Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

Unit 8: April

STEM - 1st grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding
5. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.
5. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.
5. Students are demonstrating their growth in their ability to type.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time
5. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

Unit 8: April

STEM - 1st grade - Last Updated on June 28, 2023

TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.5.0.2.8
Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.6.0.6.11
Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.

Unit 8: April

STEM - 1st grade - Last Updated on June 28, 2023

With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.a.

Unit 8: April

STEM - 1st grade - Last Updated on June 28, 2023

Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

Unit 9: May/June

STEM - 1st grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kidlo Coding App on the iPad and then transitions into Kodable and then Code.org.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges on the iPad independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time.
5. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

TS.10.2.0.3.8

Unit 9: May/June

STEM - 1st grade - Last Updated on June 28, 2023

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.5.0.2.8
Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.6.0.6.11
Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.

Unit 9: May/June

STEM - 1st grade - Last Updated on June 28, 2023

K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.

Unit 9: May/June

STEM - 1st grade - Last Updated on June 28, 2023

K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

STEM - 2nd grade

Vermilion Local School District

UNITS (9/9 SELECTED)		SUGGESTED DURATION
	Unit 1: August/September	5 lessons
	Unit 2: October	1 lessons
	Unit 3: November	1 lessons
	Unit 4: December	1 lessons
	Unit 5: January	1 lessons
	Unit 6: February	1 lessons
	Unit 7: March	1 lessons
	Unit 8: April	1 lessons
	Unit 9: May/June	1 lessons

Unit 1: August/September

STEM - 2nd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Welcome, Teacher introduction, and Classroom Expectations.
2. Internet Safety

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Done by direct instruction and question and answer discussion of expectations and what they look like in STEM.
2. Students watch a video series called the NetSmartz: Into the Cloud and are read aloud a variety of books that talks about age appropriate internet safety topics.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. Students will get to know the teacher and what is expected behavior wise in a STEM classroom.
- 1.
2. Students should understand about sharing personal information online, not meeting people face to face from the internet, internet site reliability, telling a trusted adult if they see anything that makes them feel scared, sad, or uncomfortable, and a variety of other internet and technology safety topics.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Student behavior in the STEM setting shows mastery of skill or need for remediation.
2. This is assessed by discussions in class.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Online Safety
TS.4.1.1.3.6
Use technology independently and with peers responsibly and make safe choices.
TS.4.2.0.5.11
Understand how to be safe online and in a digital world.
TS.4.3.0.5.9
Understand the importance of not sharing personal information online.
TS.4.4.2.5.11
Understand how to practice safe internet searches.
TS.4.5.2.5.11
Evaluate whether sources/websites are safe to conduct research.

Unit 1: August/September

STEM - 2nd grade - Last Updated on June 28, 2023

TS.4.6.3.7.11
Understand the positive and negative effects social media sites can have on one's life.
International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking
TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.

Unit 2: October

STEM - 2nd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. HQSD Assessment-Typing.com
2. HQSD Assessment-Google Slides
3. Engineering Design- Problem solving and grit using puzzles
4. Engineering Design-spatial awareness and building to learn how things fit together
5. Typing
6. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students take a one minute typing test using Typing.com
2. Students take a 20 skill Google Slide assessment to set a baseline of Google Slide Knowledge
3. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
4. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
5. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
6. Coding is introduced using Kodable and then moves onto Code.org.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. Students are demonstrating their baseline ability to type.
2. Students are demonstrating their baseline ability to use Google Slides
3. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
4. Students are expected to be able to build structures that show creativity and ingenuity.
5. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
6. Students are expected to be able to complete the coding challenges independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Student WPM and accuracy score will be used to determine baseline.
2. Students are assessed using a 20 skill 40 point rubric to determine Google Slide baseline knowledge.
3. Assessment is shown by progress in the assigned puzzles.
4. Assessment is shown by presentation of the finished building project.
5. This is done through observation during typing skill practice time.
6. Assessment is done through observation during skill practice time.

STANDARDS

Ohio - Grade K-2 - Technology

K-2.ICT.1.a.

Unit 2: October

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Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.

Unit 2: October

STEM - 2nd grade - Last Updated on June 28, 2023

Describe technology as something someone made to meet a want or need.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking
TS.10.1.0.3.8
Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.
TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.4.0.5.8

Unit 2: October

STEM - 2nd grade - Last Updated on June 28, 2023

Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.

TS.10.5.0.2.8

Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.

Next Generation Science (NGSS) - K-12 - Engineering Design

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Unit 3: November

STEM - 2nd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding
5. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kodable and then moves onto Code.org.
5. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges independently.
5. Students are demonstrating their growth in their ability to type.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time.
5. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

Ohio - Grade K-2 - Technology

K-2.ICT.1.a.

Develop basic skills for using digital learning tools and resources to accomplish a defined task.

Unit 3: November

STEM - 2nd grade - Last Updated on June 28, 2023

K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.

Unit 3: November

STEM - 2nd grade - Last Updated on June 28, 2023

K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking
TS.10.1.0.3.8
Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.
TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.

Unit 3: November

STEM - 2nd grade - Last Updated on June 28, 2023

Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Unit 4: December

STEM - 2nd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding
5. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kodable and then moves onto Code.org.
5. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity
3. and ingenuity.
4. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
5. Students are expected to be able to complete the coding challenges independently.
6. Students are demonstrating their growth in their ability to type.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time.
5. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

Ohio - Grade K-2 - Technology

K-2.ICT.1.a.

Develop basic skills for using digital learning tools and resources to accomplish a defined task.

Unit 4: December

STEM - 2nd grade - Last Updated on June 28, 2023

K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.

Unit 4: December

STEM - 2nd grade - Last Updated on June 28, 2023

K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.2.0.3.8

Unit 4: December

STEM - 2nd grade - Last Updated on June 28, 2023

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

Unit 5: January

STEM - 2nd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Google Slides
2. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students use a four part 23 video Google Slides tutorials course that I have created.
2. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. The students are expected to master 20 different Google Slides skills that will allow students to create a completed Google Slide project.
2. Students are demonstrating their growth in their ability to type.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Students will be assessed by a short formative assessment at the end of each of the four parts of the Google Slide course. The course culminates with four page 20 skill summative assessment at the end of the four part course.
2. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.2.0.3.8

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

Ohio - Grade K-2 - Technology

K-2.ICT.1.a.

Develop basic skills for using digital learning tools and resources to accomplish a defined task.

K-2.ICT.1.b.

With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.

Unit 5: January

STEM - 2nd grade - Last Updated on June 28, 2023

K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.3.a.
Develop basic skills for gathering and organizing information from multiple digital learning tools and resources to build knowledge.
K-2.ICT.3.b.
Use visuals found in digital learning tools and resources to clarify and add to knowledge.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ICT.4.c.
With guidance, select appropriate digital learning tools and resources to produce and publish information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.DT.2.b.
Demonstrate the ability to follow a simple design process: identify a problem, think about ways to solve the problem, develop possible solutions, and share and evaluate solutions with others.

Unit 6: February

STEM - 2nd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Google Slides
2. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students use a four part 23 video Google Slides tutorials course that I have created.
2. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. The students are expected to master 20 different Google Slides skills that will allow students to create a completed Google Slide project
2.
 1. Students are demonstrating their growth in their ability to type.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Students will be assessed by a short formative assessment at the end of each of the four parts of the Google Slide course. The course culminates with four page 20 skill summative assessment at the end of the four part course.
2. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.3.a.
Develop basic skills for gathering and organizing information from multiple digital learning tools and resources to build knowledge.
K-2.ICT.3.b.

Unit 6: February

STEM - 2nd grade - Last Updated on June 28, 2023

Use visuals found in digital learning tools and resources to clarify and add to knowledge.

K-2.ICT.4.b.

With guidance, use digital learning tools to add audio and/or visual media to clarify information.

K-2.ICT.4.c.

With guidance, select appropriate digital learning tools and resources to produce and publish information.

K-2.ST.1.a.

Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.

K-2.ST.1.b.

Identify positive and negative impacts one's use of technology can have on oneself and one's family.

Unit 7: March

STEM - 2nd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Google Slides
2. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students use a four part 23 video Google Slides tutorials course that I have created.
2. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. The students are expected to master 20 different Google Slides skills that will allow students to create a completed Google Slide project.
- 2.
3. Students are demonstrating their growth in their ability to type.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Students will be assessed by a short formative assessment at the end of each of the four parts of the Google Slide course. The course culminates with four page 20 skill summative assessment at the end of the four part course.
2. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.3.a.
Develop basic skills for gathering and organizing information from multiple digital learning tools and resources to build knowledge.
K-2.ICT.3.b.

Unit 7: March

STEM - 2nd grade - Last Updated on June 28, 2023

Use visuals found in digital learning tools and resources to clarify and add to knowledge.

K-2.ICT.4.b.

With guidance, use digital learning tools to add audio and/or visual media to clarify information.

K-2.ICT.4.c.

With guidance, select appropriate digital learning tools and resources to produce and publish information.

K-2.ST.1.a.

Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.

K-2.ST.2.b.

Identify positive and negative ways of collaborating in digital and physical environments.

Unit 8: April

STEM - 2nd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Google Slides
2. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students use a four part 23 video Google Slides tutorials course that I have created.
2. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. The students are expected to master 20 different Google Slides skills that will allow students to create a completed Google Slide project.
2. Students are demonstrating their growth in their ability to type.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Students will be assessed by a short formative assessment at the end of each of the four parts of the Google Slide course. The course culminates with four page 20 skill summative assessment at the end of the four part course.
2. Student WPM and accuracy score will be used to determine typing skill growth.

STANDARDS

Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.3.a.
Develop basic skills for gathering and organizing information from multiple digital learning tools and resources to build knowledge.
K-2.ICT.3.b.
Use visuals found in digital learning tools and resources to clarify and add to knowledge.

Unit 8: April

STEM - 2nd grade - Last Updated on June 28, 2023

K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ICT.4.c.
With guidance, select appropriate digital learning tools and resources to produce and publish information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.2.b.
Identify positive and negative ways of collaborating in digital and physical environments.

Unit 9: May/June

STEM - 2nd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kodable and then moves onto Code.org.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time.

STANDARDS

Next Generation Science (NGSS) - K-12 - Engineering Design

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Unit 9: May/June

STEM - 2nd grade - Last Updated on June 28, 2023

Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.

Unit 9: May/June

STEM - 2nd grade - Last Updated on June 28, 2023

Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

STEM - 3rd grade

Vermilion Local School District

UNITS (9/9 SELECTED)		SUGGESTED DURATION
	Unit 1: August/September	5 lessons
	Unit 2: October	1 lessons
	Unit 3: November	1 lessons
	Unit 4: December	1 lessons
	Unit 5: January	1 lessons
	Unit 6: February	1 lessons
	Unit 7: March	1 lessons
	Unit 8: April	1 lessons
	Unit 9: May/June	1 lessons

Unit 1: August/September

STEM - 3rd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Welcome, Teacher introduction, and Classroom Expectations.
2. Internet Safety

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Done by direct instruction and question and answer discussion of expectations and what they look like in STEM.
2. Students watch a video series on Brianpop and the accompanying quizzes and are read aloud a variety of books that talks about age appropriate internet safety topics. Students also explore internet safety consent through activities on the Common Sense Media website.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. Students will get to know the teacher and what is expected behavior wise in a STEM classroom.
2. Students should understand about sharing personal information online, not meeting people face to face from the internet, internet site reliability, telling a trusted adult if they see anything that makes them feel scared, sad, or uncomfortable, and a variety of other internet and technology safety topics.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Student behavior in the STEM setting shows mastery of skill or need for remediation.
2. This is assessed by discussions in class. Students also take a variety of quizzes in Brain Pop and earn a virtual Digital Passport on the Common sense Media website.

STANDARDS

Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
International Society for Technology in Education (ISTE) - Tech Skills - Online Safety
TS.4.1.1.3.6
Use technology independently and with peers responsibly and make safe choices.
TS.4.2.0.5.11
Understand how to be safe online and in a digital world.
TS.4.3.0.5.9
Understand the importance of not sharing personal information online.

Unit 1: August/September

STEM - 3rd grade - Last Updated on June 28, 2023

TS.4.4.2.5.11
Understand how to practice safe internet searches.
TS.4.5.2.5.11
Evaluate whether sources/websites are safe to conduct research.
TS.4.6.3.7.11
Understand the positive and negative effects social media sites can have on one's life.
International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking
TS.10.2.0.3.8
Use technology resources and tools to solve age- appropriate computing problems or for independent learning.

Unit 2: October

STEM - 3rd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. HQSD Assessment-Typing.com
2. Engineering Design- Problem solving and grit using puzzles
3. Engineering Design-spatial awareness and building to learn how things fit together
4. Typing
5. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students take a one minute typing test using Typing.com
2. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
3. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
4. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
5. Coding is introduced using Kodable and then moves onto Code.org.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. Students are demonstrating their baseline ability to type.
2. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
3. Students are expected to be able to build structures that show creativity and ingenuity.
4. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
5. Students are expected to be able to complete the coding challenges independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Student WPM and accuracy score will be used to determine baseline.
2. Assessment is shown by progress in the assigned puzzles.
3. Assessment is shown by presentation of the finished building project.
4. This is done through observation during typing skill practice time.
5. Assessment is done through observation during skill practice time.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.2.0.3.8

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.

TS.10.3.0.3.8

Unit 2: October

STEM - 3rd grade - Last Updated on June 28, 2023

Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.

TS.10.4.0.5.8

Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.

TS.10.5.0.2.8

Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.

TS.10.6.0.6.11

Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.

Ohio - Grade K-2 - Technology

K-2.ICT.1.a.

Develop basic skills for using digital learning tools and resources to accomplish a defined task.

K-2.ICT.1.b.

With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.

K-2.ICT.2.a.

Develop basic skills for locating information using digital learning tools and resources.

K-2.ICT.4.b.

With guidance, use digital learning tools to add audio and/or visual media to clarify information.

K-2.ST.1.a.

Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.

K-2.ST.1.b.

Identify positive and negative impacts one's use of technology can have on oneself and one's family.

K-2.ST.2.a.

Communicate and collaborate using several digital methods.

K-2.ST.3.a.

State the advantages and disadvantages of technology in one's life.

Unit 2: October

STEM - 3rd grade - Last Updated on June 28, 2023

K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.

Unit 2: October

STEM - 3rd grade - Last Updated on June 28, 2023

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Unit 3: November

STEM - 3rd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design Process (EDP) Challenge
2. HQSD Assessment-Typing.com

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are given an EDP challenge and they need to design and build a device to complete that challenge.
2. Students take a one minute typing test using Typing.com

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. Students should learn the steps of the EDP and be able to apply those steps to an EDP Challenge.
2. Students are demonstrating their growth in their ability to type.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Students will be assessed by their designs and the completion of an EDP challenge notebook.
2. Student WPM and accuracy score will be used to determine growth

STANDARDS

Next Generation Science (NGSS) - K-12 - Engineering Design

K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Ohio - Grade K-2 - Technology

K-2.ICT.1.a.

Develop basic skills for using digital learning tools and resources to accomplish a defined task.

K-2.ICT.1.b.

With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.

K-2.ICT.2.a.

Unit 3: November

STEM - 3rd grade - Last Updated on June 28, 2023

Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.2.b.
Identify main ideas and details in information found with digital learning tools and resources.
K-2.DT.2.b.
Demonstrate the ability to follow a simple design process: identify a problem, think about ways to solve the problem, develop possible solutions, and share and evaluate solutions with others.
K-2.DT.2.a.
Observe and describe details of an object's design.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.2.e.
Communicate design plans and solutions using drawings and descriptive language.
K-2.DT.3.b.
Work as a team to identify possible problems to solve and their potential technological solutions.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

Unit 4: December

STEM - 3rd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design Process (EDP) Challenge
2. HQSD Assessment-Typing.com
3. Hour of Code

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are given an EDP challenge and they need to design and build a device to complete that challenge.
2. Students take a one minute typing test using Typing.com
3. Students will complete an hour of code during International Computer Science week.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. Students should learn the steps of the EDP and be able to apply those steps to an EDP Challenge.
2. Students are demonstrating their growth in their ability to type.
3. Students are expected to be able to complete the Hour of Code challenge independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Students will be assessed by their designs and the completion of an EDP challenge notebook.
2. Student WPM and accuracy score will be used to determine growth.
3. The completed Hour of Code will be used as the assessment.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

TS.10.2.0.3.8

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.

Ohio - Grade K-2 - Technology

K-2.ICT.1.a.

Develop basic skills for using digital learning tools and resources to accomplish a defined task.

K-2.ICT.1.b.

With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.

Unit 4: December

STEM - 3rd grade - Last Updated on June 28, 2023

K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.2.b.
Identify main ideas and details in information found with digital learning tools and resources.
K-2.DT.2.a.
Observe and describe details of an object's design.
K-2.DT.2.b.
Demonstrate the ability to follow a simple design process: identify a problem, think about ways to solve the problem, develop possible solutions, and share and evaluate solutions with others.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.2.e.
Communicate design plans and solutions using drawings and descriptive language.
K-2.DT.3.b.
Work as a team to identify possible problems to solve and their potential technological solutions.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

Unit 5: January

STEM - 3rd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Problem solving and grit using puzzles
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by working on puzzles that teach creative problem solving and spatial awareness. The puzzles help students understand that they may fail the first time, but that through trial and error they can find the correct solution.
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kodable and then moves onto Code.org.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

TS.10.2.0.3.8

Unit 5: January

STEM - 3rd grade - Last Updated on June 28, 2023

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.5.0.2.8
Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.6.0.6.11
Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.

Unit 5: January

STEM - 3rd grade - Last Updated on June 28, 2023

K-2.ST.1.a.
Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.

Unit 5: January

STEM - 3rd grade - Last Updated on June 28, 2023

K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.
K-2.DT.3.b.
Work as a team to identify possible problems to solve and their potential technological solutions.
K-2.DT.3.a.
Describe how different technologies are used in various fields.
K-2.DT.2.e.
Communicate design plans and solutions using drawings and descriptive language.

Unit 6: February

STEM - 3rd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Snap Circuits
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by completing Snap Circuit puzzle Challenges
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kodable and then moves onto Code.org.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned Snap Circuit puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned Snap Circuit puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

TS.10.2.0.3.8

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.

Unit 6: February

STEM - 3rd grade - Last Updated on June 28, 2023

TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.5.0.2.8
Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.6.0.6.11
Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.

Unit 6: February

STEM - 3rd grade - Last Updated on June 28, 2023

Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.b.
Demonstrate the ability to follow a simple design process: identify a problem, think about ways to solve the problem, develop possible solutions, and share and evaluate solutions with others.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.

Unit 6: February

STEM - 3rd grade - Last Updated on June 28, 2023

Demonstrate that there are many possible solutions to a design problem.
K-2.DT.2.e.
Communicate design plans and solutions using drawings and descriptive language.
K-2.DT.3.a.
Describe how different technologies are used in various fields.
K-2.DT.3.b.
Work as a team to identify possible problems to solve and their potential technological solutions.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

Unit 7: March

STEM - 3rd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Snap Circuits
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Computer Coding

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by completing Snap Circuit puzzle Challenges
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is introduced using Kodable and then moves onto Code.org.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned Snap Circuit puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned Snap Circuit puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

TS.10.2.0.3.8

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.

Unit 7: March

STEM - 3rd grade - Last Updated on June 28, 2023

TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.5.0.2.8
Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.6.0.6.11
Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.

Unit 7: March

STEM - 3rd grade - Last Updated on June 28, 2023

Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.a.
Observe and describe details of an object's design.
K-2.DT.2.b.
Demonstrate the ability to follow a simple design process: identify a problem, think about ways to solve the problem, develop possible solutions, and share and evaluate solutions with others.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.

Unit 7: March

STEM - 3rd grade - Last Updated on June 28, 2023

Demonstrate that there are many possible solutions to a design problem.
K-2.DT.2.e.
Communicate design plans and solutions using drawings and descriptive language.
K-2.DT.3.b.
Work as a team to identify possible problems to solve and their potential technological solutions.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

Unit 8: April

STEM - 3rd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Snap Circuits
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Coding using Dash and Dot robots

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by completing Snap Circuit puzzle Challenges
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is explored using the Wonder Workshop Dash and Dot robots.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned Snap Circuit puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned Snap Circuit puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

TS.10.2.0.3.8

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.

Unit 8: April

STEM - 3rd grade - Last Updated on June 28, 2023

TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.5.0.2.8
Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.6.0.6.11
Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.

Unit 8: April

STEM - 3rd grade - Last Updated on June 28, 2023

Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.c.
Explain that systems have parts or components that work together to accomplish a goal.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.a.
Observe and describe details of an object's design.
K-2.DT.2.b.

Unit 8: April

STEM - 3rd grade - Last Updated on June 28, 2023

Demonstrate the ability to follow a simple design process: identify a problem, think about ways to solve the problem, develop possible solutions, and share and evaluate solutions with others.

K-2.DT.2.c.

Explain that a design process is a plan to find solutions to problems.

K-2.DT.2.d.

Demonstrate that there are many possible solutions to a design problem.

K-2.DT.2.e.

Communicate design plans and solutions using drawings and descriptive language.

K-2.DT.3.b.

Work as a team to identify possible problems to solve and their potential technological solutions.

K-2.DT.4.a.

Identify and discuss the use of aesthetics in everyday objects.

K-2.DT.4.b.

Identify and discuss functional aspects of everyday objects.

Unit 9: May/June

STEM - 3rd grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

1. Engineering Design- Snap Circuits
2. Engineering Design-spatial awareness and building to learn how things fit together
3. Typing
4. Coding using Dash and Dot robots

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

1. Students are taught engineering design by completing Snap Circuit puzzle Challenges
2. Students also create designs using a variety of building tools to foster creativity and to help improve spatial awareness and how things fit together.
3. Students work with the BBC Dance Mat Typing or Typing.com website with the emphasis placed on correct hand position.
4. Coding is explored using the Wonder Workshop Dash and Dot robots.

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

1. One of the main components of engineering design is that the process is repeatable and that it is ok to fail and try again. Students should be able to solve the assigned Snap Circuit puzzles even if they fail the first time.
2. Students are expected to be able to build structures that show creativity and ingenuity.
3. Students are expected to be able to recognize letters by sight in both capital and lowercase form and where the letters are located on the keyboard.
4. Students are expected to be able to complete the coding challenges independently.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

1. Assessment is shown by progress in the assigned Snap Circuit puzzles.
2. Assessment is shown by presentation of the finished building project.
3. This is done through observation during typing skill practice time.
4. Assessment is done through observation during skill practice time.

STANDARDS

International Society for Technology in Education (ISTE) - Tech Skills - Problem Solving & Computational Thinking

TS.10.1.0.3.8

Use technology tools to represent solutions to problems in a variety of ways including text, sounds, pictures, and numbers.

TS.10.2.0.3.8

Use technology resources and tools to solve age- appropriate computing problems or for independent learning.

Unit 9: May/June

STEM - 3rd grade - Last Updated on June 28, 2023

TS.10.3.0.3.8
Define an algorithm as a sequence of instructions and use the basic steps of algorithmic thinking to solve problems and design solutions.
TS.10.4.0.5.8
Use a blockbased visual programming interface to build a game, tell a story, or solve a problem.
TS.10.5.0.2.8
Use 2D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
TS.10.6.0.6.11
Use 3D design tools to create prototypes, models and simulations to demonstrate solutions and ideas.
Next Generation Science (NGSS) - K-12 - Engineering Design
K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
Ohio - Grade K-2 - Technology
K-2.ICT.1.a.
Develop basic skills for using digital learning tools and resources to accomplish a defined task.
K-2.ICT.1.b.
With guidance, identify a goal and determine how digital learning tools can help accomplish that goal.
K-2.ICT.2.a.
Develop basic skills for locating information using digital learning tools and resources.
K-2.ICT.4.b.
With guidance, use digital learning tools to add audio and/or visual media to clarify information.
K-2.ST.1.a.

Unit 9: May/June

STEM - 3rd grade - Last Updated on June 28, 2023

Demonstrate appropriate and identify inappropriate uses of technology required to be a responsible user.
K-2.ST.1.b.
Identify positive and negative impacts one's use of technology can have on oneself and one's family.
K-2.ST.2.a.
Communicate and collaborate using several digital methods.
K-2.ST.3.a.
State the advantages and disadvantages of technology in one's life.
K-2.ST.3.b.
Identify examples of how technology innovations/inventions can have multiple applications.
K-2.ST.3.c.
Identify how the use of technology affects self and others in various ways.
K-2.ST.3.d.
Define and discuss digital identity and digital footprints.
K-2.ST.3.e.
Provide examples of how rules for respecting others' belongings apply to digital content and information.
K-2.DT.1.b.
Describe technology as something someone made to meet a want or need.
K-2.DT.1.c.
Explain that systems have parts or components that work together to accomplish a goal.
K-2.DT.1.d.
Give examples of how resources such as tools and materials are things that help people get a job done.
K-2.DT.2.a.
Observe and describe details of an object's design.
K-2.DT.2.b.

Unit 9: May/June

STEM - 3rd grade - Last Updated on June 28, 2023

Demonstrate the ability to follow a simple design process: identify a problem, think about ways to solve the problem, develop possible solutions, and share and evaluate solutions with others.
K-2.DT.2.c.
Explain that a design process is a plan to find solutions to problems.
K-2.DT.2.d.
Demonstrate that there are many possible solutions to a design problem.
K-2.DT.2.e.
Communicate design plans and solutions using drawings and descriptive language.
K-2.DT.3.b.
Work as a team to identify possible problems to solve and their potential technological solutions.
K-2.DT.4.a.
Identify and discuss the use of aesthetics in everyday objects.
K-2.DT.4.b.
Identify and discuss functional aspects of everyday objects.
K-2.DT.4.c.
Identify and discuss examples of creativity found in everyday objects.
K-2.DT.4.d.
Discuss and give examples of how changes in design can be used to strengthen or improve a product.

STEM - 4th grade

Vermilion Local School District

UNITS (9/9 SELECTED)		SUGGESTED DURATION
	Unit 1: 4th Grade Week 1	2 lessons
	Unit 2: 4th Grade Week 2	2 lessons
	Unit 3: 4th Grade Week 3	2 lessons
	Unit 4: 4th Grade Week 4	2 lessons
	Unit 5: 4th Grade Week 5	2 lessons
	Unit 6: 4th Grade Week 6	2 lessons
	Unit 7: 4th Grade Week 7	2 lessons
	Unit 8: 4th Grade Week 8	2 lessons
	Unit 9: 4th Grade Week 9	2 lessons

Unit 1: 4th Grade Week 1

STEM - 4th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Identify a problem and use an engineering design process to solve the problem.

Build a bridge using the basic building components and look for ways to add strength

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Students collaborate to build the tallest tower possible using popsicle sticks, paper clips and binder clips

Basic Building components Lab

[Basic Building Components - Curriculum Packet v3.0.pdf](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ISTE 7C Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successful completion of a tower.

Successfully adding strength to a bridge and explaining what made it stronger

[Basic Building Components - Student Engineering Workbook v3.0.pdf](#)

STANDARDS

Next Generation Science (NGSS) - Grade 3-5 - Engineering, Technology, and Applications of Science

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

Unit 1: 4th Grade Week 1

STEM - 4th grade - Last Updated on June 28, 2023

7c

Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

Unit 2: 4th Grade Week 2

STEM - 4th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Use articulating components to create a simple design that moves.

Define length, depth, and height. Understand what objects look like from different perspectives. Determine an object's dimensions (in metric units) using Kid Spark engineering materials. Create a simple measuring device

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Articulating Components Lab

[Articulating Components - Curriculum Packet v3.0.pdf](#)

Dimensions, Perspectives and Measurement Lab

[Dimensions, Perspectives, __ Measurement - Curriculum Packet v3.0.pdf](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ISTE 7C Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successfully designing, constructing and improving a structure that moves

[Articulating Components - Student Engineering Workbook v3.0.pdf](#)

Successfully determining the length, depth and height of a design

[dimensions-perspectives-measurement-student-engineering-workbook-v30.pdf](#)

STANDARDS

Unit 2: 4th Grade Week 2

STEM - 4th grade - Last Updated on June 28, 2023

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

7c

Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

Next Generation Science (NGSS) - Grade 3-5 - Engineering, Technology, and Applications of Science

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Unit 3: 4th Grade Week 3

STEM - 4th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Define and utilize the 5 steps to the design and engineering process

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

The Design and Engineering Process Lab (Cart)

[The Design _ Engineering Process - Curriculum Packet v3.0.pdf](#)

The Design and Engineering Process (Pencil Holder)

[Pencil Holder Challenge.pdf](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

- Ohio 6-8.DT.3.a. Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ISTE 4a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successfully completing the cart that meets all of the given specifications and criteria

[Copy of The Design _ Engineering Process - Student Engineering Workbook v3.0.pdf](#)

Successfully creating a pencil holder that meets all of the given specifications and criteria.

[The Design Specification Report](#)

STANDARDS

Next Generation Science (NGSS) - Grade 3-5 - Engineering, Technology, and Applications of Science

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Unit 3: 4th Grade Week 3

STEM - 4th grade - Last Updated on June 28, 2023

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

4a

Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

Ohio - Grade 6-8 - Technology

6-8.DT.3.a.

Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

Unit 4: 4th Grade Week 4

STEM - 4th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Define and utilize the 5 steps to the design and engineering process

Use basic building and articulating components to construct a drawbridge

Look for ways to add strength to the design

Determine a design's dimensions in metric units

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

The Design and Engineering Process

The Drawbridge Challenge

[Draw Bridge Challenge](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

- Ohio 6-8.DT.3.a. Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ISTE 4a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successful completion and presentation of a drawbridge

[The Design Specification Report](#)

STANDARDS

Ohio - Grade 6-8 - Technology
6-8.DT.3.a.
Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.
International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)
4a
Students know and use a deliberate design process for generating ideas, testing theories, creating innovative

Unit 4: 4th Grade Week 4

STEM - 4th grade - Last Updated on June 28, 2023

artifacts or solving authentic problems.

Next Generation Science (NGSS) - Grade 3-5 - Engineering, Technology, and Applications of Science

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Unit 5: 4th Grade Week 5

STEM - 4th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Identify the features on the Spark:bit robotics controller.

Assemble and test a simple mechanism using the Motor Override Mode on the Spark:bit.

Build a custom design that is controlled using the Spark:bit

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

The Spark Bit Lab

[the-sparkbit-motor-override-mode-curriculum-packet-v30_1.pdf](#)

The Winch Challenge

[Winch Challenge](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Ohio 6-8.DT.3.a. Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ISTE 4a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successful Completion and presentation of a winch

[The Design Specification Report](#)

STANDARDS

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

4a

Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

Next Generation Science (NGSS) - Grade 3-5 - Engineering, Technology, and Applications of Science

3-5-ETS1-1.

Unit 5: 4th Grade Week 5

STEM - 4th grade - Last Updated on June 28, 2023

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Ohio - Grade 6-8 - Technology

6-8.DT.3.a.

Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

Unit 6: 4th Grade Week 6

STEM - 4th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Define rotary motion.

Build a gear train and observe how it creates rotary motion.

Create a custom design that produces rotary motion.

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Rotary Motion Lab

[rotary-motion-curriculum-packet-v30.pdf](#)

Amusement Park Ride Stem Lab

[Rotary Motion](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Ohio 6-8.DT.3.a. Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ISTE 4a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Google Slide defining rotary motion and real life examples

Successful completion and presentation of an amusement park ride using rotary motion

[The Design Specification Report](#)

STANDARDS

Ohio - Grade 6-8 - Technology
6-8.DT.3.a.
Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.
International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)
4a

Unit 6: 4th Grade Week 6

STEM - 4th grade - Last Updated on June 28, 2023

Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

Next Generation Science (NGSS) - Grade 3-5 - Engineering, Technology, and Applications of Science

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Unit 7: 4th Grade Week 7

STEM - 4th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Define linear motion.

Build a mechanism that converts rotary motion to linear motion.

Create a custom mechanism that produces linear motion

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Linear motion Lab

[linear-motion-curriculum-packet-v30.pdf](#)

Elevator Stem Lab

[Elevator Challenge](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Ohio 6-8.DT.3.a. Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ISTE 4a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.s

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Google Slide defining linear motion and real life examples

Successful completion and presentation of an elevator

[The Design Specification Report](#)

STANDARDS

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

4a

Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

Next Generation Science (NGSS) - Grade 3-5 - Engineering, Technology, and Applications of Science

Unit 7: 4th Grade Week 7

STEM - 4th grade - Last Updated on June 28, 2023

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Ohio - Grade 6-8 - Technology

6-8.DT.3.a.

Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

Unit 8: 4th Grade Week 8

STEM - 4th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Define oscillating motion.

Build a mechanism that converts rotary motion to oscillating motion.

Create a custom design that produces oscillating motion.

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Oscillating Motion Lab

[oscillating-motion-curriculum-packet-v30.pdf](#)

Grandfather Clock Stem Lab

[Grandfather Clock Challenge](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Ohio 6-8.DT.3.a. Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ISTE 4a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Google Slide defining Oscillating motion and real life examples

Successful completion and presentation of a grandfather clock

[The Design Specification Report](#)

STANDARDS

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

4a

Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

Next Generation Science (NGSS) - Grade 3-5 - Engineering, Technology, and Applications of Science

Unit 8: 4th Grade Week 8

STEM - 4th grade - Last Updated on June 28, 2023

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Ohio - Grade 6-8 - Technology

6-8.DT.3.a.

Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

Unit 9: 4th Grade Week 9

STEM - 4th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Define reciprocating motion.

Build a mechanism that converts rotary motion to reciprocating motion.

Create a custom design that produces reciprocating motion.

Identify a problem and use an engineering design process to solve the problem.

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Reciprocating Motion Lab

[reciprocating-motion-curriculum-packet-v30.pdf](#)

Longest chain from one piece of construction paper challenge

[paper-chain-challenge.pdf](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Ohio 6-8.DT.3.a. Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ISTE 4a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Google Slide defining reciprocating motion and real life examples

Successful Completion of a paper chain

[paper-chain-challenge.pdf](#)

STANDARDS

International Society for Technology in Education (ISTE) - National Technology Standards for Students

Unit 9: 4th Grade Week 9

STEM - 4th grade - Last Updated on June 28, 2023

(2016)
4a
Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
Next Generation Science (NGSS) - Grade 3-5 - Engineering, Technology, and Applications of Science
3-5-ETS1-1.
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
3-5-ETS1-2.
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
Ohio - Grade 6-8 - Technology
6-8.DT.3.a.
Collaborate to solve a problem as an interdisciplinary team modeling different roles and functions.

STEM - 5

Vermilion Local School District

UNITS (4/4 SELECTED)		SUGGESTED DURATION
<div></div> Unit 1: 5th Grade Week 1		1 lessons
<div></div> Unit 2: 5th Grade Week 2-5		4 lessons
<div></div> Unit 3: 5th Grade Week 6 - 8		3 lessons
<div></div> Unit 4: 5th Grade Week 9		1 lessons

Unit 1: 5th Grade Week 1

STEM - 5 - Last Updated on February 16, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Evaluate designs using functional, aesthetic and creative elements.

Identify a problem and use an engineering design process to solve the problem.

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Paper airplane competition

[Paper Airplane Competition](#)

ATTACHMENTS

 Paper Airplane Competition

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

ISTE 4A - Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ISTE 7C Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successfully competing in the paper airplane competition.

[Paper Airplane Competition Write Up](#)

ATTACHMENTS

 Paper Airplane Competition Write Up

STANDARDS

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

4a

Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

Unit 1: 5th Grade Week 1

STEM - 5 - Last Updated on February 16, 2023

7c
Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.
Next Generation Science (NGSS) - Middle School - Engineering, Technology, and Applications of Science
MS-ETS1-2.
Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

Unit 2: 5th Grade Week 2-5

STEM - 5 - Last Updated on February 16, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Students learn the basics of Ozobot's line-following capabilities, and learn the different ways to code ozobot using colors (speed, direction and special moves, line switches and timers)

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Ozobots STEM Labs

[Pacing Guide | Grade 5](#) Lessons 1-10

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

CSTA.1B-CS-02 Model how computer hardware and software work together as a system to accomplish tasks.

CSTA.1B-AP-10 Create programs that include sequences, events, loops, and conditionals.

CSTA.1A-AP-12 Develop plans that describe a program's sequence of events, goals, and expected outcomes.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successfully Completing the activity sheets from each lesson found using the link in the methods column

Check list

[Color Coding](#)

[Ozobot Skills Check Formative:](#)

[OZOBOT SKILLS Assessment 1](#)

ATTACHMENTS

 Color Coding

 OZOBOT SKILLS Assessment 1

 Ozobot Skills Check Formative:

STANDARDS

CSTA Computer Science - K-12 (2017)

1B-CS-02,

Model how computer hardware and software work together as a system to accomplish tasks. [3-5][Computing Systems][Hardware & Software][Computing Systems: Hardware & Software]

Unit 2: 5th Grade Week 2-5

STEM - 5 - Last Updated on February 16, 2023

1A-AP-10,

Develop programs with sequences and simple loops, to express ideas or address a problem. [K-2][Algorithms & Programming][Control][Algorithms & Programming: Control]

1A-AP-12,

Develop plans that describe a program's sequence of events, goals, and expected outcomes. [K-2][Algorithms & Programming][Program Development][Algorithms & Programming: Program Development]

Unit 3: 5th Grade Week 6 - 8

STEM - 5 - Last Updated on February 16, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Students learn the basics of how to navigate Ozobot Blockly, program a simple code, and run it on their bot.

Students learn to program a simple sequence in Ozobot Blockly.

Students learn to program with loops to create a dance sequence.

Students learn to use debugging skills by building a program and fixing errors.

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Ozobot STEM Labs

[Pacing Guide | Grade 5](#) (Lessons 16-19)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

CSTA.1B-CS-02 Model how computer hardware and software work together as a system to accomplish tasks.

CSTA.1B-AP-10 Create programs that include sequences, events, loops, and conditionals.

CSTA.1A-AP-12 Develop plans that describe a program's sequence of events, goals, and expected outcomes.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successfully Completing the activity sheets from lessons 16-19 [Pacing Guide | Grade 5](#)
completing skills check 1 found after lesson 19 in the pacing guide

STANDARDS

CSTA Computer Science - K-12 (2017)	
1B-AP-10,	
Create programs that include sequences, events, loops, and conditionals. [3-5][Algorithms & Programming][Control][Algorithms & Programming: Control]	
1A-AP-15,	
Using correct terminology, describe steps taken and choices made during the iterative process of program development. [K-2][Algorithms & Programming][Program Development][Algorithms & Programming: Program Development]	

Unit 3: 5th Grade Week 6 - 8

STEM - 5 - Last Updated on February 16, 2023

1B-CS-02,

Model how computer hardware and software work together as a system to accomplish tasks. [3-5][Computing Systems][Hardware & Software][Computing Systems: Hardware & Software]

Unit 4: 5th Grade Week 9

STEM - 5 - Last Updated on February 16, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Students learn the basics of how to navigate Ozobot Blockly, program a simple code, and run it on their bot.

Students learn to program a simple sequence in Ozobot Blockly.

Students learn to program with loops to create a dance sequence.

Students learn to use debugging skills by building a program and fixing errors.

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Lesson 23 found in the Ozobot classroom 5th grade

[Ozobot classroom](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

CSTA.1B-AP-10 Create programs that include sequences, events, loops, and conditionals

CSTA.1B-AP-15 Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.

CSTA.1B-CS-02 Model how computer hardware and software work together as a system to accomplish tasks.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successfully navigate Ozo around town

ATTACHMENTS

 Ozo Around Town

 navigatingaroundtown.StrhQS0nScep7NSdHM8Fqw6D.pdf

STANDARDS

CSTA Computer Science - K-12 (2017)

1A-AP-10,

Develop programs with sequences and simple loops, to express ideas or address a problem. [K-2][Algorithms & Programming][Control][Algorithms & Programming: Control]

1A-AP-12,

Unit 4: 5th Grade Week 9

STEM - 5 - Last Updated on February 16, 2023

Develop plans that describe a program's sequence of events, goals, and expected outcomes. [K-2][Algorithms & Programming][Program Development][Algorithms & Programming: Program Development]

1A-CS-02,

Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware). [K-2][Computing Systems][Hardware & Software][Computing Systems: Hardware & Software]

STEM - 6th grade

Vermilion Local School District

UNITS (5/5 SELECTED)		SUGGESTED DURATION
<div></div> Unit 1: 6th Grade Week 1		1 lessons
<div></div> Unit 2: 6th Grade Weeks 2 - 5		4 lessons
<div></div> Unit 3: 6th Grade Week 6-7		2 lessons
<div></div> Unit 5: 6th Grade Week 8		1 lessons
<div></div> Unit 6: 6th Grade Week 9		1 lessons

Unit 1: 6th Grade Week 1

STEM - 6th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Collaborate with teammates using both verbal and nonverbal communication to perform a task

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Building a tower using solo cups, rubber bands and strings. No Hands.

[cup_stacking_challenge.pdf](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

ISTE 4A - Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ISTE 7C Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successful demonstration of The task cards both verbally and non verbally.

[cup_stacking_challenge.pdf](#)

STANDARDS

Next Generation Science (NGSS) - Middle School - Engineering, Technology, and Applications of Science

MS-ETS1-2.

Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

4a

Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

7c

Unit 1: 6th Grade Week 1

STEM - 6th grade - *Last Updated on June 28, 2023*

Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

Unit 2: 6th Grade Weeks 2 - 5

STEM - 6th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Students will build and drive the BaseBot using the IQ Controller, choose wheels, and add sensors to their robot to compete in the Freeze Tag competition.

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Team Freeze Tag
VEX STEM Lab

<https://education.vex.com/stemlabs/iq/team-freeze-tag>

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

NGSS MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

NGSS MS-ETS1-4. Develop a model to generate data for iterative testing and

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Competing in the Freeze Tag Tournament

Completion of Freeze Tag Engineering Journal

[Team Freeze Tag Journal](#)

STANDARDS

Next Generation Science (NGSS) - Middle School - Engineering, Technology, and Applications of Science

MS-ETS1-2.

Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

MS-ETS1-3.

Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

MS-ETS1-4.

Unit 2: 6th Grade Weeks 2 - 5

STEM - 6th grade - *Last Updated on June 28, 2023*

Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Unit 3: 6th Grade Week 6-7

STEM - 6th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Students will program their basebot using block coding to navigate various mazes

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Cube Crasher Challenge VEX Stem Lab

[VEX IQ Activity - Cube Crasher Challenge](#)

(The link provides the basics of what the activity is about) See link in the assessment column for the different mazes students need to navigate through)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

CSTA 1B-AP-08 - Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

CSTA.1B-AP-10 Create programs that include sequences, events, loops, and conditionals.

CSTA 1B-AP-13 Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences.

CSTA 1B-AP-16T Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development.

CSTA 2-AP-19 Document programs in order to make them easier to follow, test, and debug

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successful completion of each maze (see Rubric)

[Cube Crasher](#)

STANDARDS

CSTA Computer Science - K-12 (2017)

1A-AP-08,

Model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks. [K-2][Algorithms & Programming][Algorithms][Algorithms & Programming: Algorithms]

1A-AP-10,

Develop programs with sequences and simple loops, to express ideas or address a problem. [K-2][Algorithms & Programming][Control][Algorithms & Programming: Control]

Unit 3: 6th Grade Week 6-7

STEM - 6th grade - Last Updated on June 28, 2023

1A-AP-13,

Give attribution when using the ideas and creations of others while developing programs. [K-2][Algorithms & Programming][Program Development][Algorithms & Programming: Program Development]

1B-AP-16,

Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development. [3-5][Algorithms & Programming][Program Development][Algorithms & Programming: Program Development]

2-AP-19,

Document programs in order to make them easier to follow, test, and debug. [6-8][Algorithms & Programming][Program Development][Algorithms & Programming: Program Development]

Unit 5: 6th Grade Week 8

STEM - 6th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Explain the logic of changes made to a design after a prototype test.

Explain what is meant by a design constraint.

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Spaghetti Soap Box Derby STEM LAB

https://www.teachengineering.org/activities/view/ucd_derby_activity1

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

CSTA.1B-AP-10 Create programs that include sequences, events, loops, and conditionals.

ISTE 4C Students develop, test and refine prototypes as part of a cyclical design process.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successful completion of a Spaghetti Soap Box Derby Car

[Spaghetti Soap Box Derby Challenge](#)

STANDARDS

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

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.

Unit 6: 6th Grade Week 9

STEM - 6th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Students will program their Sphero using block coding to navigate various obstacles throughout the room

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

[Sphero Edu](#)

Use sphero Edu to teach students how to

1. connect a sphero to a device
2. Drive sphero using the remote on a device
3. Code Sphero using the block coding programs on sphero edu

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

CSTA.1B-AP-10 Create programs that include sequences, events, loops, and conditionals.

ISTE 4C Students develop, test and refine prototypes as part of a cyclical design process.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successful Completion of the 6 tasks found in 6th grade Sphero Code Challenge

Design and Engineering Process Write Up

[Sphero Write up](#)

ATTACHMENTS

 6th grade Sphero Code Challenge

STANDARDS

CSTA Computer Science - K-12 (2017)

1A-AP-10,

Develop programs with sequences and simple loops, to express ideas or address a problem. [K-2][Algorithms & Programming][Control][Algorithms & Programming: Control]

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

4c

Students develop, test and refine prototypes as part of a cyclical design process.

STEM - 7th grade

Vermilion Local School District

UNITS (5/5 SELECTED)		SUGGESTED DURATION
<div></div> Unit 1: Grade 7 Week 1		1 lessons
<div></div> Unit 2: Grade 7 Week 2		1 lessons
<div></div> Unit 3: Grade 7 Week 3 - 7		5 lessons
<div></div> Unit 4: Grade 7 Week 8		1 lessons
<div></div> Unit 5: Grade 7 Week 9		1 lessons

Unit 1: Grade 7 Week 1

STEM - 7th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Design a carrier that can carry a ping pong ball down a zip line the within 5 seconds/longer than 10 seconds

Students collaborate to complete a task

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Zip Line STEM Lab

[Zip Line STEM Lab.pdf](#)

<https://pbskids.org/designsquad/build/zip-line/>

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

NGSS MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

ISTE 7C Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successful completion of the STEM Lab

STEM Lab Write Up (coming soon)

STANDARDS

Next Generation Science (NGSS) - Middle School - Engineering, Technology, and Applications of Science

MS-ETS1-4.

Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

Unit 1: Grade 7 Week 1

STEM - 7th grade - Last Updated on June 28, 2023

7c

Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

Unit 2: Grade 7 Week 2

STEM - 7th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Students will drive their clawbot to pick up and transfer (stack cubes) to another location

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Triple Transfer STEM Lab

[VEX IQ Activity - Triple Transfer](#)

****This activity calls for the simple Clawbot. It will be completed with the regular clawbot in preparation for the next lab****

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

NGSS 3-5 ETS 1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

NGSS MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successful completion of the STEM Lab

Students can each do the following (performance assessments)

1. Pair the remote and robot
2. Change Drive modes
3. Pick up and stack cubes

STANDARDS

Next Generation Science (NGSS) - Middle School - Engineering, Technology, and Applications of Science

MS-ETS1-3.

Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

Next Generation Science (NGSS) - Grade 3-5 - Engineering, Technology, and Applications of Science

3-5-ETS1-3.

Unit 2: Grade 7 Week 2

STEM - 7th grade - Last Updated on June 28, 2023

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Unit 3: Grade 7 Week 3 - 7

STEM - 7th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Students will explore the difference between competing in a driver controlled and autonomous competition. They will use both autonomous and driver control in order to score cubes in the Cube Collector competition.

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Cube Collector STEM Lab

[Cube Collector | VEX Education](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

NGSS MS-ETS-1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ISTE 4A Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successful Completion of the STEM Lab

[Cube Collector Journal](#)

STANDARDS

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

4a

Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

Next Generation Science (NGSS) - Middle School - Engineering, Technology, and Applications of Science

MS-ETS1-1.

Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS-ETS1-2.

Unit 3: Grade 7 Week 3 - 7

STEM - 7th grade - Last Updated on June 28, 2023

Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

Unit 4: Grade 7 Week 8

STEM - 7th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Students will program their Sphero using block coding to navigate various obstacles throughout the room

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Sphero Olympics
[SPHERO OLYMPICS](#)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

CSTA.1B-AP-10 Create programs that include sequences, events, loops, and conditionals.

ISTE 4C Students develop, test and refine prototypes as part of a cyclical design process.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successful Completion of the Sphero Olympic Events

****Successful Completion = scoring a point in sphero bags, knocking pins down in sphero bowling, capturing a square and completing the sphero slalom course****

STANDARDS

CSTA Computer Science - K-12 (2017)	
	1A-AP-10,
Develop programs with sequences and simple loops, to express ideas or address a problem. [K-2][Algorithms & Programming][Control][Algorithms & Programming: Control]	
International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)	
	4c
Students develop, test and refine prototypes as part of a cyclical design process.	

Unit 5: Grade 7 Week 9

STEM - 7th grade - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Students will explore how to design a Clawbot to collect, pick up, and move cubes from one side of the Field to the other, in the Up and Over competition.

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Up and Over STEM Lab

[Up and Over | VEX Education](#)

ATTACHMENTS



COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

ISTE 4A Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Successful Completion of the STEM Lab

STANDARDS

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

4a

Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

Next Generation Science (NGSS) - Middle School - Engineering, Technology, and Applications of Science

MS-ETS1-2.

Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

STEM - HS - Applied Technologies

Vermilion Local School District

UNITS (4/4 SELECTED)		SUGGESTED DURATION
	Unit 1: Technology Interfaces	20 lessons
	Unit 2: 3D Modeling and Additive Manufacturing	30 lessons
	Unit 3: Circuits and Electronic Applications	22 lessons
	Unit 4: Industrial Automation	22 lessons

Unit 1: Technology Interfaces

STEM - HS - Applied Technologies - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

MacBook features for school and beyond

trackpad, mouse, keyboard, display

self-service, dictionary, finder

typing

Google suite applications

docs: format, page setup, edit, insert, copy, share, version history, comment, suggest

sheets: enter data, sort, conditional formatting, charts/graphs/tables, freeze/protect, functions and formulas

forms: share/send, survey and sampling methods, export data,

slides: templates, layout, format, style, animations,

drive: File naming conventions, hierarchy of organization, sharing folders

classroom

add-ons and extensions

Networks:

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

STANDARDS

Unit 2: 3D Modeling and Additive Manufacturing

STEM - HS - Applied Technologies - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

TinkerCAD: Place, measure, duplicate, group, manipulate objects; import/export files;

OnShape/Solidworks: sketch parts, group and mate parts, create assemblies, simulate

3Dwox/Sindoh Printers: Load a model, scale/duplicate/rotate model, support/overhang
printer settings: print quality vs time, printable materials, support qualities, bed adhesion

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Widget Factory Project

model, export to .stl support and slice, save gcode, send to printer

Level 1: model an single object

Level 2: model two objects that fit together

Level 3: model a mechanism with moving parts

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

STANDARDS

Unit 3: Circuits and Electronic Applications

STEM - HS - Applied Technologies - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

wiring diagram symbols
components of a circuit
current, voltage, resistance
electric vs electronic
boards and their components
solder technique
Arduino IDE

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Prefixes and Units
Circuits: draw the build and build the draw
Arduino Lesson 1
 parts in the kit table:
 resistor bands decoded
Arduino Project 1
 series and parallel circuits

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

STANDARDS

Unit 4: Industrial Automation

STEM - HS - Applied Technologies - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Introduction to Industrial Automation: Industry 4.0

cartesian coordinates

VEXcode V5 for Workcell

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

V5 workcell build and master

Cartesian coordinates activity

Quality Control Project

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

STANDARDS

STEM - HS - Bicycle repair

Vermilion Local School District

UNITS (3/3 SELECTED)		SUGGESTED DURATION
<div></div> Unit 1: VHS Bikes Orientation		15 lessons
<div></div> Unit 2: Mechanical basics, Wheels, tires, tubes		30 lessons
<div></div> Unit 3: Brakes, Derailleurs, Bottom brackets, headsets		30 lessons

Unit 1: VHS Bikes Orientation

STEM - HS - Bicycle repair - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Pretest, mission/Vision of VHS Bikes,
Introduction of teams (media, mechanical, operations)
Definition of roles, safety, clean up

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

VHS Bikes Volunteer Orientation(direct instruction and station rotation)

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Explain the basic operations and goals of VHS Bikes, follow volunteer guidelines on daily basis, explain the need for safety culture, Explain the role of a bike co-op in a community.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Volunteer Orientation interview, Individual goal setting, Safety quiz and contract

STANDARDS

Ohio - High School - Business, Finance and Marketing - Strand 1 (Business Operations)
1.1.1.
Identify the knowledge, skills and abilities necessary to succeed in careers.
1.1.6.
Explain the importance of work ethic, accountability and responsibility and demonstrate associated behaviors in fulfilling personal, community and workplace roles.
1.1.7.
Apply problem-solving and critical-thinking skills to work-related issues when making decisions and formulating solutions.
1.1.9.
Give and receive constructive feedback to improve work habits.
1.1.10.
Adapt personal coping skills to adjust to taxing workplace demands.
1.1.11.
Recognize different cultural beliefs and practices in the workplace and demonstrate respect for them.
1.2.

Unit 1: VHS Bikes Orientation

STEM - HS - Bicycle repair - Last Updated on June 28, 2023

Leadership and Communications - Process, maintain, evaluate and disseminate information in a business. Develop leadership and team building to promote collaboration.
1.2.2.
Deliver formal and informal presentations.
1.2.1.
Extract relevant, valid information from materials and cite sources of information (e.g., medical reports, fitness assessment, medical test results).
1.2.3.
Identify and use verbal, nonverbal and active listening skills to communicate effectively.
1.2.5.
Communicate information for an intended audience and purpose.
1.2.6.
Use proper grammar and expression in all aspects of communication.
1.2.7.
Use problem-solving and consensus-building techniques to draw conclusions and determine next steps.
1.2.10.
Use interpersonal skills to provide group leadership, promote collaboration and work in a team.
1.2.13.
Identify stakeholders and solicit their opinions.
1.3.9.
Identify potential conflicts of interest (e.g., personal gain, project bidding) between personal, organizational and professional ethical standards.
1.4.7.
Use personal information management and productivity applications to optimize assigned tasks (e.g., lists, calendars, address books).
1.4.8.

Unit 1: VHS Bikes Orientation

STEM - HS - Bicycle repair - Last Updated on June 28, 2023

Use electronic media to communicate and follow network etiquette guidelines.

1.6.4.

Identify types of businesses, ownership and entities (i.e., individual proprietorships, partnerships, corporations, cooperatives, public, private, profit, not-for-profit).

1.7.4.

Assess the roles of nonprofit and for-profit businesses.

1.8.3.

Analyze the performance of organizational activities and reallocate resources to achieve established goals.

1.8.4.

Identify alternative actions to take when goals are not met (e.g., changing goals, changing strategies, efficiencies).

Unit 2: Mechanical basics, Wheels, tires, tubes

STEM - HS - Bicycle repair - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Mech: Parts of bicycles, bicycle diversity, mechanical basics, bicycling science, friction, tension, bicycle tools, threads, tires, wheels

Media: email etiquette and professional communications, update website/ social media profile

Ops: reinforce safety, inventory bikes and parts

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Mech: BBB-4 summaries, Procedure posters, Icebike bike comparison tool, Bicycling Science mini reports

Media: Google applied digital skills, practice email role-playing,

Ops: implement safety reward program, develop flow charts for decision making,

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Mech: Identify parts of bicycle, identify bike tools and purpose, use the correct tool correctly, differentiate among bicycle types, true wheels, install/repair tube and tire

Media: successful contact with community partners; professional communication etiquette

Ops: Accumulate data to support team decisions;

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Parts of bike quiz, Bicycle tools quiz, mechanical basics performance assessment

STANDARDS

Unit 3: Brakes, Derailleurs, Bottom brackets, headsets

STEM - HS - Bicycle repair - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Mech:Derailleurs, brakes, bottom brackets, bearings,headsets

Media:placing bikes with families, Non-profit collaborations, social media messaging

Ops:quality control, stop/check form, parts acquisition

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Mech, Ops:Demonstrations, guided practice, independent practice, inventory of bikes, supplies, tools

Media:procedure posters, Bike repair memes, website maintenance, Social media update

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Mech:Adjust derailleurs for smooth shifting, adjust/install brakes for responsive braking, identify worn components, determine need for adjustment repair,

Media: successful bike adoption

Ops:Inventory accounted for accurately, identify sources for rare parts

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Repair procedure video,

Website data and feedback,

engaging /appropriate social media presence, self evaluation,

STANDARDS

Robotics 1

Vermilion Local School District

UNITS (6/6 SELECTED)	SUGGESTED DURATION
<div></div> Unit 1: Introduction to Robots	10 lessons
<div></div> Unit 2: Electronic robot components input/output	15 lessons
<div></div> Unit 3: Mechanical robot components	15 lessons
<div></div> Unit 4: Drivetrain, chassis and passive manipulators	12 lessons
<div></div> Unit 5: Autonomous drivetrain commands	10 lessons
<div></div> Unit 6: Active manipulators	7 lessons

Unit 1: Introduction to Robots

Robotics 1 - Last Updated on February 17, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Getting to know you, design cycle, teambuilding, design challenges, , giving and receiving feedback, Engineering Notebook guidelines for documentation, Asimov's Laws of Robotics, robot subsystems, Industry 4.0

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

parts of design cycle modeled in simple design challenges, Mars Perseverance Rover webquest, Industry 4.0 digital timeline activity

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

cooperative problem solving, offer and receive feedback graciously, identify components in robot subsystems, identify Asimov's laws of robotics, identify milestones in the advancement of automation

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

- Design challenge documentation in engineering notebook
- opinion essay: robot ethics
- Unit 1 test Intro to Robots
 - identify components in robot subsystems
 - identify Asimov's laws of robotics
 - identify milestones in the advancement of automation

STANDARDS

Ohio - High School - Engineering and Science Technologies and Manufacturing Technologies	
1.1.	
Employability Skills: Develop career awareness and employability skills (e.g., face - to - face, online) needed for gaining and maintaining employment in diverse business settings.	
1.1.7.	
Apply problem - solving and critical - thinking skills to work - related issues when making decisions and formulating solutions.	
1.1.9.	
Give and receive constructive feedback to improve work habits.	
1.2.	
Leadership and Communications: Process, maintain, evaluate and disseminate information in a business. Develop leadership and team building to promote collaboration.	
1.2.1.	

Unit 1: Introduction to Robots

Robotics 1 - Last Updated on February 17, 2023

Extract relevant, valid information from materials and cite sources of information.

1.2.3.

Identify and use verbal, nonverbal and active listening skills to communicate effectively.

1.2.7.

Use problem - solving and consensus - building techniques to draw conclusions and determine next steps.

1.2.10.

Use interpersonal skills to provide group leadership, promote collaboration and work in a team.

Unit 2: Electronic robot components input/output

Robotics 1 - Last Updated on February 17, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Circuits, voltage, current, resistance, electrical diagram symbols, continuity, Elegoo smart car construction/repair/programming interface, sensors and voltage/resistance

V5 brain, V5 controller, V5 radio

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

TinkerCAD circuits tutorials

My circuit project-based activity

VEX knowledge base: Electronics station rotation

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Draw circuits in TinkerCAD circuits, Build circuits with continuity and no shorts, identify common electrical diagram symbols, interpret electrical diagrams,

Use V5 brain interface to edit controller inputs, select and edit device configuration, connect controller and wireless radio, reset devices to factory settings, update firmware

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

My circuit presentation

Station rotation demonstrations

Electronics best practice guide in engineering notebook

- how to
 - Use V5 brain interface to edit controller inputs
 - select and edit device configuration
 - connect controller and wireless radio
 - reset devices to factory settings
 - update firmware

STANDARDS

Ohio - High School - Engineering and Science Technologies and Manufacturing Technologies

2.1.6.

Define the units of measurement for voltage, current, power and resistance.

2.1.7.

Describe the relationships between voltage, current, resistance and power in circuits.

Unit 2: Electronic robot components input/output

Robotics 1 - Last Updated on February 17, 2023

2.2.1.
Compare and contrast conductors and insulators.
2.2.10.
Analyze wiring schematics and diagrams for accuracy and function.
2.4.3.
Identify symbols for electronic components.
2.5.
Electronic Soldering Connections: Connect individual components into an electrical unit.
2.5.4
Protect circuit boards from electrostatic discharge (ESD).
2.5.6
Combine components per wiring prints, schematics and block diagrams.
2.6.
Digital Electronics: Create circuits to perform tasks and operations.

Unit 3: Mechanical robot components

Robotics 1 - Last Updated on May 19, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Mechanical safety guidelines

types of hardware and fasteners

tools for V5 robots

drive shaft capture and support

reducing friction in mechanical systems

motors and gears, gear ratios (torque vs speed)

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Safe use of tools presentation

- hand tools
- power tools
- pinch points
- robot/mechanism testing guidelines

VEX knowledge base report and share activity

- notebook illustrations
- demonstrate proper use of bearings, shaft collars and motor mounts
- Gear ratios lab activity

Unit 3: Mechanical robot components

Robotics 1 - Last Updated on May 19, 2023

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Describe safe use of tools, mechanisms

Identify V5 fasteners, hardware and components

Identify tools for V5 robots

Construct mechanisms that reduce friction using V5 parts

Explain relationship between speed and torque.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Safety Standards and Practices Test

Performance assessment: Assemble stationary gear train.

STANDARDS

Ohio - High School - Engineering and Science Technologies and Manufacturing Technologies

6.8.

Maintenance: Maintain tools and equipment in working condition.

7.

Safety, Tools and Equipment: Learners apply principles of protection, prevention and mitigation to create and maintain safe working conditions at manufacturing sites. Knowledge and skills may be applied in all aspects of personal and site safety, including handling materials, using tools and equipment, working with and around electricity and using personal protective equipment.

7.1.7.

Identify and eliminate worksite clutter in accordance with standards for cleanliness and safety.

7.2.5.

Identify, inspect and use safety equipment appropriate for a task.

7.2.6.

Use safe practices when working with electrical, mechanical, or other equipment.

Unit 4: Drivetrain, chassis and passive manipulators

Robotics 1 - Last Updated on February 17, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

drivetrain configurations
conventional build practices
game rules analysis
decision matrix

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Standard drivetrain build
parts and tools review
Passive manipulator lab
Robot Soccer Competition

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Identify drivetrain configurations: standard, H-drive, holonomic, mecanum, track drive
Identify 2 advantages and 2 disadvantages of each drivetrain configuration
Successful driveshaft capture and durability evaluation
Analyze game manual to reveal possible strategies
Choose drivetrain type to support game play strategy
Design passive manipulator for soccer ball
Document design process and relevant information in engineering notebook

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Completion of engineering notebook knowledge base
Robot Soccer inspection checklist
Robot Soccer competition ranking
Documentation of design process in engineering notebook

ATTACHMENTS

 Robot soccer checklist

STANDARDS

Unit 5: Autonomous drivetrain commands

Robotics 1 - Last Updated on May 19, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

VEXcode VR interface

Drivetrain Configuration in VEXcode

- track width
- wheelbase
- wheel size
- motor speed

Drivetrain commands

- loops
- sequence
- proportions

Troubleshoot robot ideal vs robot reality

- value of multiple iterations
- loops and semi-auto sequences

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

VEXcode VR name writer

Drivetrain configuration lab tutorial

Autonomous shape draw challenge

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Build autonomous sequences to trace basic to advanced shapes

Measure drivetrain and use data to configure devices

Use repeat loops to draw/trace consistent and proportional shapes

Edit/Adjust/Adapt initial code sequence in multiple iterations for real robot movements to improve precision and accuracy

Unit 5: Autonomous drivetrain commands

Robotics 1 - Last Updated on May 19, 2023

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Performance assessment: The student will demonstrate autonomous code sequence for the highest difficulty shape chosen by the student.

The student will document the design and trouble shooting process in their engineering notebooks.

- Measure drivetrain and use data to configure devices
- Build autonomous sequences to trace basic to advanced shapes
- Use repeat loops to draw/trace consistent and proportional shapes
- Edit/Adjust/Adapt initial code sequence in multiple iterations for real robot movements to improve precision and accuracy

STANDARDS

Unit 6: Active manipulators

Robotics 1 - Last Updated on May 19, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Torque, rotational forces

gear ratios and gear reduction

linear vs rotational motion translation

observe/interpret/apply power curve (watts vs rpm) and torque graph (rpm vs torque)

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Active manipulator station rotation

- gear-driven mechanisms
- chain and sprocket driven mechanisms
- claws
- arms
- reciprocating mechanisms
- alternative gearboxes

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Use conventional building practices to construct claws, arms, gearboxes, cam and follower.

Calculate gear ratios and reductions when given rpm, gear diameter and tooth count.

Explain the relationship between rpm and torque.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

Students will build the assigned mechanism, demonstrate its function, describe its application, and calculate rpm/torque

Active manipulator rubric

- shafts supported by structure and captured with collars
- washers and spacers used appropriately
- gear teeth interface completely
- sprockets aligned and appropriate chain length chosen
- bearings used to reduce friction
- appropriate rpm/gear ratio chosen for load
- rpm, torque calculated correctly

STANDARDS

Ohio - High School - Engineering and Science Technologies and Manufacturing Technologies

7.2.6.

Unit 6: Active manipulators

Robotics 1 - Last Updated on May 19, 2023

Use safe practices when working with electrical, mechanical, or other equipment.

3.6.5.

Calculate or obtain speed and torque ratios for belt and chain drives per design specifications.

STEM - HS - Robotics 3

Vermilion Local School District

UNITS (4/4 SELECTED)		SUGGESTED DURATION
<div></div> Unit 1: Pre-season		15 lessons
<div></div> Unit 2: Competition Season		110 lessons
<div></div> Unit 3: Post-season		40 lessons
<div></div> Unit 4: Off-season		30 lessons

Unit 1: Pre-season

STEM - HS - Robotics 3 - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Policies, procedures, expectations and commitments
Teambuilding
Design Cycle refresher
VRC Game Manual
Engineering Notebook Guidelines
SailorTech Handbook
Fundraising/Alumni Relations/outreach planning

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Collaborative study guide
Decision-making matrices

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Identify key game vocabulary, develop sound understanding of the rules and constraints of game,
How to construct and use decision-making matrices
Develop sound strategies

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

- VRC Game Manual Test
- SailorTech Handbook acknowledgement and Safety contract

STANDARDS

Ohio - Grade 9-12 - Technology
9-12.DT.2.b.
Implement, document and present a design process as applied to a particular product, process or problem.
9-12.DT.2.a.
Evaluate a design solution using conceptual, physical, digital and mathematical models at various intervals of a design process in order to check for proper design and note areas where improvements are needed (e.g., check the design solutions against criteria and constraints).
9-12.DT.4.a.
Evaluate project/product solutions and communicate observations of the entire design process results.

Unit 2: Competition Season

STEM - HS - Robotics 3 - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Brainstorming, Prototyping, Design and testing of subsystems, integrate subsystems, develop program, add sensors and autonomous commands as able

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Cooperative feedback sessions, testing, research, calculations,
Weekly team meeting, weekly Captains meeting.
Driver practice,
Continue to test and improve mechanisms, subsystems and program,
Document iterations in Engineering notebook

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Offer/receive feedback graciously, consider alternative methods, use durable construction methods, seek to minimize repairs and maintenance, implement tactics to improve cycle time, integrate sensor feedback, adding automated sequences, and practicing scoring objectives.

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

- Engineering notebook documentation
- Team and self evaluation
- Competition ranking and rubric evaluation

STANDARDS

Ohio - High School - Engineering and Science Technologies and Manufacturing Technologies
1.2.10.
Use interpersonal skills to provide group leadership, promote collaboration and work in a team.
1.2.7.
Use problem - solving and consensus - building techniques to draw conclusions and determine next steps.
1.2.4.
Use negotiation and conflict - resolution skills to reach solutions.
1.2.3.
Identify and use verbal, nonverbal and active listening skills to communicate effectively.
1.1.6.
Explain the importance of work ethic, accountability and responsibility and demonstrate associated behaviors in fulfilling personal, community and workplace roles.
1.1.7.

Unit 2: Competition Season

STEM - HS - Robotics 3 - Last Updated on June 28, 2023

Apply problem - solving and critical - thinking skills to work - related issues when making decisions and formulating solutions.

1.1.9.

Give and receive constructive feedback to improve work habits.

1.1.8.

Identify the correlation between emotions, behavior and appearance and manage those to establish and maintain professionalism.

1.1.11.

Recognize different cultural beliefs and practices in the workplace and demonstrate respect for them.

1.6.1.

Identify business opportunities.

1.8.7.

Collect information and feedback to help assess the organization's strategic planning and policymaking processes.

Unit 3: Post-season

STEM - HS - Robotics 3 - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Intramural competition
Skills Extension
sustainability, outreach, fundraising

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Imitate best mechanisms observed all season, New skills, New mechanism, new sensors: TBD based on individual ability and skill

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Research, prototype, test, build and document process,
Evaluate construction methods, ease of maintenance and performance

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

- Competition ranking and rubric evaluation
- Team and self evaluation
- Scouting report
- Engineering notebook documentation
- Season in review

STANDARDS

Ohio - High School - Engineering and Science Technologies and Manufacturing Technologies	
1.4.6.	
Use an electronic database to access and create business and technical information.	
1.4.5.	
Use information technology tools to maintain, secure and monitor business records.	
1.6.6.	
Identify the target market served by the organization, the niche that the organization fills and an outlook of the industry.	
1.6.5.	
Describe organizational structure, chain of command, the roles and responsibilities of the organizational departments and interdepartmental interactions.	
1.8.	
Operations Management: Plan, organize and monitor an organization or department to maximize contribution to organizational goals and objectives.	

Unit 3: Post-season

STEM - HS - Robotics 3 - Last Updated on June 28, 2023

1.8.1.

Forecast future resources and budgetary needs using financial documents (e.g., balance sheet, demand forecasting, financial ratios).

Unit 4: Off-season

STEM - HS - Robotics 3 - Last Updated on June 28, 2023

CONTENT: WHAT ESSENTIAL TOPICS DO I TEACH?

Event planning: SMS Robotics Mini-Camp
New game manual evaluation
Recognition Banquet

METHODS: HOW DO I TEACH THE ESSENTIAL TOPICS?

Planning for age appropriate outreach activities for grades 6-8

COMPREHENSION & SKILLS: WHAT WILL STUDENTS UNDERSTAND AND BE ABLE TO DO?

Lead design, build, program challenges, draft a lesson plan for 1 activity

SUMMATIVE ASSESSMENTS: HOW WILL STUDENTS DEMONSTRATE LEARNING?

- Self-evaluation
- MiniCamp lesson plan

STANDARDS

Ohio - High School - Engineering and Science Technologies and Manufacturing Technologies	
1.1.1.	Identify the knowledge, skills and abilities necessary to succeed in careers.
1.1.6.	Explain the importance of work ethic, accountability and responsibility and demonstrate associated behaviors in fulfilling personal, community and workplace roles.
1.1.7.	Apply problem - solving and critical - thinking skills to work - related issues when making decisions and formulating solutions.
1.2.	Leadership and Communications: Process, maintain, evaluate and disseminate information in a business. Develop leadership and team building to promote collaboration.
1.2.1.	Extract relevant, valid information from materials and cite sources of information.
1.2.2.	

Unit 4: Off-season

STEM - HS - Robotics 3 - Last Updated on June 28, 2023

Deliver formal and informal presentations.

1.2.5.

Communicate information (e.g., directions, ideas, vision, workplace expectations) for an intended audience and purpose.

1.2.6.

Use proper grammar and expression in all aspects of communication.

1.2.7.

Use problem - solving and consensus - building techniques to draw conclusions and determine next steps.