

Deal School Curriculum



Technology Curriculum Guide Grades K - 8

Deal School

Deal, New Jersey

2004

Board of Education

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Board Approved

Course Introduction

New Jersey's Technology Standards consist of 8.1 Educational Technology and 8.2 Technology, Engineering, Design and Computational Thinking, which work symbiotically to provide students with the necessary skills for college and career readiness.

"Advances in technology have drastically changed the way we interact with the world and each other. The digital age requires that we understand and are able to harness the power of technology to live and learn". - International Society for Technology in Education

In this ever-changing digital world where citizenship is being re-imagined, our students must be able to harness the power of technology to live, solve problems and learn in college, on the job and throughout their lives. Enabled with digital and civic citizenship skills, students are empowered to be responsible members of today's diverse global society.

Readiness in this century demands that students actively engage in critical thinking, communication, collaboration, and creativity. Technology empowers students with real-world data, tools, experts and global outreach to actively engage in solving meaningful problems in all areas of their lives. The power of technology discretely supports all curricular areas and multiple levels of mastery for all students.

"A major consequence of accelerating technological change is a difference in levels of technological ability and understanding. The workforce of the future must have the ability to use, manage, and understand technology." – International Technology and Engineering Educators Association

The design process builds in our students the recognition that success is not merely identifying a problem but working through a process and that failure is not an end but rather a point for reevaluation. Whether applied as a skill in product development, in the learning environment, in daily life, in a local or more global arena, the design process supports students in their paths to becoming responsible, effective citizens in college, careers and life.

Computational thinking provides an organizational means of approaching life and its tasks. It develops an understanding of technologies and their operations and provides students with the abilities to build and create knowledge and new technologies. Not all students will be programmers, but they should have an understanding of how computational thinking can build knowledge and control technology.

Resources:

The New Jersey State Department of Education offers the following link to resources for the assessment and instruction of technology for teachers:

<http://www.state.nj.us/education/aps/cccs/tech/resources.htm>

Grade K – 2 Deal School Curriculum

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Educational Technology
Technology, Operations and Concepts

Desired Outcomes

A. Technology Operations and Concepts: *Students demonstrate a sound understanding of technology concepts, systems and operations.*

Enduring Understandings	Essential Questions
<ul style="list-style-type: none"> ● Understand and use technology systems. ● Select and use applications effectively and productively. 	<ul style="list-style-type: none"> ● In what ways does technology make life easier? ● How do the basic operations help me use technology more efficiently?
Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> ● Computers contain basic features that facilitate their used. ● Technology terms are needed for daily computer practice. ● There are advantages and disadvantages of the common uses of computer applications and hardware. ● Text documents can be created with a word processing program. ● Computer use gives one the ability to navigate in <u>virtual environments</u> that are <u>developmentally appropriate</u> 	<p>8.1.2.A.1 - Identify the basic features of a digital device and explain its purpose.</p> <p>8.1.2.A.2 - Create a document using a word processing application.</p> <p>8.1.2.A.3 - Compare the common uses of at least two different digital applications and identify the advantages and disadvantages of using each.</p> <p>8.1.2.A.4 - Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).</p> <p>8.1.2.A.5 - Enter information into a spreadsheet and sort the information.</p> <p>8.1.2.A.6 - Identify the structure and components of a database.</p> <p>8.1.2.A.7 - Enter information into a database or spreadsheet and filter the information.</p>

Assessment Evidence

Summative:

ePortfolios
Project Presentations
Computed based pre and post tests

Formative:

Daily Journals
Quick Checks
Project Specific Rubrics
Exit Slips
Student Self-Assessment
Peer review
Pre-Assessments

Alternative Assessment:

Class Discussion
Teacher Observation
Class Participation
ePortfolios

Suggested Learning Plan

With one 44-minute period per week in approximately 40 school weeks, each student will complete 4 Learning Launchers or Lift-off challenges per year.

OR

Students will visit the lab once a week for the school year.

The structure of the daily lesson will be in the format of a 44-minute period.

- 10 minutes – Do/Now summary and whole group instruction
- 30 minutes – Independent work with teacher monitoring and guidance
- 4 minutes – Wrap up/review

List of Core Instructional and Supplemental Materials

SeeSaw
Brain Pop Jr.
Teach Your Monster to Read
Typing Club
Google Apps
Common Sense Education
Scratch Jr.
Code.org
ABCYa.com

Students will use ipads and/or laptops during class.

Deal School Curriculum

Grade K - 2 Educational Technology Creativity and Innovation

Desired Outcomes

B. Creativity and Innovation: *Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.*

Enduring Understandings

Apply existing knowledge to generate new ideas, products, or processes.

Create original works as a means of personal or group expression.

Essential Questions

How can we apply existing knowledge to generate new ideas products, or processes?

How does creating original works help us with personal or group expression?

Learners will know...

- How to illustrate and communicate original ideas and stories use digital tools and [media-rich resources](#).

Learners will be able to....

8.1.2.B.1 - Illustrate and communicate original ideas and stories using multiple digital tools and resources.

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ToonTastic

Deal School Curriculum

Grade K - 2 Educational Technology Communication and Collaboration

Desired Outcomes

C. Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

Enduring Understandings

- Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media.

Essential Questions

- How can we use a variety of digital environments and media to interact, collaborate, and publish with peers, experts, or

<ul style="list-style-type: none"> ● Communicate information and ideas to multiple audiences using a variety of media and formats. ● Develop cultural understanding and global awareness by engaging with learners of other cultures. ● Contribute to project teams to produce original works or solve problems. 	<p>others?</p> <ul style="list-style-type: none"> ● How can we communicate information and ideas to multiple audiences using a variety of media and formats? ● How can we develop cultural understanding and global awareness by engaging with learners of other cultures? ● How can we contribute to project teams to produce original works or solve problems?
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Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> ● It is now possible to engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using electronic tools. 	8.1.2.C.1 -Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.

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Grade K - 2 Educational Technology Digital Citizenship

Desired Outcomes

D. Digital Citizenship: *Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.*

Enduring Understandings

- Advocate and practice safe, legal, and responsible use of information and technology.

Essential Questions

- How can we advocate and practice safe legal, and responsible use of information and technology?

Learners will know...

- How to model legal and ethical behaviors when using both print and non-print information cite resources.

Learners will be able to....

8.1.2.D.1 - Develop an understanding of ownership of print and non-print information.

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Google Apps
Common Sense Education
Google Be Internet Awesome

Deal School Curriculum

Grade K - 2 Educational Technology Research and Information Literacy

Desired Outcomes

E: Research and Information Fluency: *Students apply digital tools to gather, evaluate, and use information.*

Enduring Understandings

- Plan strategies to guide inquiry
- Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
- Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.

Essential Questions

1. In what ways does technology make life easier?
2. How do the basic operations help me use technology more efficiently?
3. How should technology be used?
4. When can you expect technology to be effective?

Learners will know...

- Digital tools and online resources are used to explore a problem or issue affecting children, and discuss possible solutions.

Learners will be able to....

8.1.2.E.1 - Use digital tools and online resources to explore a problem or issue.

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Code.org

Deal School Curriculum

Grade K - 2 Educational Technology
Critical Thinking, Problem Solving, and Decision Making

Desired Outcomes

F: Critical thinking, problem solving, and decision making: *Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.*

Enduring Understandings

Essential Questions

<ul style="list-style-type: none"> ● Identify and define authentic problems and significant questions for investigation. ● Plan and manage activities to develop a solution or complete a project. ● Collect and analyze data to identify solutions and/or make informed decisions. ● Use multiple processes and diverse perspectives to explore alternative solutions. 	<ol style="list-style-type: none"> 1. How does technology change thinking? 2. In what ways does technology make life easier? 3. How does innovation and technological change influence our lives?
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Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> ● Mapping tools are used to plan and choose alternate routes to and from various locations. 	8.1.2.F.1 - Use geographic mapping tools to plan and solve problems

Assessment Evidence

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SeeSaw
Brain Pop Jr.
Google Apps
Google Maps
Google Expeditions

Pacing Guide

[Kindergarten Pacing Guide](#)

[First Grade Pacing Guide](#)

[Second Grade Pacing Guide](#)

21st CENTURY LIFE AND CAREERS

Career Awareness, Exploration and Preparation

9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.



Career Education

CRP1, CRP2, CRP3,
CRP4, CRP5, CRP6,
CRP7, CRP8, CRP9,
CRP10, CRP11,
CRP12

[Career Ready Practices](#)

Accommodations and Modifications

Gifted and Talented

- Provide appropriate challenge for wide ranging skills and development areas.
- Participate in inquiry and project-based learning units of study.

English Language Learners

- Pair visual prompts with verbal presentations
- Provide students with visual models, sentence stems, concrete objects, and hands on materials.

Students with IEPs/504

- Review student individual educational plan and/or 504 plan
- Establish procedures for accommodations and modifications for assessments as per IEP/504
- Modify classroom environment to support academic and physical needs of the students as per IEP/504

At Risk Learners

- Differentiated instruction
- Basic Skills
- Provide instructional interventions in the general education classroom

Interdisciplinary Connections/Cross Curricular Opportunities

3.9.K.1.NJSLSA.L1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
3.9.K.1.NJSLSA.L2	Demonstrate command of the conventions of standard English capitalization punctuation and spelling when writing.
3.7.K.1.NJSLSA.SL1	Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others ideas and expressing their own clearly and persuasively.
3.7.K.2.NJSLSA.SL5	Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
3.5.K.2.NJSLSA.W4	Produce clear and coherent writing in which the development organization and style are appropriate to task purpose and audience.

<p>3.10.1.1.L.1.1</p>	<p>Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. A.Print all upper- and lowercase letters. B.Use common proper and possessive nouns. C.Use singular and plural nouns with matching verbs in basic sentences (e.g. He hops We hop). D.Use personal possessive and indefinite pronouns (e.g. I me my they them their anyone everything). E.Use verbs to convey a sense of past present and future (e.g. Yesterday I walked home Today I walk home Tomorrow I will walk home). F.Use frequently occurring adjectives. G.Use frequently occurring conjunctions (e.g. and but or so because). H.Use determiners (e.g. articles demonstratives). I.Use frequently occurring prepositions (e.g. during beyond toward). J.Produce and expand complete simple and compound declarative interrogative imperative and exclamatory sentences in response to prompts.</p>
<p>3.8.1.1.SL.1.3</p>	<p>Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.</p>
<p>3.8.2.2.SL.2.5</p>	<p>Use multimedia add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas thoughts and feelings.</p>
<p>NJSLS.MATH.CONTENT.K.G.A.1</p>	<p>Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.</p>

6.1.P.A.3	Demonstrate appropriate behavior when collaborating with others.
6.1.4.B.3	Explain how and when it is important to use digital geographic tools, political maps, and globes to measure distances and to determine time zones and locations using latitude and longitude.
6.1.P.D.4	Learn about and respect other cultures within the classroom and community.
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.
1.3.2.D.1	Create two- and three-dimensional works of art using the basic elements of color line shape form texture and space as well as a variety of art mediums and application methods.

Integration of Technology

Students will use ipads and/or laptops during class.

Deal School Curriculum

STEAM Enduring Understandings

What does it mean to be creative?
 What can our imagination be used for?
 How can our imagination be used to solve a problem?
 What does it mean to be innovative?
 How can we come up with new ideas to solve a problem?

STEAM Essential Questions

What does it mean to be a problem- solver?
 What can we learn from our mistakes?
 What must you know about a problem before you can develop a solution?
 How can making mistakes be an important part of learning?

Why is it important to know the resources you have to solve a problem?
 What are some advantages to planning before starting a project?

Grade K - 2

8.2 Technology Education, Engineering, Design, and Computational Thinking -
 Programming:

All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Desired Outcomes

A. The Nature of Technology: Creativity and Innovation *Technology systems impact every aspect of the world in which we live.*

Enduring Understandings	Essential Questions
<p>The characteristics and scope of technology.</p> <p>The core concepts of technology.</p> <p>The relationships among technologies and the connections between technology and other fields of study.</p>	<p>What are the characteristics and scope of technology?</p> <p>What are the core concepts of technology?</p> <p>What are the relationships among technologies and the connections between technology and other fields of study?</p>
Learners will know...	Learners will be able to....
<p>Technology products, systems, and resources are useful at school, home, and work.</p>	<p>8.2.2.A.1 Define products produced as a result of technology or of nature.</p> <p>8.2.2.A.2 Describe how designed products and systems are useful at school, home and work.</p> <p>8.2.2.A.3 Identify a system and the components that work together to accomplish its purpose.</p> <p>8.2.2.A.4 Choose a product to make and plan the tools and materials needed.</p> <p>8.2.2.A.5 Collaborate to design a solution to a problem affecting the community.</p>

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Assessment Evidence

Summative:
ePortfolios
Project Presentations
Computed based pre and post tests

Formative:
Daily Journals
Quick Checks
Project Specific Rubrics
Exit Slips
Student Self-Assessment
Peer review
Pre-Assessments

Alternative Assessment:
Class Discussion
Teacher Observation
Class Participation
ePortfolios

Suggested Learning Plan

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- 10 minutes – Do/Now summary and whole group instruction
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List of Core Instructional and Supplemental Materials

Creative Learning Systems Learning Launchers
Seesaw
Google Sketchup
Google Earth
Brain Pop
Code.org

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Deal School Curriculum

Grade K - 2

All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Desired Outcome

B. Technology and Society: *Knowledge and understanding of human, cultural and societal values are fundamental when designing technological systems and products in the global society.*

Enduring Understandings	Essential Questions
<ul style="list-style-type: none">• The cultural, social, economic and political effects of technology.• The effects of technology on the environment.• The role of society in the development and use of technology.• The influence of technology on history.	<p>How does technology change thinking? How does technology affect artistic achievement? In what ways does technology make life easier? How does innovation and technological change influence our lives? Why do humans create innovations and advancements in technology? What encourages innovation and technology? How does innovation and technological change influence our lives?</p>
Learners will know...	Learners will be able to....
<ul style="list-style-type: none">• The design process is used to brainstorm and devise a plan.• Specific technologies on the individual, family, community, and environment.	<p>8.2.2.B.1 Identify how technology impacts or improves life. 8.2.2.B.2 Demonstrate how reusing a product affects the local and global environment. 8.2.2.B.3 Identify products or systems that are designed to meet human needs. 8.2.2.B.4 Identify how the ways people live and work has changed because of technology.</p>

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designed world as they relate to the individual, global society, and the environment.

Desired Outcomes

C. Design: *The design process is a systematic approach to solving problems.*

Enduring Understandings

The attributes of design.
The application of engineering design.
The role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.

Essential Questions

How do resources help us learn, design, and create technology?
What are the benefits of the design process?
How does the design process help with technology learning and creation?

Learners will know...

The designed world is the product of a design process that provides the means to convert resources into products and systems.

Learners will be able to....

8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product.
8.2.2.C.2 Create a drawing of a product or device that communicates its function to peers and discuss.
8.2.2.C.3 Explain why we need to make new products.
8.2.2.C.4 Identify designed products and brainstorm how to improve one used in the classroom.
8.2.2.C.5 Describe how the parts of a common toy or tool interact and work as part of a system.
8.2.2.C.6 Investigate a product that has stopped working and brainstorm ideas to correct the problem.

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Desired Outcomes

D. Abilities for a Technological World: *The designed world is the product of a design process that provides the means to convert resources into products and systems*

Enduring Understandings	Essential Questions
<p>Apply the design process.</p> <p>Use and maintain technological products and systems.</p> <p>Assess the impact of products and systems.</p>	<p>What are the benefits of the design process?</p> <p>How does the design process help with technology learning and creation?</p>
Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> ● How to collaborate and apply a design process to solve a simple problem from everyday experiences. ● Understand that discovering how a product works by taking it apart, sketching how parts fit, and putting it back together. Identify the strengths and weaknesses in a product or system. ● How to identify the resources needed to create technological products or systems. ● How to identify how using a tool (such as a bucket or wagon) aids in reducing work. 	<p>8.2.2.D.1 Collaborate and apply a design process to solve a simple problem from everyday experiences.</p> <p>8.2.2.D.2 Discover how a product works by taking it apart, sketching how parts fit, and putting it back together.</p> <p>8.2.2.D.3 Identify the strengths and weaknesses in a product or system.</p> <p>8.2.2.D.4 Identify the resources needed to create technological products or systems.</p> <p>8.2.2.D.5 Identify how using a tool (such as a bucket or wagon) aids in reducing work.</p>

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Desired Outcomes

E. Computational Thinking: Programming: *Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.*

Enduring Understandings

Essential Questions

Computational thinking and computer programming as tools used in design and engineering	How are computational thinking and computer programming used as tools in design and engineering?
Learners will know...	Learners will be able to....
<p>how to:</p> <p>List and demonstrate the steps to an everyday task.</p> <p>Demonstrate an understanding of how a computer takes input through a series of written commands and then interprets and displays information as output.</p> <p>Create algorithms (a sets of instructions) using a predefined set of commands (e.g., to move a student or a character through a maze).</p> <p>Debug an algorithm (i.e., correct an error).</p> <p>Use appropriate terms in conversation (e.g., basic vocabulary words: input, output, the operating system, debug, and algorithm).</p>	<p>8.2.2.E.1 List and demonstrate the steps to an everyday task.</p> <p>8.2.2.E.2 Demonstrate an understanding of how a computer takes input through a series of written commands and then interprets and displays information as output.</p> <p>8.2.2.E.3 Create algorithms (a sets of instructions) using a predefined set of commands (e.g., to move a student or a character through a maze).</p> <p>8.2.2.E.4 Debug an algorithm (i.e., correct an error).</p> <p>8.2.2.E.5 Use appropriate terms in conversation (e.g., basic vocabulary words: input, output, the operating system, debug, and algorithm).</p>
Assessment Evidence	
<p>Summative: ePortfolios Project Presentations Computed based pre and post tests</p> <p>Formative: Daily Journals Quick Checks Project Specific Rubrics</p>	

Exit Slips
Student Self-Assessment
Peer review
Pre-Assessments

Alternative Assessment:

Class Discussion
Teacher Observation
Class Participation
ePortfolios

Suggested Learning Plan

The structure of the daily lesson will be in the format of a 44 minute period.

- 10 minutes – Do/Now summary and whole group instruction
- 30 minutes – Independent work with teacher monitoring and guidance
- 4 minutes – Wrap up/review

List of Core Instructional and Supplemental Materials

Creative Learning Systems Learning Launchers
Seesaw
Google Sketchup
Google Earth
Brain Pop
Code.org
Scratch.mit.edu

21st CENTURY LIFE AND CAREERS

Career Awareness, Exploration and Preparation

9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Career Education

CRP1, CRP2, CRP3,
CRP4, CRP5, CRP6,
CRP7, CRP8, CRP9,
CRP10, CRP11,
CRP12

[Career Ready
Practices](#)

Accommodations and Modifications

Gifted and Talented

- Provide appropriate challenge for wide ranging skills and development areas.
- Participate in inquiry and project-based learning units of study.

English Language Learners

- Pair visual prompts with verbal presentations
- Provide students with visual models, sentence stems, concrete objects, and hands on materials.

Students with IEPs/504

- Review student individual educational plan and/or 504 plan
- Establish procedures for accommodations and modifications for assessments as per IEP/504
- Modify classroom environment to support academic and physical needs of the students as per IEP/504

At Risk Learners

- Differentiated instruction
- Basic Skills
- Provide instructional interventions in the general education classroom

Interdisciplinary Connections/Cross Curricular Opportunities

3.9.K.1.NJSLSA.L1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
3.9.K.1.NJSLSA.L2	Demonstrate command of the conventions of standard English capitalization punctuation and spelling when writing.
3.7.K.1.NJSLSA.SL1	Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others ideas and expressing their own clearly and persuasively.
3.7.K.2.NJSLSA.SL5	Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
3.5.K.2.NJSLSA.W4	Produce clear and coherent writing in which the development organization

	and style are appropriate to task purpose and audience.
3.10.1.1.L.1.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. A.Print all upper- and lowercase letters. B.Use common proper and possessive nouns. C.Use singular and plural nouns with matching verbs in basic sentences (e.g. He hops We hop). D.Use personal possessive and indefinite pronouns (e.g. I me my they them their anyone everything). E.Use verbs to convey a sense of past present and future (e.g. Yesterday I walked home Today I walk home Tomorrow I will walk home). F.Use frequently occurring adjectives. G.Use frequently occurring conjunctions (e.g. and but or so because). H.Use determiners (e.g. articles demonstratives). I.Use frequently occurring prepositions (e.g. during beyond toward). J.Produce and expand complete simple and compound declarative interrogative imperative and exclamatory sentences in response to prompts.
3.8.1.1.SL.1.3	Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
3.8.2.2.SL.2.5	Use multimedia add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas thoughts and feelings.
Science Connections	Mathematics

K-2 Engineering Design

Students who demonstrate understanding can:

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.

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 solutions to a problem based on how well they meet the criteria and constraints of the design problem. to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3 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.

MP.2 Reason abstractly and quantitatively. (K-2-ETS1-1), (K-2-ETS1-3)

MP.4 Model with mathematics.(K-2-ETS1-1), (K-2-ETS1-3)

MP.5 Use appropriate tools strategically.(K-2-ETS1-1), (K-2-ETS1-3)

2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1), (K-2-ETS1-3)

Integration of Technology

Students will use ipads and/or desktops during class.

Pacing Guide

[K-2 Pacing Guide STEAM Place- Based Education](#)

Deal School Curriculum

Commented [1]: +rvanhazinga@dealschool.org All the 8.2 standards have been updated but please check that I did it correctly. Also I put a section at the end of the 8.2 standards that has the pacing guide, interdisciplinary, 21st century etc. but has to be filled out for what you use. Only doing this once for all of 8.2 standards grades 3-5.
Assigned to Rachel Van Hazinga

Grades 3 - 5 Educational Technology Technology, Operations and Concepts

Desired Outcomes

A. *Students demonstrate a sound understanding of technology concepts, systems and operations.*

Enduring Understandings

- Understand and use technology systems.
- Select and use applications effectively and productively.

Essential Questions

- How can we understand and use technology systems?
- How do we select and use applications effectively and productively?

Learners will know...

- How to identify the basic features of a digital device and explain its purpose.
- How to create a document using a word processing application.
- How to compare the common uses of at least two different digital applications and identify the advantages and disadvantages of using each.
- How to demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- How to enter information into a spreadsheet and sort the information.
- How to identify the structure and components of a database.
- How to enter information into a database or spreadsheet and filter the information.

Learners will be able to....

- 8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- 8.1.5.A.2** Format a document using a word processing application to enhance text and include graphics, symbols and/ or pictures.
- 8.1.5.A.3** Use a graphic organizer to organize information about problem or issue.
- 8.1.5.A.4** Graph data using a spreadsheet, analyze and produce a report that explains the analysis of the data.
- 8.1.5.A.5** Create and use a database to answer basic questions.
- 8.1.5.A.6** Export data from a database into a spreadsheet; analyze and produce a report that explains the analysis of the data.

Assessment Evidence

Summative:

ePortfolios
Project Presentations
Computed based pre and post tests

Formative:

Daily Journals
Quick Checks
Project Specific Rubrics
Exit Slips
Student Self-Assessment
Peer review
Pre-Assessments

Alternative Assessment:

Class Discussion
Teacher Observation
Class Participation
ePortfolios

Suggested Learning Plan

With one 44-minute period per week in approximately 40 school weeks, each student will complete 4 Learning Launchers or Lift-off challenges per year.

OR

Students come to the lab 3 days a week for a 60 day cycle and then rotate to other related arts classes.

The structure of the daily lesson will be in the format of a 44-minute period.

- 10 minutes – Do/Now summary and whole group instruction
- 30 minutes – Independent work with teacher monitoring and guidance
- 4 minutes – Wrap up/review

List of Core Instructional and Supplemental Materials

SeeSaw
Brain Pop
Typing Club
Google Apps
Common Sense Education
Scratch
Code.org
E-Pals
Google Hangouts

Deal School Curriculum

Grades 3 - 5 Educational Technology Creativity and Innovation

Desired Outcomes

B. Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.

Enduring Understandings

Apply existing knowledge to generate new ideas, products, or processes.

Create original works as a means of personal or group expression.

Essential Questions

How can we apply existing knowledge to generate new ideas, products, or processes?

How can we create original works as a means of personal or group expression?

Learners will know...

How to collaborate to produce a digital story about a significant local event or issue based on first-person interviews.

Learners will be able to....

8.1.5.B.1 Collaborate to produce a digital story about a significant local event or issue based on first-person interviews.

Assessment Evidence

Summative:

ePortfolios
Project Presentations
Computed based pre and post tests

Formative:

Daily Journals
Quick Checks
Project Specific Rubrics
Exit Slips
Student Self-Assessment
Peer review
Pre-Assessments

Alternative Assessment:

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Teacher Observation
Class Participation
ePortfolios

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Typing Club
Google Apps
Common Sense Education
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Code.org
E-Pals
Google Hangouts

Deal School Curriculum

Grades 3 - 5 Educational Technology

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Communication and Collaboration

Desired Outcomes

C. Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

Enduring Understandings

Essential Questions

<ul style="list-style-type: none"> ● Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media. ● Communicate information and ideas to multiple audiences using a variety of media and formats. ● Develop cultural understanding and global awareness by engaging with learners of other cultures. ● Contribute to project teams to produce original works or solve problems. 	<ul style="list-style-type: none"> ● How can we interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media? ● How can we communicate information and ideas to multiple audiences using a variety of media and formats? ● How can we develop cultural understanding and global awareness by engaging with learners of other cultures? ● How can we contribute to project teams to produce original works or solve problems?
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Learners will know ...	Learners will be able to....
<ul style="list-style-type: none"> ● How to engage in online discussions with learners of other cultures to investigate a worldwide issue from multiple perspectives and sources, evaluate findings and present possible solutions, using digital tools and online resources for all steps. 	8.1.5.C.1 - Engage in online discussions with learners of other cultures to investigate a worldwide issue from multiple perspectives and sources, evaluate findings and present possible solutions, using digital tools and online resources for all steps

Assessment Evidence

<p>Summative: ePortfolios Project Presentations Computed based pre and post tests</p> <p>Formative: Daily Journals Quick Checks Project Specific Rubrics Exit Slips Student Self-Assessment Peer review Pre-Assessments</p> <p>Alternative Assessment: Class Discussion Teacher Observation Class Participation ePortfolios</p>
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List of Core Instructional and Supplemental Materials

SeeSaw
Brain Pop
Typing Club
Google Apps
Common Sense Education
Scratch
Code.org
E-Pals
Google Hangouts

Deal School Curriculum

**Grades 3 - 5 Educational Technology
Digital Citizenship**

Desired Outcomes

Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.

Enduring Understandings	Essential Questions
<ul style="list-style-type: none"> ● Advocate and practice safe, legal, and responsible use of information and technology. ● Demonstrate personal responsibility for lifelong learning. ● Exhibit leadership for digital citizenship. 	<ul style="list-style-type: none"> ● How can we advocate and practice safe, legal, and responsible use of information and technology? ● How can we demonstrate personal responsibility for lifelong learning? ● How can we exhibit leadership for digital citizenship?

Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> ● The importance/need for and use of copyrights. ● How to analyze the resource citations in online materials for proper use. ● How to demonstrate an understanding of the need to practice cyber safety, cyber security, and cyber ethics when using technologies and social media. ● The importance of digital citizenship and the ability to demonstrate an understanding of the personal consequences of inappropriate use of technology and social media. 	<p>8.1.5.D.1 Understand the need for and use of copyrights.</p> <p>8.1.5.D.2 - Analyze the resource citations in online materials for proper use.</p> <p>8.1.5.D.3 - Demonstrate an understanding of the need to practice cyber safety, cyber security, and cyber ethics when using technologies and social media.</p> <p>8.1.5.D.4 - Understand digital citizenship and demonstrate an understanding of the personal consequences of inappropriate use of technology and social media.</p>

Assessment Evidence

Summative:

ePortfolios
 Project Presentations
 Computed based pre and post tests

Formative:

Daily Journals
 Quick Checks
 Project Specific Rubrics
 Exit Slips
 Student Self-Assessment
 Peer review
 Pre-Assessments

Alternative Assessment:

Class Discussion
 Teacher Observation
 Class Participation
 ePortfolios

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List of Core Instructional and Supplemental Materials

SeeSaw
 Brain Pop
 Typing Club
 Google Apps
 Common Sense Education
 Scratch
 Code.org
 E-Pals
 Google Hangouts
 Google Be Internet Awesome

Deal School Curriculum

Grades 3 - 5 Educational Technology Research and Information Literacy

Desired Outcomes

E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.

Enduring Understandings	Essential Questions
<ul style="list-style-type: none"> ● Plan strategies to guide inquiry. ● Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. ● Evaluate and select information sources and digital tools based on the appropriateness for specific tasks. 	<ul style="list-style-type: none"> ● How can we plan strategies to guide inquiry? ● How to locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media? ● How to evaluate and select information sources and digital tools based on the appropriateness for specific tasks?
Learners will know...	Learners will be able to....

- How to use digital tools to research and evaluate the accuracy of, relevance to, and appropriateness of using print and non-print electronic information sources to complete a variety of tasks.

8.1.5.E.1 - Use digital tools to research and evaluate the accuracy of, relevance to, and appropriateness of using print and non-print electronic information sources to complete a variety of tasks.

Assessment Evidence

Summative:

ePortfolios
 Project Presentations
 Computed based pre and post tests

Formative:

Daily Journals
 Quick Checks
 Project Specific Rubrics
 Exit Slips
 Student Self-Assessment
 Peer review
 Pre-Assessments

Alternative Assessment:

Class Discussion
 Teacher Observation
 Class Participation
 ePortfolios

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List of Core Instructional and Supplemental Materials

SeeSaw
 Brain Pop
 Typing Club
 Google Apps
 Common Sense Education
 Scratch
 Code.org
 E-Pals
 Google Hangouts

Deal School Curriculum

Grades 3 - 5 Educational Technology

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Desired Outcomes

F. Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Enduring Understandings

- Identify and define authentic problems and significant questions for investigation.
- Plan and manage activities to develop a solution or complete a project.
- Collect and analyze data to identify solutions and/or make informed decisions.
- Use multiple processes and diverse perspectives to explore alternative solutions

Essential Questions

- How can we identify and define authentic problems and significant questions for investigation?
- How can we plan and manage activities to develop a solution or complete a project?
- How can we collect and analyze data to identify solutions and/or make informed decisions?
- How can we use multiple processes and diverse perspectives to explore alternative solutions?

Learners will know...

- Digital tools are used to collect, organize, and analyze data that support a scientific finding.

Learners will be able to....

8.1.5.F.1 - Apply digital tools to collect, organize, and analyze data that support a scientific finding.

Assessment Evidence

Summative:

ePortfolios
Project Presentations
Computed based pre and post tests

Formative:

Daily Journals
Quick Checks
Project Specific Rubrics
Exit Slips
Student Self-Assessment
Peer review
Pre-Assessments

Alternative Assessment:

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Teacher Observation
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ePortfolios

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List of Core Instructional and Supplemental Materials

SeeSaw
Brain Pop
Typing Club
Google Apps
Common Sense Education
Scratch
Code.org
E-Pals

Google Hangouts

Pacing Guide

[Grades 3 and 4](#)

[Grade 5](#)

21st CENTURY LIFE AND CAREERS

Career Awareness, Exploration and Preparation

9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.

9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.

9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Career Education

CRP1, CRP2, CRP3, CRP4, CRP5, CRP6,
CRP7, CRP8, CRP9, CRP10, CRP11, CRP12
[Career Ready Practices](#)

Accommodations and Modifications

Gifted and Talented

- Provide appropriate challenge for wide ranging skills and development areas.
- Participate in inquiry and project-based learning units of study.

English Language Learners

- Pair visual prompts with verbal presentations
- Provide students with visual models, sentence stems, concrete objects, and hands on materials.

Students with IEPs/504

- Review student individual educational plan and/or 504 plan
- Establish procedures for accommodations and modifications for assessments as per IEP/504

- Modify classroom environment to support academic and physical needs of the students as per IEP/504

At Risk Learners

- Differentiated instruction
- Basic Skills
- Provide instructional interventions in the general education classroom

Interdisciplinary Connections/Cross Curricular Opportunities

3.9.K.1.NJSLSA.L1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
3.9.K.1.NJSLSA.L2	Demonstrate command of the conventions of standard English capitalization punctuation and spelling when writing.
3.7.K.1.NJSLSA.SL1	Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others ideas and expressing their own clearly and persuasively.
3.7.K.2.NJSLSA.SL5	Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
3.5.K.2.NJSLSA.W6	Use technology including the Internet to produce and publish writing and to interact and collaborate with others.
6.1.4.B.3	Explain how and when it is important to use digital geographic tools, political maps, and globes to measure distances and to determine time zones and locations using latitude and longitude.

Integration of Technology

Students will use ipads and/or laptops during class.

Deal School Curriculum

STEAM Enduring Understandings

- What does it mean to be creative?
- What can our imagination be used for?
- How can our imagination be used to solve a problem?

<p>What does it mean to be innovative? How can we come up with new ideas to solve a problem?</p>	
<p>STEAM Essential Questions</p>	
<p>What does it mean to be a problem- solver? What can we learn from our mistakes? What must you know about a problem before you can develop a solution? How can making mistakes be an important part of learning? Why is it important to know the resources you have to solve a problem? What are some advantages to planning before starting a project?</p>	
<p>Grades 3 - 5</p> <p>8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</p>	
<p>Desired Outcomes</p>	
<p>A. The Nature of Technology: Creativity and Innovation <i>Technology systems impact every aspect of the world in which we live.</i></p>	
<p>Enduring Understandings</p>	<p>Essential Questions</p>
<p>The characteristics and scope of technology.</p> <p>The core concepts of technology.</p> <p>The relationships among technologies and the connections between technology and other fields of study.</p>	<p>What are the characteristics and scope of technology?</p> <p>What are the core concepts of technology?</p> <p>What are the relationships among technologies and the connections between technology</p>
<p>Learners will know...</p>	<p>Learners will be able to....</p>
<p>How to compare and contrast how products made in nature differ from products that are human made in how they are produced and used.</p> <p>How to investigate and present factors that influence the development and function of a product and a system.</p> <p>How to investigate and present factors that influence the development and function of</p>	<p>8.2.5.A.1 Compare and contrast how products made in nature differ from products that are human made in how they are produced and used.</p> <p>8.2.5.A.2 Investigate and present factors that influence the development and function of a product and a system.</p> <p>8.2.5.A.3 Investigate and present factors that influence the development and function of products and systems, e.g., resources, criteria and constraints.</p>

<p>products and systems, e.g., resources, criteria and constraints.</p> <p>How to compare and contrast how technologies have changed over time due to human needs and economic, political and/or cultural influences.</p> <p>Identify how improvement in the understanding of materials science impacts technologies.</p>	<p>8.2.5.A.4 Compare and contrast how technologies have changed over time due to human needs and economic, political and/or cultural influences.</p> <p>8.2.5.A.5 Identify how improvement in the understanding of materials science impacts technologies.</p>
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Assessment Evidence

Summative:

ePortfolios
 Project Presentations
 Computed based pre and post tests

Formative:

Daily Journals
 Quick Checks
 Project Specific Rubrics
 Exit Slips
 Student Self-Assessment
 Peer review
 Pre-Assessments

Alternative Assessment:

Class Discussion
 Teacher Observation
 Class Participation
 ePortfolios

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- 30 minutes – Independent work with teacher monitoring and guidance
- 4 minutes – Wrap up/review

List of Core Instructional and Supplemental Materials

Creative Learning Systems Learning Launchers
 Seesaw
 Google APPS
 Google Sketchup
 Google Earth

Brain Pop Code.org Scratch Lego Mindstorms iPads Digital cameras

Deal School Curriculum

Grades 3 - 5

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Desired Outcomes

B. Technology and Society: *Knowledge and understanding of human, cultural and societal values are fundamental when designing technological systems and products in the global society.*

Enduring Understandings	Essential Questions
<ul style="list-style-type: none"> ● The cultural, social, economic and political effects of technology. ● The effects of technology on the environment. ● The role of society in the development and use of technology. ● The influence of technology on history. 	<ul style="list-style-type: none"> ● What are the cultural, social, economic, and political effects of technology? ● What are the effects of technology on the environment? ● What is the role of society in the development and use of technology? ● What is the influence of technology on history?

Learners will know...	Learners will be able to....
How to examine ethical considerations in the development and production of a product through its life cycle.	8.2.5.B.1 Examine ethical considerations in the development and production of a product through its life cycle.
How to examine systems used for recycling and recommend simplification of the systems and share with product developers.	8.2.5.B.2 Examine systems used for recycling and recommend simplification of the systems and share with product developers.
How to investigate ways that various technologies are being developed and used to reduce improper	8.2.5.B.3 Investigate ways that various

<p>use of resources.</p> <p>How to research technologies that have changed due to society's changing needs and wants.</p> <p>How to explain the purpose of intellectual property law.</p> <p>How to compare and discuss how technologies have influenced history in the past century.</p>	<p>technologies are being developed and used to reduce improper use of resources.</p> <p>8.2.5.B.4 Research technologies that have changed due to society's changing needs and wants.</p> <p>8.2.5.B.5 Explain the purpose of intellectual property law.</p> <p>8.2.5.B.6 Compare and discuss how technologies have influenced history in the past century.</p>
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Assessment Evidence

Summative:
 ePortfolios
 Project Presentations
 Computed based pre and post tests

Formative:
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Alternative Assessment:
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- 4 minutes – Wrap up/review

List of Core Instructional and Supplemental Materials

Creative Learning Systems Learning Launchers

Seesaw

Google APPS

Google Sketchup

Google Earth

Brain Pop

Code.org

Scratch

Lego Mindstorms

iPads

Digital cameras

Deal School Curriculum

Grades 3 - 5

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Desired Outcomes

C. Design: *The design process is a systematic approach to solving problems.*

Enduring Understandings	Essential Questions
The attributes of design.	What are the attributes of design?
The application of engineering design.	In what way can we apply engineering design?
The role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.	What is the role of troubleshooting research and development, invention and innovation and experimentation in problem solving? What are the benefits of the design process? How does the design process help with technology learning and creation?
Learners will know...	Learners will be able to....
How to collaborate with peers to illustrate components of a designed system.	8.2.5.C.1 Collaborate with peers to illustrate components of a designed system.
How to explain how specifications and limitations	8.2.5.C.2 Explain how specifications and

<p>can be used to direct a product's development.</p> <p>How to research how design modifications have lead to new products.</p> <p>How to collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.</p> <p>How to explain the functions of a system and subsystems.</p> <p>How to examine a malfunctioning tool and identify the process to troubleshoot and present options to repair the tool.</p> <p>How to work with peers to redesign an existing product for a different purpose.</p>	<p>limitations can be used to direct a product's development.</p> <p>8.2.5.C.3 Research how design modifications have lead to new products.</p> <p>8.2.5.C.4 Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.</p> <p>8.2.5.C.5 Explain the functions of a system and subsystems.</p> <p>8.2.5.C.6 Examine a malfunctioning tool and identify the process to troubleshoot and present options to repair the tool.</p> <p>8.2.5.C.7 Work with peers to redesign an existing product for a different purpose.</p>
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Assessment Evidence

Summative:

- ePortfolios
- Project Presentations
- Computed based pre and post tests

Formative:

- Daily Journals
- Quick Checks
- Project Specific Rubrics
- Exit Slips
- Student Self-Assessment
- Peer review
- Pre-Assessments

Alternative Assessment:

- Class Discussion
- Teacher Observation
- Class Participation
- ePortfolios

Suggested Learning Plan

The structure of the daily lesson will be in the format of a 44 minute period.

- 10 minutes – Do/Now summary and whole group instruction
- 30 minutes – Independent work with teacher monitoring and guidance
- 4 minutes – Wrap up/review

List of Core Instructional and Supplemental Materials

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 Digital cameras

Deal School Curriculum

Grades 3 - 5
 Technology Education, Engineering, and Design
 Research and Information Fluency

Desired Outcomes

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

D. Abilities for a Technological World: *The designed world is the product of a design process that provides the means to convert resources into products and systems.*

Enduring Understandings

Applying the design process.

Using and maintaining technological products and systems.

Assessing the impact of products and systems.

Essential Questions

How can we apply the design process?

How do we use and maintain technological products and systems?

How do we assess the impact of products and systems?

	How do resources help us learn, design, and create technology?
Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> • How to identify and collect information about a problem that can be solved by technology, generate ideas to solve the problem, and identify constraints and trade-offs to be considered. • How to evaluate and test alternative solutions to a problem using the constraints and trade-offs identified in the design process to evaluate potential solutions. • How to follow step by step directions to assemble a product or solve a problem. • How to explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved. • How to describe how resources such as material, energy, information, time, tools, people and capital are used in products or systems. • How to explain the positive and negative effect of products and systems on humans, other species and the environment, and when the product or system should be used. • How to explain the impact that resources such as energy and materials used in a process to produce products or system have on the environment. 	<p>8.2.5.D.1 Identify and collect information about a problem that can be solved by technology, generate ideas to solve the problem, and identify constraints and trade-offs to be considered.</p> <p>8.2.5.D.2 Evaluate and test alternative solutions to a problem using the constraints and trade-offs identified in the design process to evaluate potential solutions.</p> <p>8.2.5.D.3 Follow step by step directions to assemble a product or solve a problem.</p> <p>8.2.5.D.4 Explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved.</p> <p>8.2.5.D.5 Describe how resources such as material, energy, information, time, tools, people and capital are used in products or systems.</p> <p>8.2.5.D.6 Explain the positive and negative effect of products and systems on humans, other species and the environment, and when the product or system should be used.</p> <p>8.2.5.D.7 Explain the impact that resources such as energy and materials used in a process to produce products or system have on the environment.</p>
Assessment Evidence	
<p>Summative: ePortfolios Project Presentations Computed based pre and post tests</p> <p>Formative: Daily Journals Quick Checks</p>	

Project Specific Rubrics
Exit Slips
Student Self-Assessment
Peer review
Pre-Assessments

Alternative Assessment:

Class Discussion
Teacher Observation
Class Participation
ePortfolios

Suggested Learning Plan

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Google APPS
Google Sketchup
Google Earth
Brain Pop
Code.org
Scratch
Lego Mindstorms
iPads
Digital cameras

Deal School Curriculum

Grades 3 - 5

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:
All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Desired Outcomes

E. Computational Thinking: Programming: *Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.*

Enduring Understandings	Essential Questions
How computational thinking and computer programming are used as tools used in design and engineering.	How are computational thinking and computer programming used as tools in design and engineering?
Learners will know...	Learners will be able to....
<p>Computer programming impacts our everyday lives.</p> <p>How computers take in data, processes/stores data, and outputs information.</p> <p>How to use a simple, visual programming language to create a program using loops, events, and procedures to generate specific output.</p> <p>How to use appropriate programming terms in conversation.</p>	<p>8.2.5.E.1 Identify how computer programming impacts our everyday lives.</p> <p>8.2.5.E.2 Demonstrate an understanding of how a computer takes input of data, processes and stores the data through a series of commands, and outputs information.</p> <p>8.2.5.E.3 Using a simple, visual programming language, create a program using loops, events and procedures to generate specific output.</p> <p>8.2.5.E.4 Use appropriate terms in conversation (e.g., algorithm, program, debug, loop, events, procedures, memory, storage, processing, software, coding, procedure, and data).</p>

Assessment Evidence

Summative:

- ePortfolios
- Project Presentations
- Computed based pre and post tests

Formative:

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List of Core Instructional and Supplemental Materials

Google Apps
Code Monkey
Scratch
Lightbot
Osmo
Code.org

Pacing Guide

[Grades 3 & 4 Pacing Guide - STEAM](#)
[Grades 5 & 6 Pacing Guide - STEAM](#)

21st CENTURY LIFE AND CAREERS

Career Awareness, Exploration and Preparation

9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.



Career Education

CRP1, CRP2, CRP3, CRP4, CRP5, CRP6,
CRP7, CRP8, CRP9, CRP10, CRP11, CRP12
[Career Ready Practices](#)

Accommodations and Modifications

Gifted and Talented

- Provide appropriate challenge for wide ranging skills and development areas.
- Participate in inquiry and project-based learning units of study.

English Language Learners

- Pair visual prompts with verbal presentations
- Provide students with visual models, sentence stems, concrete objects, and hands on materials.

Students with IEPs/504

- Review student individual educational plan and/or 504 plan
- Establish procedures for accommodations and modifications for assessments as per IEP/504
- Modify classroom environment to support academic and physical needs of the students as per IEP/504

At Risk Learners:

- Differentiated instruction
- Basic Skills
- Provide instructional interventions in the general education classroom

Interdisciplinary Connections/Cross Curricular Opportunities

ELA/Literacy

WHST.6-8.4. Produce clear and coherent writing in which the development, organization, voice, and style are appropriate to task, purpose, and audience.

WHST.6-8.10. Write routinely over extended time frames (time for research, reflection, metacognition/self correlation, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

RST.6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

RST.6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

NJSLSA.SL3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

NJSLSA.SL4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

3.9.K.1.NJSLSA.L1

Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

3.9.K.1.NJSLSA.L2

Demonstrate command of the conventions of standard English capitalization punctuation and spelling when writing.

3.7.K.1.NJSLSA.SL1

Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others ideas and expressing their own clearly and persuasively.

3.7.K.2.NJSLSA.SL5

Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

3.5.K.2.NJSLSA.W6

Use technology including the Internet to produce and publish writing and to interact and collaborate with others.

6.1.4.B.3

Explain how and when it is important to use digital geographic tools, political maps, and globes to measure distances and to determine time zones and locations using latitude and longitude.

Science Connections	Mathematics
<p>Engineering Design</p> <p>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.</p> <p>3-5-ETS1-2. Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.</p> <p>3-5-ETS1-3. 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.</p> <p>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.</p> <p>MS-ETS1-2. Evaluate competing design solution using a systematic process to determine how well they meet the criteria and constraints of the problem.</p> <p>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.</p> <p>MS-ETS1-4. Develop a model to generate data to test ideas about designed systems, including those representing inputs and outputs.</p> <p>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.</p> <p>3-5-ETS1-2 Generate and compare multiple</p>	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.</p> <p>8.G.A.1. Verify experimentally the properties of rotations, reflections, and translations:</p> <p>8.G.A.2. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.</p> <p>8.G.A.3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.</p> <p>8.G.A.4. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.</p> <p>8.G.B.2. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.</p> <p>8.G.B.3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.</p> <p>8.G.B.4. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that</p>

solutions to a problem based on how well they meet the criteria and constraints of the design problem.
to a problem based on how well each is likely to meet the criteria and constraints of the problem.
3-5-ETS1-3 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.

exhibits the similarity between them.
8.G.C.9. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Integration of Technology

Students will use ipads and/or laptops during class.

Additional Tech Resources/ Learning Launcher Categories:

Circuitry

MaKey MaKey

Snap Circuits - Electricity and Electronics

Computer Graphics

Doodle 4 Google

Illustrator

Photoshop

Photoshop Elements

Punch Home Design Suite

SketchUp - 3D Modeling

Tinkercad

Digital Communications

ACID Music Studio - Sound Engineering

CrazyTalk

CrazyTalk Animator

Frames - Stop Motion Animation

GarageBand - Sound Engineering

Google Arts & Culture

Google Sites

PowerPoint

STEM Career Exploration

Storyboarding

Video Production

Express Challenges

Digital Communications

Mechanics and Structures

Scientific Data and Analysis

Software Engineering

Liftoff Challenges

Orientation

Circuitry

Computer Graphics

Digital Communications

Mechanics and Structures

Robotics and Control Technology

Scientific Data and Analysis

Software Engineering

Sustainability

Mechanics and Structures

Bridge Designer

fischertechnik Mechanic + Static

fischertechnik Mechanic + Static 2

K'Nex

Zometool

Orientation

Online ePortfolio

Orientation Collection

Robotics and Control Technology

Lego Mindstorms EV3 Robotics

Scientific Data and Analysis

ArcGIS Online - Geographic Information Systems

Astronomy with MicroObservatory

Extreme Weather and Monster Storms

Geographic Information Systems (GIS) - GIS Websites

Google Earth

Lasers

Vernier Scientific Sensors

Vernier Structures Tester

Software Engineering

Scratch v2 - Computer Programming

Stencyl - Game Design

TouchDevelop

Sustainability

Hydrogen Fuel Cells

Introduction to Alternative Energy and Other Topics

Solar Energy

Deal School Curriculum	
Grade 6 - 8 Educational Technology Technology, Operations and Concepts	
Desired Outcomes	
A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.	
Enduring Understandings	Essential Questions
<ul style="list-style-type: none"> • Understand and use technology systems. • Select and use applications effectively and productively. 	<ul style="list-style-type: none"> • In what ways does technology make life easier? • How do the basic operations help me use technology more efficiently?
Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> • Professional documents can be created using advanced features of a word processing program. • One can plan and create a simple database, define fields, input data, and produce a report using sort and query. • A multimedia presentation can be created including sound and images. • One can generate a spreadsheet to calculate, graph, and present information. • To accomplish a variety of tasks and to solve problems select and use appropriate tools and digital resources. 	<p>8.1.8.A.1- Demonstrate knowledge of a real world problem using digital tools.</p> <p>8.1.8.A.2 - Create a document (e.g. newsletter, reports, personalized learning plan, business letters or flyers) using one or more digital applications to be critiqued by professionals for usability.</p> <p>8.1.8.A.3 - Use and/or develop a simulation that provides an environment to solve a real world problem or theory.</p> <p>8.1.8.A.4 - Graph and calculate data within a spreadsheet and present a summary of the results</p> <p>8.1.8.A.5 - Create a database query, sort and create a report and describe the process, and explain the report results.</p>
Assessment Evidence	
<p>Summative: ePortfolios Project Presentations Computed based pre and post tests</p> <p>Formative: Daily Journals Quick Checks Project Specific Rubrics Exit Slips</p>	

Student Self-Assessment
Peer review
Pre-Assessments

Alternative Assessment:

Class Discussion
Teacher Observation
Class Participation
ePortfolios

Suggested Learning Plan

With one 44-minute period per week in approximately 40 school weeks, each student will complete 4 Learning Launchers or Lift-off challenges per year.

OR

Students come to the lab 3 times a week for a 60 day cycle period and then rotate to other subjects or elective classes.

The structure of the daily lesson will be in the format of a 44-minute period.

- 10 minutes – Do/Now summary and whole group instruction
- 30 minutes – Independent work with teacher monitoring and guidance
- 4 minutes – Wrap up/review

Suggested Learning Resources

SeeSaw
Brain Pop
Typing Club
Google Apps
Common Sense Education
Scratch
Code.org
Google Hangouts

Deal School Curriculum

**Grade 6 - 8 Educational Technology
Creativity and Innovation**

Desired Outcomes

B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology

Enduring Understandings

Apply existing knowledge to generate new ideas, products, or processes.

Essential Questions

- Why do humans create innovations and advancements in

Create original works as a means of personal or group expression.	<p>technology?</p> <ul style="list-style-type: none"> • What encourages innovation and technology? • How does innovation and technological change influence our lives?
Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> • To synthesize and publish information about a local or global issue or event on a collaborative, web-based service (also known as a shared hosted service). 	8.1.8.B.1 - Synthesize and publish information about a local or global issue or event (ex. telecollaborative project, blog, school web).

Assessment Evidence

<p>Summative: ePortfolios Project Presentations Computed based pre and post tests</p> <p>Formative: Daily Journals Quick Checks Project Specific Rubrics Exit Slips Student Self-Assessment Peer review Pre-Assessments</p> <p>Alternative Assessment: Class Discussion Teacher Observation Class Participation ePortfolios</p>
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Suggested Learning Plan

<p>With one 44-minute period per week in approximately 40 school weeks, each student will complete 4 Learning Launchers or Lift-off challenges per year.</p> <p>OR</p> <p>Students come to the lab 3 times a week for a 60 day cycle period and then rotate to other subjects or elective classes.</p> <p>The structure of the daily lesson will be in the format of a 44-minute period.</p> <ul style="list-style-type: none"> • 10 minutes - Do/Now summary and whole group instruction
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- 30 minutes – Independent work with teacher monitoring and guidance
- 4 minutes – Wrap up/review

Suggested Learning Resources

SeeSaw
 Brain Pop
 Typing Club
 Google Apps
 Common Sense Education
 Scratch
 Code.org
 E-Pals
 Google Hangouts

Deal School Curriculum

Grade 6 - 8 Educational Technology

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Communication and Collaboration

Desired Outcomes

C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

Enduring Understandings	Essential Questions
<ul style="list-style-type: none"> • Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media. • Communicate information and ideas to multiple audiences using a variety of media and formats. • Develop cultural understanding and global awareness by engaging with learners of other cultures. • Contribute to project teams to produce original works or solve problems. 	<ol style="list-style-type: none"> 1. How does technology connect people and civilizations? 2. In what ways does technology make life easier? 3. How can innovation help some and hurt others? 4. How does technology improve the human condition?
Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> • Participating in an online learning community with learners from 	8.1.8.C.1 - Collaborate to develop and publish work that provides perspectives

other countries helps to understand their perspectives on a global problem or issue, and propose possible solutions.	on a global problem for discussions with learners from other countries.
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Assessment Evidence

<p>Summative: ePortfolios Project Presentations Computed based pre and post tests</p> <p>Formative: Daily Journals Quick Checks Project Specific Rubrics Exit Slips Student Self-Assessment Peer review Pre-Assessments</p> <p>Alternative Assessment: Class Discussion Teacher Observation Class Participation ePortfolios</p>
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Suggested Learning Plan

<p>With one 44-minute period per week in approximately 40 school weeks, each student will complete 4 Learning Launchers or Lift-off challenges per year.</p> <p>OR</p> <p>Students come to the lab 3 times a week for a 60 day cycle period and then rotate to other subjects or elective classes.</p> <p>The structure of the daily lesson will be in the format of a 44-minute period.</p> <ul style="list-style-type: none"> ● 10 minutes – Do/Now summary and whole group instruction ● 30 minutes – Independent work with teacher monitoring and guidance ● 4 minutes – Wrap up/review
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Suggested Learning Resources

<p>SeeSaw Brain Pop Typing Club Google Apps Common Sense Education</p>
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Scratch
Code.org
E-Pals
Google Hangouts

Deal School Curriculum	
Grade 6 - 8 Educational Technology	
Digital Citizenship	
Desired Outcomes	
<i>D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.</i>	
Enduring Understandings	Essential Questions
<p>Advocate and practice safe, legal, and responsible use of information and technology.</p> <p>Demonstrate personal responsibility for lifelong learning.</p> <p>Exhibit leadership for digital citizenship.</p>	<p>How is survival dependent on innovation/technology?</p> <p>What are the responsibilities of a good digital citizen?</p>
Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> ● Members of the global community need to practice cyber safety, cyber security, and cyber ethics when using existing and emerging technologies. ● Creative Commons guidelines are needed and used to protect digital content. ● Information on a controversial issue may be biased. 	<p>8.1.8.D.1 Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media.</p> <p>8.1.8.D.2 Demonstrate the application of appropriate citations to digital content.</p> <p>8.1.8.D.3 Demonstrate an understanding of fair use and Creative Commons to intellectual property.</p> <p>8.1.8.D.4 Assess the credibility and accuracy of digital content.</p> <p>8.1.8.D.5 Understand appropriate</p>

uses for social media and the negative consequences of misuse.

Assessment Evidence

Summative:

ePortfolios
Project Presentations
Computed based pre and post tests

Formative:

Daily Journals
Quick Checks
Project Specific Rubrics
Exit Slips
Student Self-Assessment
Peer review
Pre-Assessments

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ePortfolios

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Suggested Learning Resources

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Brain Pop
Typing Club
Google Apps
Common Sense Education
Scratch
Code.org

Grade 6 - 8 Educational Technology Research and Information Literacy

Desired Outcomes

E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.

Enduring Understandings

- Plan strategies to guide inquiry.
- Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
- Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.
- Process data and report results.

Essential Questions

- In what ways does technology make life easier?
- How do the basic operations help me use technology more efficiently?
- How should technology be used?
- When can you expect technology to be effective?

Learners will know...

- To produce a possible solution for a content-related or real-world problem gather and analyze findings using [data collection technology](#).

Learners will be able to....

8.1.8.E.1 - Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem.

Assessment Evidence

Summative:

ePortfolios
Project Presentations
Computed based pre and post tests

Formative:

Daily Journals
Quick Checks
Project Specific Rubrics
Exit Slips
Student Self-Assessment
Peer review
Pre-Assessments

Alternative Assessment:

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 Scratch
 Code.org
 Google Hangouts

Deal School Curriculum

Grade 6 - 8 Educational Technology

Critical Thinking, Problem Solving, and Decision Making

Desired Outcomes

F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Enduring Understandings

- Identify and define authentic problems and significant questions for investigation.
- Plan and manage activities to develop a solution or complete a

Essential Questions

- How does technology change thinking?
- How does technology affect artistic achievement?
- In what ways does technology make life easier?

<ul style="list-style-type: none"> project. ● Collect and analyze data to identify solutions and/or make informed decisions. ● Use multiple processes and diverse perspectives to explore alternative solutions. 	<ul style="list-style-type: none"> ● How does innovation and technological change influence our lives?
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Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> ● An electronic authoring tool is used in collaboration with learners from other countries to evaluate and summarize the perspectives of other cultures about a current event or contemporary figure. 	8.1.8.F.1 - Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.

Assessment Evidence

<p>Summative: ePortfolios Project Presentations Computed based pre and post tests</p> <p>Formative: Daily Journals Quick Checks Project Specific Rubrics Exit Slips Student Self-Assessment Peer review Pre-Assessments</p> <p>Alternative Assessment: Class Discussion Teacher Observation Class Participation ePortfolios</p>
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Suggested Learning Plan

With one 44-minute period per week in approximately 40 school weeks, each student will complete 4 Learning Launchers or Lift-off challenges per year.

OR

Students come to the lab 3 times a week for a 60 day cycle period and then rotate to other subjects or elective classes.

The structure of the daily lesson will be in the format of a 44-minute period.

- 10 minutes – Do/Now summary and whole group instruction
- 30 minutes – Independent work with teacher monitoring and guidance
- 4 minutes – Wrap up/review

Suggested Learning Resources

SeeSaw
 Brain Pop
 Typing Club
 Google Apps
 Common Sense Education
 Scratch
 Code.org
 E-Pals
 Google Hangouts
 Tinkercad
 Google Sketchup

Pacing Guide

[Grade 6](#)

[Grades 7 & 8](#)

21st CENTURY LIFE AND CAREERS

Career Awareness, Exploration and Preparation

9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Career Education

CRP1, CRP2, CRP3,
 CRP4, CRP5, CRP6,
 CRP7, CRP8, CRP9,
 CRP10, CRP11,
 CRP12

[Career Ready Practices](#)

Accommodations and Modifications

Gifted and Talented

- Provide appropriate challenge for wide ranging skills and development areas.
- Participate in inquiry and project-based learning units of study.

English Language Learners

- Pair visual prompts with verbal presentations
- Provide students with visual models, sentence stems, concrete objects, and hands on materials.

Students with IEPs/504

- Review student individual educational plan and/or 504 plan
- Establish procedures for accommodations and modifications for assessments as per IEP/504
- Modify classroom environment to support academic and physical needs of the students as per IEP/504

At Risk Learners

- Differentiated instruction
- Basic Skills
- Provide instructional interventions in the general education classroom

Interdisciplinary Connections/Cross Curricular Opportunities	
3.9.K.1.NJSLSA.L1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
3.9.K.1.NJSLSA.L2	Demonstrate command of the conventions of standard English capitalization punctuation and spelling when writing.
3.7.K.1.NJSLSA.SL1	Prepare for and participate effectively in a range of conversations and collaborations with diverse partners building on others ideas and expressing their own clearly and persuasively.
3.5.K.2.NJSLSA.W6	Use technology including the Internet to produce and publish writing and to interact and collaborate with others.
3.10.5.2.L.5.3	Use knowledge of language and its conventions when writing speaking reading or listening. A.Expand combine and reduce sentences for meaning reader listener interest and style. B.Compare and contrast the varieties of English (e.g. dialects registers) used in stories dramas or poems.
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.

1.3.8.A.4	Use media arts and technology in the creation and performance of short original choreographic compositions.
Integration of Technology	
Students will use ipads and/or laptops during class.	

<h2>Deal School Curriculum</h2>	
<h3>STEAM Enduring Understandings</h3>	
<p>What does it mean to be creative? What can our imagination be used for? How can our imagination be used to solve a problem? What does it mean to be innovative? How can we come up with new ideas to solve a problem?</p>	
<h3>STEAM Essential Questions</h3>	
<p>What does it mean to be a problem- solver? What can we learn from our mistakes? What must you know about a problem before you can develop a solution? How can making mistakes be an important part of learning? Why is it important to know the resources you have to solve a problem? What are some advantages to planning before starting a project?</p>	
<p>Grade 6 - 8 Technology Education, Engineering, and Design Communication and Collaboration</p>	
<p>8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</p>	
Desired Outcomes	
<p>A. The Nature of Technology: Creativity and Innovation Technology systems impact every aspect of the world in which we live.</p>	
Enduring Understandings	Essential Questions
<ul style="list-style-type: none"> ● The characteristics and scope of technology. ● The core concepts of technology. ● The relationships among technologies and the connections between technology and other fields of study. 	<ul style="list-style-type: none"> ● How does technology connect people and civilizations? ● In what ways does technology make life easier? ● How can innovation help some and hurt others? ● How does technology improve the human condition?
Learners will know...	Learners will be able to....

<ul style="list-style-type: none"> • Products are designed for specific demands and change over time. • Systems are composed of related parts and can be redesigned for improvement. • Systems can fail and have lasting impacts. • Products can be redesigned for a greener society. • Technological products and systems are affected by different resources. 	<p>8.2.8.A.1 Research a product that was designed for a specific demand and identify how the product has changed to meet new demands (i.e. telephone for communication - smart phone for mobility needs).</p> <p>8.2.8.A.2 Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system.</p> <p>8.2.8.A.3 Investigate a malfunction in any part of a system and identify its impacts.</p> <p>8.2.8.A.4 Redesign an existing product that impacts the environment to lessen its impact(s) on the environment.</p> <p>8.2.8.A.5 Describe how resources such as material, energy, information, time, tools, people, and capital contribute to a technological product or system.</p>
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Assessment Evidence

<p>Summative: ePortfolios Project Presentations Computed based pre and post tests</p> <p>Formative: Daily Journals Quick Checks Project Specific Rubrics Exit Slips Student Self-Assessment Peer review Pre-Assessments</p> <p>Alternative Assessment: Class Discussion Teacher Observation Class Participation ePortfolios</p>
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Suggested Learning Plan

The structure of the daily lesson will be in the format of a 44 minute period.

- 10 minutes – Do/Now summary and whole group instruction
- 30 minutes – Independent work with teacher monitoring and guidance
- 4 minutes – Wrap up/review

Suggested Learning Resources

Creative Learning Systems Learning Launchers
 Seesaw
 Google APPS
 Google Sketchup
 Google Earth
 Brain Pop
 Code.org
 Scratch
 Lego Mindstorms
 iPads
 Digital cameras
 Code.org

Deal School Curriculum

Grade 6 - 8

Technology Education, Engineering, and Design Design, Critical Thinking, Problem Solving, and Decision Making

Desired Outcomes

B. Technology and Society: Knowledge and understanding of human, cultural and societal values are fundamental when designing technological systems and products in the global society.

Enduring Understandings	Essential Questions
<ul style="list-style-type: none"> ● The cultural, social, economic and political effects of technology. ● The effects of technology on the environment. ● The role of society in the development and use of technology. ● The influence of technology on history 	<p>How does technology change thinking? How does technology affect artistic achievement? In what ways does technology make life easier? How does innovation and technological change influence our lives?</p>
Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> ● Using the design process and working with specific criteria and constraints it is possible to design 	<p>8.2.8.B.1 Evaluate the history and impact of sustainability on the development of a designed product or</p>

<p>and create a product that addresses a real-world problem.</p> <ul style="list-style-type: none"> • There are design constraints and trade-offs involved in designing a prototype. • Using science and math principles throughout the design process you can solve a science-based design challenge and build a prototype. 	<p>system over time and present results to peers.</p> <p>8.2.8.B.2 Identify the desired and undesired consequences from the use of a product or system.</p> <p>8.2.8.B.3 Research and analyze the ethical issues of a product or system on the environment and report findings for review by peers and /or experts.</p> <p>8.2.8.B.4 Research examples of how humans can devise technologies to reduce the negative consequences of other technologies and present your findings.</p> <p>8.2.8.B.5 Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries and societies.</p> <p>8.2.8.B.6 Compare and contrast the different types of intellectual property including copyrights, patents and trademarks.</p> <p>8.2.8.B.7 Analyze the historical impact of waste and demonstrate how a product is upcycled, reused or remanufactured into a new product.</p>
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Assessment Evidence

Summative:

ePortfolios
 Project Presentations
 Computed based pre and post tests

Formative:

Daily Journals
 Quick Checks
 Project Specific Rubrics
 Exit Slips
 Student Self-Assessment
 Peer review
 Pre-Assessments

Alternative Assessment:

Class Discussion
 Teacher Observation
 Class Participation

ePortfolios
Suggested Learning Plan
<p>The structure of the daily lesson will be in the format of a 44 minute period.</p> <ul style="list-style-type: none"> • 10 minutes – Do/Now summary and whole group instruction • 30 minutes – Independent work with teacher monitoring and guidance • 4 minutes – Wrap up/review
Suggested Learning Resources
<p>Creative Learning Systems Learning Launchers Seesaw Google APPS Google Sketchup Google Earth Brain Pop Code.org Scratch Lego Mindstorms iPads Digital cameras</p>

Deal School Curriculum	
Grade 6 - 8	
Technology Education, Engineering, and Design Technological Citizenship, Ethics, and Society	
Desired Outcomes	
C. Design: The design process is a systematic approach to solving problems.	
Enduring Understandings	Essential Questions
<ul style="list-style-type: none"> • The attributes of design. • The application of engineering design. • The role of troubleshooting, research and development, invention and innovation and experimentation in problem solving. 	<p>How is survival dependent on innovation/technology?</p> <p>What are the responsibilities of a good digital citizen?</p>
Learners will know...	Learners will be able to....
<ul style="list-style-type: none"> • Brainstorming can help in solving problems and building products. • Drawings are a tool for sharing information. • New products have a purpose. 	<p>8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product.</p> <p>8.2.2.C.2 Create a drawing of a product or device that communicates its function to peers and discuss.</p>

<ul style="list-style-type: none"> • Designed products can always be improved upon. • Toys and tools are composed of parts working together as a system. 	<p>8.2.2.C.3 Explain why we need to make new products.</p> <p>8.2.2.C.4 Identify designed products and brainstorm how to improve one used in the classroom.</p> <p>8.2.2.C.5 Describe how the parts of a common toy or tool interact and work as part of a system.</p>
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Assessment Evidence

Summative:

ePortfolios
 Project Presentations
 Computed based pre and post tests

Formative:

Daily Journals
 Quick Checks
 Project Specific Rubrics
 Exit Slips
 Student Self-Assessment
 Peer review
 Pre-Assessments

Alternative Assessment:

Class Discussion
 Teacher Observation
 Class Participation
 ePortfolios

Suggested Learning Plan

The structure of the daily lesson will be in the format of a 44 minute period.

- 10 minutes – Do/Now summary and whole group instruction
- 30 minutes – Independent work with teacher monitoring and guidance
- 4 minutes – Wrap up/review

Suggested Learning Resources

Creative Learning Systems Learning Launchers
 Seesaw
 Google APPS
 Google Sketchup
 Google Earth
 Brain Pop
 Code.org
 Scratch
 Lego Mindstorms

iPads
Digital cameras

Deal School Curriculum

Grade 6 - 8

Technology Education, Engineering, and Design Research and Information Fluency

Desired Outcomes

D. Abilities for a Technological World: The designed world is the product of a design process that provides the means to convert resources into products and systems.

Enduring Understandings

- Apply the design process
- Use and maintain technological products and systems.
- Assess the impact of products and systems.

Essential Questions

- How can we apply the design process?
- How do we use and maintain technological products and systems?
- How do we assess the impact of products and systems?

Learners will know...

- Designing and creating products for the real world uses a design process under specific constraints.
- There are design constraints and trade-offs involved in prototype design.
- Prototypes must meet criteria using science, engineering, and math principles.

Learners will be able to....

- 8.2.8.D.1** Design and create a product that addresses a real world problem using a design process under specific constraints.
- 8.2.8.D.2** Identify the design constraints and trade-offs involved in designing a prototype (e.g., how the prototype might fail and how it might be improved) by completing a design problem and reporting results in a multimedia presentation, design portfolio or engineering notebook.
- 8.2.8.D.3** Build a prototype that meets a STEM-based design challenge using science, engineering, and math principles that validate a solution.

Assessment Evidence

Summative:

ePortfolios
Project Presentations
Computed based pre and post tests

Formative:

Daily Journals
 Quick Checks
 Project Specific Rubrics
 Exit Slips
 Student Self-Assessment
 Peer review
 Pre-Assessments

Alternative Assessment:

Class Discussion
 Teacher Observation
 Class Participation
 ePortfolios

Suggested Learning Plan

The structure of the daily lesson will be in the format of a 44 minute period.

- 10 minutes – Do/Now summary and whole group instruction
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Suggested Learning Resources

Creative Learning Systems Learning Launchers
 Seesaw
 Google APPS
 Google Sketchup
 Google Earth
 Brain Pop
 Code.org
 Scratch
 Lego Mindstorms
 iPads
 Digital cameras

Deal School Curriculum**Grade 6 - 8**

**Technology Education, Engineering, and Design
 Technological Citizenship, Ethics, and Society**

Desired Outcomes

E. Computational Thinking: Programming: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

Enduring Understandings**Essential Questions**

<ul style="list-style-type: none"> • Computer programming and computational thinking has impacted society in many ways. • Computers are used as a tool to design and create. 	<ul style="list-style-type: none"> • How does computer programming and computational thinking affect human activity and career life? • How are computers impacting our society?
<p>Learners will know...</p>	<p>Learners will be able to....</p>
<ul style="list-style-type: none"> • Computational thinking and computer programming as tools used in design and engineering. 	<p>8.2.8.E.1 Identify ways computers are used that have had an impact across the range of human activity and within different careers where they are used.</p> <p>8.2.8.E.2 Demonstrate an understanding of the relationship between hardware and software.</p> <p>8.2.8.E.3 Develop an algorithm to solve an assigned problem using a specified set of commands and use peer review to critique the solution.</p> <p>8.2.8.E.4 Use appropriate terms in conversation (e.g., programming, language, data, RAM, ROM, Boolean logic terms)</p>
<p>Assessment Evidence</p>	
<p>Summative: ePortfolios Project Presentations Computed based pre and post tests</p> <p>Formative: Daily Journals Quick Checks Project Specific Rubrics Exit Slips Student Self-Assessment Peer review Pre-Assessments</p> <p>Alternative Assessment: Class Discussion Teacher Observation Class Participation ePortfolios</p>	
<p>Suggested Learning Plan</p>	
<p>The structure of the daily lesson will be in the format of a 44 minute period.</p>	

- 10 minutes – Do/Now summary and whole group instruction
- 30 minutes – Independent work with teacher monitoring and guidance
- 4 minutes – Wrap up/review

Suggested Learning Resources

Google Apps
 Google CS First
 Scratch
 Code.org

Pacing Guide

[Grades 5 & 6 Pacing Guide - STEAM](#)
[Grades 7 & 8 Pacing Guide - STEAM](#)
[Grade 8 Pacing Guide- STEAM](#)

21st CENTURY LIFE AND CAREERS

Personal Financial Literacy

9.1.8.A.2 Relate how career choices, education choices, skills, entrepreneurship, and economic conditions affect income.

9.1.8.A.3 Differentiate among ways that workers can improve earning power through the acquisition of new knowledge and skills.

Career Awareness, Exploration and Preparation

only GRADES 7/8

9.2.8.B.1 Research careers within the 16 Career Clusters® and determine attributes of career success.

9.2.8.B.3 Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

Career Education

CRP1, CRP2, CRP3, CRP4, CRP5, CRP6,
 CRP7, CRP8, CRP9, CRP10, CRP11, CRP12
[Career Ready Practices](#)

Accommodations and Modifications

Gifted and Talented

- Provide appropriate challenge for wide ranging skills and development areas.
- Participate in inquiry and project-based learning units of study.

English Language Learners

- Pair visual prompts with verbal presentations
- Provide students with visual models, sentence stems, concrete objects, and hands on materials.

Students with IEPs/504

- Review student individual educational plan and/or 504 plan
- Establish procedures for accommodations and modifications for assessments as per IEP/504
- Modify classroom environment to support academic and physical needs of the students as per IEP/504

At Risk Learners:

- Differentiated instruction
- Basic Skills
- Provide instructional interventions in the general education classroom

Interdisciplinary Connections/Cross Curricular Opportunities

ELA/Literacy -

WHST.6-8.1. Write arguments focused on discipline-specific content. A. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. B. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. C. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. D. Establish and maintain a formal/academic style, approach, and form. E. Provide a concluding statement or section that follows from and supports the argument presented.

WHST.6-8.2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. A. Introduce a topic and organize ideas, concepts, and information using text structures (e.g. definition, classification, comparison/contrast, cause/effect, etc.) and text features (e.g. headings, graphics, and multimedia) when useful to aiding comprehension. B. Develop the topic with relevant, well-chosen facts, definitions, concrete details,

Mathematics -

MP.2 Reason abstractly and quantitatively.
 MP.4 Model with mathematics.
 MP.5 Use appropriate tools strategically.

6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.

7.G.A.1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

7.G.A.2. Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

7.G.B.6. Solve real-world and mathematical problems involving area, volume and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

quotations, or other information and examples. C. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. D. Use precise language and domain-specific vocabulary to inform about or explain the topic. E. Establish and maintain a formal/academic style, approach, and form. F. Provide a concluding statement or section that follows from and supports the information or explanation presented.

WHST.6-8.4. Produce clear and coherent writing in which the development, organization, voice, and style are appropriate to task, purpose, and audience.

WHST.6-8.10. Write routinely over extended time frames (time for research, reflection, metacognition/self correlation, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

RST.6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

RST.6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

Science Connections

SCI.6-8.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. Evaluate competing design solution 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. Develop a model to generate data to test ideas about designed systems, including those representing inputs and outputs.
for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Integration of Technology

Students will use ipads and/or laptops during class.

Additional Tech Resources/ Learning Launcher Categories:

Circuitry

MaKey MaKey

Snap Circuits - Electricity and Electronics

Computer Graphics

Doodle 4 Google

Illustrator

Photoshop

Photoshop Elements

Punch Home Design Suite

SketchUp - 3D Modeling

Tinkercad

Digital Communications

ACID Music Studio - Sound Engineering

CrazyTalk

CrazyTalk Animator

Frames - Stop Motion Animation

GarageBand - Sound Engineering

Google Arts & Culture

Google Sites

PowerPoint

STEM Career Exploration

Storyboarding

Video Production

Express Challenges

Digital Communications

Mechanics and Structures

Scientific Data and Analysis

Software Engineering

Liftoff Challenges

Orientation

Circuitry

Computer Graphics

Digital Communications

Mechanics and Structures

Robotics and Control Technology

Scientific Data and Analysis

Software Engineering

Sustainability

Mechanics and Structures

Bridge Designer

fischertechnik Mechanic + Static

fischertechnik Mechanic + Static 2

K'Nex

Zometool

Orientation

Online ePortfolio

Orientation Collection

Robotics and Control Technology

Lego Mindstorms EV3 Robotics

Scientific Data and Analysis

ArcGIS Online - Geographic Information Systems

Astronomy with MicroObservatory

Extreme Weather and Monster Storms

Geographic Information Systems (GIS) - GIS Websites

Google Earth

Lasers

Vernier Scientific Sensors

Vernier Structures Tester

Software Engineering

Scratch v2 - Computer Programming

Stencyl - Game Design

TouchDevelop

Sustainability

Hydrogen Fuel Cells

Introduction to Alternative Energy and Other Topics

Solar Energy

Annual Pacing Guide
Grade Level: Kindergarten
Subject: Educational Technology

September	October	November	December	January
Basic Technology Skills ipads	Basic Technology Skills ipads	Using a laptop Using a mouse Navigating the Web Keyboarding	Using a laptop Using a mouse Navigating the Web Keyboarding	Keyboarding Google Apps SeeSaw

February	March	April	May	June
Keyboarding Google Apps eSaw	Keyboarding Scratch Jr.	Keyboarding Coding / Code.org	Keyboarding Coding / Code.org	Culminating Project incorporating Google Apps



Working document.

Update as needed

Annual Pacing Guide

Grade Level: 1

Subject: Technology

September	October	November	December	January
Review of Basic Tech Skills	Review of Basic Tech Skills	Review of Laptop Usage	Review of Laptop Usage	Using Google Apps
Apps	Ipads	Mouse Practice	Mouse Practice	Creating stories in Google Docs
Autumn	Teach Your Monster to Read	Navigating virtual environments	Navigating virtual environments	Keyboarding
		Keyboarding	Keyboarding	

February	March	April	May	June
Using Google Apps	Using Google Apps	Using Google Apps	Coding / Code.org	Coding / Code.org
Creating stories in Google Docs	Internet Research	Internet Research	Keyboarding	Keyboarding
Keyboarding	Google Slides	Google Slides		
	Keyboarding	Keyboarding		



Working document.

Update as needed

Annual Pacing Guide

Grade Level: 2

Subject: Technology

September	October	November	December	January
view of laptop usage	Google Docs	Google Docs	Google Docs	Google Sheets
Keyboarding	Google Drawing	Google Drawing	Google Drawing	Keyboarding
Google Classroom	Keyboarding	Keyboarding	Keyboarding	Google Hangouts w/ partner class
		Digital Citizenship	Digital Citizenship	

February	March	April	May	June
Internet Research	Internet Research	Coding / Code.org	Coding / Code.org	Coding / Code.org
Google Slides	Google Slides	Keyboarding	Keyboarding	Keyboarding
Digital Citizenship (Citing Sources)	Digital Citizenship (Citing Sources)			
Keyboarding	Keyboarding			



Working document.

Update as needed

Annual Pacing Guide

Grade Levels: 3 & 4

Subject: Technology

Course meets once per week until the immersive cycle which begins in March. Students will meet 4 times a week during the cycle.

September	October	November/Beginning December
CYCLE 1 Center Rotations: Robotics Coding 3D Printing Google Apps Keyboarding Digital Media	CYCLE 1 Center Rotations: Robotics Coding 3D Printing Google Apps Keyboarding Digital Media	CYCLE 1 Center Rotations: Robotics Coding 3D Printing Google Apps Keyboarding Digital Media



Working document.

Update as needed.

Annual Pacing Guide

Grade Levels: 5 & 6

Subject: Technology

Course meets once 3 times per week during the immersive cycle.

March	April	May	June
CYCLE	CYCLE	CYCLE	CYCLE
Center Rotations:	Center Rotations:	Center Rotations:	Center Rotations:
Robotics Coding 3D Printing Google Apps Digital Media Game Design			



Working document.

Update as needed

Annual Pacing Guide

Grade Levels: 7&8

Subject: Technology

Course meets once 3 times per week during the immersive cycle.

December	January
<p>CYCLE</p> <p>Center Rotations:</p> <ul style="list-style-type: none">RoboticsCoding3D PrintingGoogle AppsDigital MediaGame Design	<p>CYCLE</p> <p>Center Rotations:</p> <ul style="list-style-type: none">RoboticsCoding3D PrintingGoogle AppsDigital MediaGame Design
February	March
<p>Center Rotations:</p> <ul style="list-style-type: none">RoboticsCoding3D PrintingGoogle AppsDigital MediaGame Design	<p>Center Rotations:</p> <ul style="list-style-type: none">RoboticsCoding3D PrintingGoogle AppsDigital MediaGame Design



Working document.

Update as needed

Annual Pacing Guide

Grade Level: K-2

Subject: STEAM

Curriculum Map to integrate Nature-Based STEaM Activities

Grade	Design Principles	Nature Activities	Blocks Curriculum	Block Activities	STEAM	Goals/ Objectives
	Hunting and Gathering	Herb Garden Exploring the school grounds	Sense of place	Balance, Stability, sequences, counting, patterns,	Science Math Art-design	
	Animal Allies		Community/Jobs			
	Small Worlds		Collaboration			
	Maps and Paths		School and Grounds Study			
	Fantasy and Imagination					
	Adventure		History of Place			
	Maps and Paths	"Be" Flower Garden	Public Works			
	Special Places		Town Study			
	Fantasy and Imagination		Transportation			
	Adventure		History of Place			
	Maps and Paths	Vegetable Garden	Interconnectedness of the World			



Working document.

Update as needed

Annual Pacing Guide

Grade Level: K-2

Subject: STEAM

	Special Places (forts)		Boro Hall & Police Station Study			

Kindergarten

Theme: **Our Place**

Month	Nature Design Principles	Essential Questions	Activities	Town &/or Community	Target Skill
September 2019	Adventure Hunting and Gathering	What is Our Place ? At home? In class? At school?	Create culture of learning with rituals and routines; exploration in nature; hunting and gathering for science and math concepts (stability, patterns)	Guidance Principal	Curiosity and Wonder *Model quality Community
	Maps & Paths	How do we move from place to place? How do we find our way ?	Painting rocks to create paths to follow; class map of our discoveries outside and paths we use on bulletin board by lunch room	Gardeners?	Community *model quality Collaboration
	Animal Allies Hunting & Gathering	Noticing our neighbors How do scientists know things about animals? What can we learn from observing our animal friends?	Observation of animal activity; recording evidence; adding animal tracking/notes to progressive map; Use hunting and gathering skills for resources	Naturalist? Community jobs	Collaboration *model community cooperation and



Working document.

Update as needed

Annual Pacing Guide

Grade Level: K-2

Subject: STEAM

Maps & Paths Small Worlds Fantasy & Imagination	Sharing our World What are we learning in nature? How can we share our learning?	Use previously gathered resources to begin design and build of small worlds (fairies, animals); Treasure hunts for ?	Parents?	Communication *model character
Small Worlds Fantasy & Imagination	What can nature teach us? What are systems? How do systems work?	Reflection; sit spot observation of changes September to January; Construct systems that work, move, etc		Character *model critical th
Adventure	What can nature teach us? What are systems? How do systems work?	Construct systems that “work”, move, etc; map the builds, label, and document learning	Engineer? Fred Rogers	Critical thinking *model creative
Adventure Fantasy & Imagination	Innovation How do I make something new?	How can we trap a leprechaun without causing harm? Build trap using simple machines; map the builds, label, and document learning		Creative Thinking *model problem
Special Places	Our Place What does community mean? How can we give something back to our community?	Garden- what can we grow to plant in the Vegetable garden?; Sit spot extention- what did you like about your spot?; Can we create a special place to invite others into?	Gardeners?	Problem solving *model collabora community
Special Places	How do we make a class fort that we can all fit into?	Can we create a special place to invite others into?; build class fort that we can all fit into	Another class? Maybe second grade	Collaborative co *model organization
Special Places	How can others learn about our class	Invite others in with maps, treasure hunts, celebration	families?	Organization And Communica



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Annual Pacing Guide

Grade Level: K-2

Subject: STEAM

		community?			
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Grade

Theme: **History of Place**

Month -19	Nature Design Principle	Essential Questions	Activities	Town/ Community	Target Skill
	Adventure Animal Allies Special Places	How do you define community? Who are we as a community?	Where do you see signs of life? Animals? Explore; Identify bats, bees, birds, butterflies, where do you see them?, why are they there?, map where you see them; design and modify the “be” garden to make it our special place as a class using loose parts, sand, and soil	Gardeners? Fred Rogers- town administrator	Curiosity and *model comm
	Maps & Paths	How can we share this with our community? families?	Map how you get to the garden from different classrooms, driveway, front door 1 & 2; Design a way to invite the community to share in your special place; celebrate	Parents, town admin, school?	Community *model collab
	Maps & Paths	How can we understand the town of Deal and its history?	Walking trips to places like Public works, the beach, local brooks and streams, the train overpass, local parks and green areas	Public Works	Collaboration *model leadership
	Maps & Paths	What is something we can do for our community?	Make a brochure? Booklet? About local flora and fauna in Deal from notes on our walking trips including detailed illustrations with labels	Service Learning? Guidance or local naturalist	Leadership *model critica
	Small Worlds	What do we know about the history of our place(Deal)?	Physical mapping exercises outside to explore scale; Create a map on paper for the town of Deal;	Town Administrator	Critical thinki *model Crea thinking



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Annual Pacing Guide

Grade Level: K-2

Subject: STEAM

			Build the town of Deal using blocks; invite town administrator or public works supervisor to see and give feedback; short walks for observations focussing on seasonal changes		
	Small Worlds	Same as January	Same as January	See January	See January
	Animal Allies	How can we contribute to our place? Deal?	Review observations where we saw our Animal Allies and think about what we can do to support them? And beautify our community? Meet with gardeners to plan for spring planting both in vegetable garden and "Be" garden; plant seeds in classroom, build birdhouses, bat boxes, a bench, etc	Gardeners and/ or bat/bee/bird/butterfly experts	Creative thinking *model organization
	Fantasy & Imagination	What have we learned from our animal allies? Have they inspired you? How?	Write stories using your observations in the "be" garden and our trips around town, use illustrations, write from all your senses, and share a lesson	author?	Organization *model decision making
	Special Places Maps & Paths	How do communities form?	Build your own community (in teams of 4) in nature using loose parts, sheets, and rope; make a map to get to your special place	architect	Decision making *model ownership
		How can you share your learning?	Create a way to share your learning from this year about what community means to you; this will be assembled into a book	Principal and Superintendent	ownership

Grade

Theme: Interconnectedness of the World



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Annual Pacing Guide

Grade Level: K-2

Subject: STEAM

Month	Nature Design Principle	Essential Questions	Activities	Town/Community	Target Skill
19	Adventure Maps & Paths	How are places connected?	Sit spot- journals; vegetable garden-school job, meet with gardeners to discuss planting plan, id plants, harvest, help plan how to use harvest with Spanish; map path to school from home, map the garden, map the school grounds (to be used by grades k & 1)	gardeners	Community *model owner
	Maps & Paths	What identifies a place? What systems or patterns do you find around you? Why do humans create systems?	Hike locally to observe and record local places and map the local areas around the school: brooks and streams, beach, parks, green areas, boro hall, police station, etc One trip will be to gather loose parts materials at the beach (bus)	Town personnel	Ownership *model collabor
	Small Worlds	How can we identify Deal?	Build Boro Hall/Police Station Using notes from you tours, including the facade and grounds around the building	Town Administrator, town architect	Collaboration *model Problem solvi
	See November	See November	See November Share with parents at Showcase	See November	See November
	Animal Allies Special Places	How do communities form? Why do people have rules? government?	Look to our animal friends and identify what we can learn from them? Choose one and in your team, create a clan name/symbol/?, chose a location for your fort, make a plan for building your fort		Problem solvi *decision mak
	Special Places	How can we work together?	Develop and modify your fort based on the	Engineer or	Decision mak



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Grade Level: K-2

Subject: STEAM

		Do we need to work together?	engineering challenges; simple machine security features, system for communication	builder	*model Self-direction
	Special Places Fantasy & Imagination	What connects us? Towns? States?	Establish language, customs, commerce, rituals, ??	Town administrator	Self-direction *model leader
	(sustainability and developing environmental stewardship)	What impact does the garden have on our community? How do we know?	Garden- school job: prepare ground, help plant, map garden plantings in english and spanish; meet with other classes to find out what they are growing for the garden, what they like about the garden, etc	gardeners	Leadership *model communication
		How are we connected to others? How are we interconnected?	Online collaborations with other nature-based learning programs	Clare in Louisiana: Pre-K Hannah: Grade 4 International?	Communication *model quality
	Fantasy & Imagination	How can you share your learning?	Using technology create a way to share your learning with a focus on the interconnectedness of the world	Public platform? blog?	Quality



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Annual Pacing Guide

Grade Level: K-2

Subject: STEAM

Technology, Engineering, and Art Activities for Children K-2

Within the Contexts of Mathematics and Science

Teacher's Role

- ◆Provide Meaningful Experiences ◆Model Language and Literacy Skills
- ◆Provide Extended Time on Task ◆Ask Questions ◆Work in Context ◆Extend Thinking

Engineering

Why is something happening?

What can I create?

How does it work?

What materials will I need?

Which materials will work best?

Design!

Arts

Dramatic Play

Constructing with blocks

Drawing and Painting

Writing/Telling stories

Create!

Technology

Tools

Ramps

Bridges

Utensils

Transportation

Machines

Innovate!

21st Century Skills of Learning and Innovation

4C's:

Creativity

Critical Thinking

Collaboration,

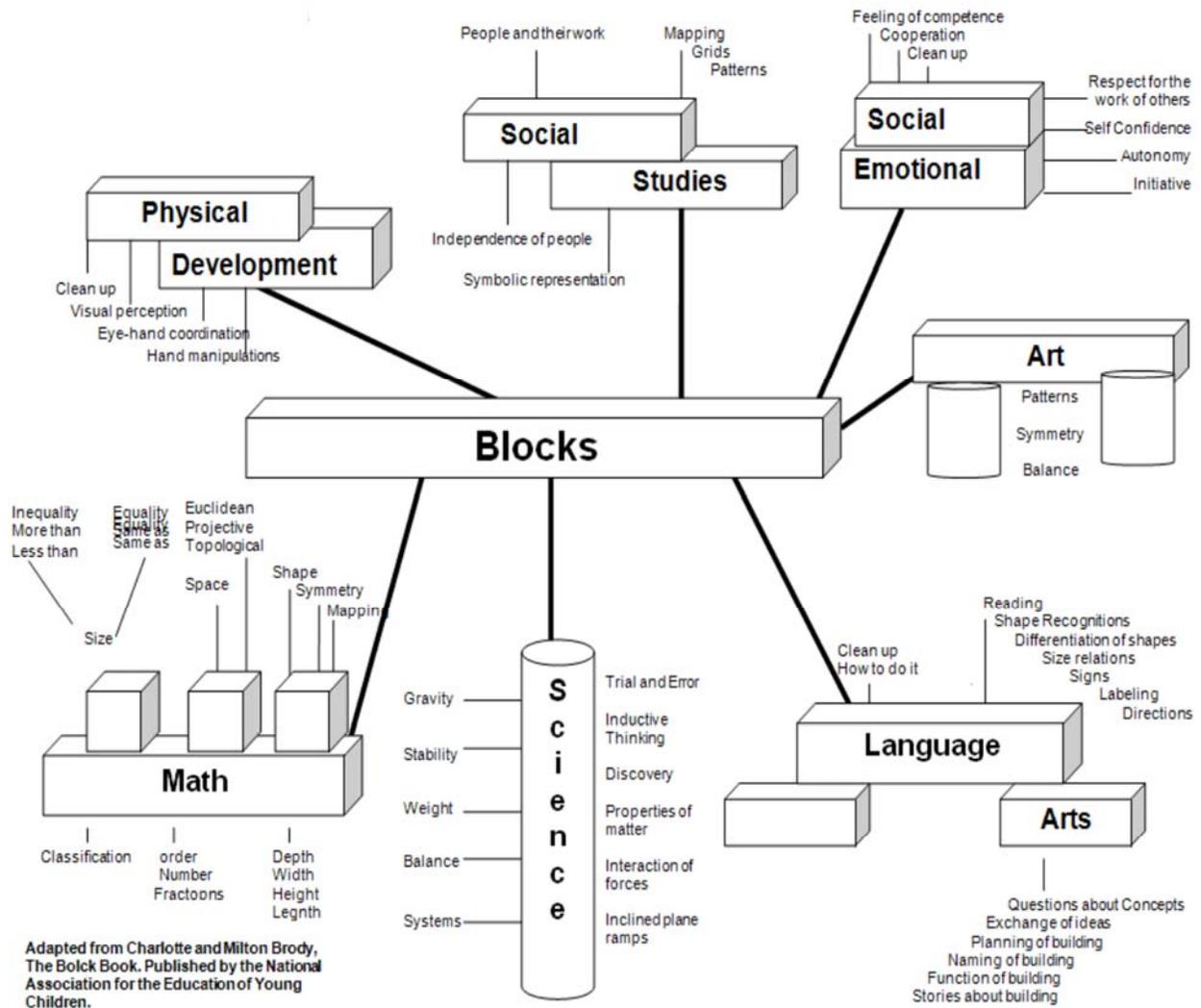
Communication



Annual Pacing Guide

Grade Level: K-2

Subject: STEAM



Annual Pacing Guide

Grade Levels: 3 & 4

Subject: STEAM

Course meets once 4 times per week during the immersive cycle.

December	January	February	March
<p>CYCLE</p> <p>Establishing a Collaborative Learning Community of Creators</p> <p><u>Liftoff Challenges</u></p> <p>Orientation</p> <p>Circuitry</p> <p>Computer Graphics</p> <p>Digital Communications</p> <p>Mechanics and Structures</p> <p>Robotics and Control</p> <p>Technology</p> <p>Scientific Data and Analysis</p> <p>Software Engineering</p> <p>Sustainability</p>	<p>CYCLE</p> <p><u>Liftoff Challenges</u></p> <p>Orientation</p> <p>Circuitry</p> <p>Computer Graphics</p> <p>Digital Communications</p> <p>Mechanics and Structures</p> <p>Robotics and Control</p> <p>Technology</p> <p>Scientific Data and Analysis</p> <p>Software Engineering</p> <p>Sustainability</p>	<p>CYCLE</p> <p><u>Liftoff Challenges</u></p> <p>Orientation</p> <p>Circuitry</p> <p>Computer Graphics</p> <p>Digital Communications</p> <p>Mechanics and Structures</p> <p>Robotics and Control</p> <p>Technology</p> <p>Scientific Data and Analysis</p> <p>Software Engineering</p> <p>Sustainability</p>	<p>CYCLE</p> <p><u>Liftoff Challenges</u></p> <p>Orientation</p> <p>Circuitry</p> <p>Computer Graphics</p> <p>Digital Communications</p> <p>Mechanics and Structures</p> <p>Robotics and Control</p> <p>Technology</p> <p>Scientific Data and Analysis</p> <p>Software Engineering</p> <p>Sustainability</p> <p>Showcase Work/ Presentations</p>



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Annual Pacing Guide

Grade Levels: 5 & 6

Subject: STEAM

Course meets once 4 times per week during the immersive cycle.

September	October	November	December
<p>CYCLE</p> <p>Establishing a Collaborative Learning Community of Creators</p> <p><u>Liftoff Challenges</u></p> <p>Orientation</p> <p>Circuitry</p> <p>Computer Graphics</p> <p>Digital Communications</p> <p>Mechanics and Structures</p> <p>Robotics and Control</p> <p>Technology</p> <p>Scientific Data and Analysis</p> <p>Software Engineering</p> <p>Sustainability</p>	<p>CYCLE</p> <p><u>Liftoff Challenges</u></p> <p>Orientation</p> <p>Circuitry</p> <p>Computer Graphics</p> <p>Digital Communications</p> <p>Mechanics and Structures</p> <p>Robotics and Control</p> <p>Technology</p> <p>Scientific Data and Analysis</p> <p>Software Engineering</p> <p>Sustainability</p>	<p>CYCLE</p> <p><u>Liftoff Challenges</u></p> <p>Orientation</p> <p>Circuitry</p> <p>Computer Graphics</p> <p>Digital Communications</p> <p>Mechanics and Structures</p> <p>Robotics and Control</p> <p>Technology</p> <p>Scientific Data and Analysis</p> <p>Software Engineering</p> <p>Sustainability</p>	<p>CYCLE</p> <p><u>Liftoff Challenges</u></p> <p>Orientation</p> <p>Circuitry</p> <p>Computer Graphics</p> <p>Digital Communications</p> <p>Mechanics and Structures</p> <p>Robotics and Control</p> <p>Technology</p> <p>Scientific Data and Analysis</p> <p>Software Engineering</p> <p>Sustainability</p> <p>Showcase Work/ Presentations demonstrating ISTE mindsets/ standards</p>



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Annual Pacing Guide

Grade Levels: 7&8

Subject: STEAM

Course meets once 3 times per week during the immersive cycle for 8th grade and 4 times per week for 7th grade.

March	April
<p>CYCLE</p> <p>Establishing a Collaborative Learning Community of Creators</p> <p>Career Investigation Collaborative Project: ELA, Social Studies</p> <p>Washington DC Collaborative Project: ELA, Social Studies, Tech Ed</p>	<p>CYCLE</p> <p>Career Investigation Collaborative Project: ELA, Social Studies</p> <p>Or</p> <p>Washington DC Collaborative Project: ELA, Social Studies, Tech Ed</p>
May	June
<p>CYCLE</p> <p>Think like a STEAMOLOGIST- IDEO and d.school: UN Sustainability Goals, STEAM Tank</p> <p>Engineering Design Challenge/ Learning Launcher Challenge</p> <p>ePortfolio Presentation</p>	<p>CYCLE</p> <p>Engineering Design Challenge/ Learning Launcher Challenge</p> <p>ePortfolio Presentation</p>



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Annual Pacing Guide

Grade Levels: 7&8

Subject: STEAM



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Annual Pacing Guide

Grade Level: 8

Subject: STEAM

September	October	November	December	January
Establishing a Collaborative Learning Community of Creators STEM Career Investigation Engineering Design Challenge- E1	Engineering Design Challenge- E1 Self-Designed STEAM Challenge	Self-Designed STEAM Challenge- E2 My American Story Think like a STEAMOLOGIST- IDEO and d.school	Engineering Design Challenge E3: Science/Math Collaborative PBL- Mars Landing/Water Bottle Rockets	How to think like a Designer using design thinking Engineering Design Challenge E4: Process and Documentation Makers Night Presentation
February	March	April	May	June
30 Seconds of Genius Makers Engineering Design Challenge E5	Makers Engineering Design Challenge E5 Makers Week	Research and Planning STEAM Carnival Challenge E6	Planning and Organizing STEAM Carnival Challenge	STEAM Carnival TED Talks

P: Water Scenario Challenge, Tesla Linked Challenges, Pinwheels for Peace & Respect for All- UN Sustainability Goals, STEAM Tank



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Update as needed