



Stafford Township School District

Gifted and Talented Curriculum Grade 4

Mission Statement

The mission of the Stafford Township School District is to promote excellence in an environment that engages students in meaningful learning experiences. In partnership with students, dedicated staff, families, and community, the district provides a strong educational foundation that will empower our students to:

- Achieve their unique potential
- Embrace self-directed, lifelong learning
- Develop the skills necessary for appropriate risk-taking and responsible decision-making
- Respect themselves and others
- Problem-solve individually and collaboratively
- Become contributing members of a diverse, global society

Philosophy

The Stafford Township School District Gifted and Talented program fosters a love of learning. We believe in a program where each student's passion can be explored.

We are committed to a model that values differentiated instruction, one in which classroom teachers work to tailor instruction and content to match student ability level. Our Gifted and Talented program is designed to address the unique social and emotional needs of students by promoting self-understanding, awareness of needs, and cognitive and affective growth.

We hope to inspire and support this special group of learners to embrace challenges and opportunities.

The intent of all levels of Gifted and Talented programming is to honor the "whole child, every child" in developing student competencies that forge lifelong learners and create Global and World changers!

The Stafford Township School District believes that meeting the needs of all students is paramount to providing a thorough and efficient education. Our goal is to empower students to reach their highest potential; physically, academically, emotionally and socially. Students will find the challenge and support needed to help them function in a world that requires:

- Competence in academics and the arts;
- Excellence in communications;
- Adaptability, creativity, and critical thinking;
- Valuing of diversity; and
- Development of character

The New Jersey Student Learning Standards (NJSLs) in ELA, Mathematics, and Next Generation Science Standards (NGSS), are intended to promote higher levels of learning for all students, emphasizing analytical thinking, reasoning, and

problem-solving skills. These standards provide a rigorous framework for instruction at each grade level in terms of content and progression of skills. As gifted and talented students typically grasp curriculum concepts more quickly and deeply than peers their age, they also need additional learning experiences that extend and enrich the standards and require students to apply complex, creative, and innovative thinking to authentic problems.

In order to identify and provide for the many diverse talents of our students, we have developed an enrichment triad model for grades 3-6. This model has been adapted from Joseph Renzulli's Schoolwide Enrichment Program and is based upon the Enrichment Triad Model, which was developed and field tested over a ten year period throughout the United States and Canada (Renzulli, 1990). At the heart of the model is differentiation of instruction. The Enrichment Triad Model is based upon the following four general goals:

- To improve the extent and quality of enrichment for all students and promote excellence throughout the school environment;
- To provide various types and levels of enrichment to a broader spectrum of the school population than usually served in traditional gifted programs;
- To integrate the program within the classroom, with opportunities to enhance learning experiences in a collaborative pull-out setting;
- To minimize concerns about exclusiveness and the negative attitudes that are often expressed toward students participating in only special programs for the gifted.

Interdisciplinary Connections: Language Arts, Math, Science, Social Studies, Technology

Unit 1: Designing a Submersible - Ocean Engineering		Duration: 22 days (September – December)
Standards		
Language Arts Standards		
RL.4.1.	Refer to details and examples in a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text.	
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.	
SL.4.1.B	Follow agreed-upon rules for discussions and carry out assigned roles.	
SL.4.1.C	Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.	
SL.4.1.D	Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.	
Technology Standards		
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.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.	
Science Standards		
4-PS3-4	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another	
21st Century Life and Careers		
<p>Century Life and Career Skills: 21st century life and career skills enable students to make informed decisions that prepare them to engage as active citizens in a dynamic global society and to successfully meet the challenges and opportunities of the 21st century global workplace.</p> <p>http://www.state.nj.us/education/aps/cccs/career/</p> <p>9.1 Personal Financial Literacy This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers.</p> <p>9.2 Career Awareness, Exploration, and Preparation This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.</p> <p>9.3 Career and Technical Education This standard outlines what students should know and be able to do upon completion of a CTE Program of Study.</p>		

Career Ready Practices	
<p>CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence</p>	
Essential Understandings	Essential Questions
<p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> ● Different cultures have different traditions that may not be similar to those they are familiar with ● Individual with disabilities should not be looked upon as if they are inferior or unable to accomplish things ● Ocean engineers solve problems related to the ocean environment ● The Engineering Design Process is a tool that can be used to help solve problems ● Mass and volume are important factors that affect an object's ability to sink or float in a fluid ● Density is a term that describes how much mass there is in a given volume and affects sinking and floating behaviors ● There can be multiple solutions to a problem 	<ul style="list-style-type: none"> ● How can you use a series of steps, called the Engineering Design Process, to design solutions to problems? ● How does increasing the performance of a design for some variables decrease its performance for other variables? ● How does the density of an object affect its sinking and floating behavior?
Evidence of Student Learning	
Performance Tasks: <i>Activities to provide evidence for student learning of content and cognitive skills.</i>	Other Assessments
<p>Using the Engineering Design Process - Ask, Imagine, Plan, Create, and Improve - to solve a problem related to ocean engineering and the design of a submersible.</p>	<p>Formative Assessments</p> <ul style="list-style-type: none"> ● Observe students' contribution to class discussions ● Note taking for each lesson

	<p>Summative Assessments</p> <ul style="list-style-type: none"> • Test submersibles to see if they meet specific criteria <p>Benchmark Assessments</p> <ul style="list-style-type: none"> • Teacher Created Rubric to assess each student's design and creation using Tinkercad <p>Alternative Assessments</p> <ul style="list-style-type: none"> • Stop & Jot Activities • Student Conversation Rubric • Drawing a Sketch or Picture to Show Comprehension of an Assignment with Verbal Explanation • Teacher Created Projects with Scoring Rubrics • Work Samples • Teacher Observation Checklist
Knowledge and Skills	
Content	Skills
<p><i>Students will know...</i></p> <ul style="list-style-type: none"> • Learn how to engage effectively in a range of collaborative discussions and activities • Learn how to ask and answer questions to clarify understanding of student centered activities • Present their ideas about a topic using relevant facts and details to support their points • Enhance their knowledge about floating and sinking. • Correlate how the density and the volume of objects play a role in its ability to either float or sink. 	<p><i>Students will be able to ...</i></p> <ul style="list-style-type: none"> • Explain the concept of density and why it is important for ocean engineers to consider • Conduct controlled tests to collect data about the properties (mass, volume, and density) and behavior (floating and sinking) of vials filled with different materials • Make predictions about the properties of vials based on completed tests and observations • Analyze data from controlled tests and use it to explain why objects sink or float in water • Use their knowledge of density, sinking, and floating gained earlier in the unit to inform their submersible designs
Instructional Plan	
Suggested Activities	Resources
Students will read a story and trace the use of the Engineering Design Process. The main character, Despina, is from Santorini,	<ul style="list-style-type: none"> • <i>Despina Makes a Splash</i> • World map

Greece. She is disabled and the story follows how her disability makes it a bit more difficult to complete certain activities. The Greek culture and importance of the ocean to their economy plays a huge role in the outcome of the story. The students will discuss how similar their lifestyle is to ours (since we live by the ocean also). Students will also discuss whether or not they know someone with a disability and should that change their treatment of that person.	
Students will use a sounding pole technology to generate data about a model of the ocean floor.	<ul style="list-style-type: none"> All supplies needed for this activity are listed in the teacher's edition under Lesson #2
Students will conduct controlled experiments to observe how changes in mass and volume affect whether an object floats or sinks in water then formulate hypotheses as to why some vials sink and some float.	<ul style="list-style-type: none"> Notebook template to record results All supplies needed for this activity are listed in the teacher's edition under Lesson #3
Students will use their knowledge of floating and sinking and the Engineering Design Process to design a submersible that meets specific criteria. That being it must be within a specific range for volume and be able to pick up different density objects from the bottom of the seafloor and then float back to the surface.	<ul style="list-style-type: none"> Notebook template to record results All supplies needed for this activity are listed in the teacher's edition under Lesson #4
Students will present and test final project based on criteria presented at the beginning of the unit.	<ul style="list-style-type: none"> Notebooks to record results, variety of online options All supplies needed for this activity are listed in the teacher's edition under Lesson #4
Students will reflect on effectiveness of project and document improvements that could be made.	<ul style="list-style-type: none"> Notebooks to record results
Literature	
<ul style="list-style-type: none"> <i>Despina Makes A Splash</i> 	
Websites	
www.eie.org	Engineering is Elementary
http://www.egfi-k12.org	
http://oceanexplorer.noaa.gov	NOAA
http://seaperch.mit.edu	Sea Perch Program
http://www.careercornerstone.org/engother/ocean.htm	Career Cornerstone Center
Accommodations & Modifications	
English Language Learners	

- Provide extra time
- Pre-Teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cuing
- Activate schema
- Build background knowledge
- Work toward longer passages as skills in English increase
- Use visuals
- Teacher models reading aloud daily
- Provide peer tutoring
- Use a strong student as a “buddy” (does not necessarily have to speak the primary language)

Basic Skills

- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cuing
- Activate schema
- Build background knowledge

Economically Disadvantaged

- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers

- Highlight key words
- Sentence starters
- Prompting and cuing
- Activate schema
- Build background knowledge

Special Education/504 Plans

- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications/504 plan

Gifted and Talented

- Higher level questioning
- Students design questions
- Choice board to extend learning
- Expose to sophisticated vocabulary
- Extend reading response to further enrich understanding (see extension activities in unit binder)
- Discuss how readers and writers are connected
- Create comic strip showing connections to reading lives: illustrate and caption
- Create poem using rich adjectives and detailed illustrations
- Write paragraph in notebook about things they are passionate about
- Have students choose someone in their family they would write a biography about and why
- Collect artifacts to decorate notebook at home- discuss with class
- Have students create a poster showing their favorite reading spot
- Have students create anchor charts to explain strategy taught to hang around the room
- Students can expand on discussions with family members in their notebooks
- Expand reading genre while independent reading to reflect a well-rounded book bag
- Complete appendix pages at home with independent reading
- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum •
- Organize and offer flexible small group learning activities
- Teach cognitive and methodological skills
- Use center, stations, or contracts

- Organize integrated problem-solving simulations
- Propose interest-based extension activities

Students at risk of school failure

- Provide peer tutoring
- Use a strong student as a “buddy”
- Use books on tape
- Allow extra time to complete assignments or tests
- Work in a small group
- One on one instruction
- Provide immediate praise and feedback
- Provide high interest topics
- Create a nurturing environment
- Provide visuals
- Be flexible with assignments and time frames
- Provide needed academic resources

Unit 2: Designing Solar Ovens - Green Engineering		Duration: 26 days (December – March)
Standards		
Language Arts Standards		
NJSLSA.S L4.	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.	
SL.4.1.B	Follow agreed-upon rules for discussions and carry out assigned roles.	
SL.4.1.C	Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.	
SL.4.1.D	Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.	
Social Studies Standards		
6.1.4.A.15	Explain how and why it is important that people from diverse cultures collaborate to find solutions to community, state, national, and global challenges.	
6.1.4.C.9	Compare and contrast how the availability of resources affects people across the world differently.	
6.1.4.D.20	Describe why it is important to understand the perspectives of other cultures in an interconnected world.	
Science Standards		
4-ESS3-1.	Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment	
Technology Standards		
8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.	
21st Century Life and Careers		
<p>Century Life and Career Skills: 21st century life and career skills enable students to make informed decisions that prepare them to engage as active citizens in a dynamic global society and to successfully meet the challenges and opportunities of the 21st century global workplace.</p> <p>http://www.state.nj.us/education/aps/cccs/career/</p>		
9.1 Personal Financial Literacy		
This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers.		
9.2 Career Awareness, Exploration, and Preparation		
This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.		
9.3 Career and Technical Education		
This standard outlines what students should know and be able to do upon completion of a CTE Program of Study.		

Career Ready Practices	
<p>CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence</p>	
Essential Understandings	Essential Questions
<p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> ● Life in other countries may not be similar to that of the United States and that what they take as a given in our community may not be available to those in other countries ● Green engineering involves analyzing the resources used to make a technology and any environmental impacts resulting from a technology ● There are environmental impacts of a product include the pollution created throughout the product's life cycle ● Engineers often have to balance several variables when designing a technology 	<ul style="list-style-type: none"> ● How can you use a series of steps, called the Engineering Design Process, to design solutions to problems? ● How does increasing the performance of a design for some variables decrease its performance for other variables? ● How does environmental impact of materials affect green engineering designs?
Evidence of Student Learning	
Performance Tasks: <i>Activities to provide evidence for student learning of content and cognitive skills.</i>	Other Assessments
<p>Using the Engineering Design Process - Ask, Imagine, Plan, Create, and Improve - to solve a problem related to green engineering and the design of a solar oven.</p>	<p>Formative Assessments</p> <ul style="list-style-type: none"> ● Observe students' contribution to class discussions ● Note taking for each lesson <p>Summative Assessments</p> <ul style="list-style-type: none"> ● Build and test the effectiveness of the solar oven

	<p>Benchmark Assessments</p> <ul style="list-style-type: none"> • Teacher Created Rubric to assess each student’s design and creation using Tinkercad <p>Alternative Assessments</p> <ul style="list-style-type: none"> • Stop & Jot Activities • Student Conversation Rubric • Drawing a Sketch or Picture to Show Comprehension of an Assignment with Verbal Explanation • Teacher Created Projects with Scoring Rubrics • Work Samples • Teacher Observation Checklist
Knowledge and Skills	
Content	Skills
<p><i>Students will know...</i></p> <ul style="list-style-type: none"> • Learn how to engage effectively in a range of collaborative discussions and activities • Learn how to ask and answer questions to clarify understanding of student centered activities • Present their ideas about a topic using relevant facts and details to support their points • Learn about, research, and test thermal properties and environmental impact of materials • Determine how properties of material may impact solar (or green) technology. 	<p><i>Students will be able to ...</i></p> <ul style="list-style-type: none"> • Identify and explain some of the environmental impact of a technology • Utilize a life cycle assessment to analyze the environmental impact of paper • Discuss ways to decrease the environmental impact of a product, including reducing, reusing, and recycling • Analyze class data and draw conclusions, ranking each material based on how well it worked as a thermal insulator • Evaluate materials based on established criteria to determine their environmental impact • Improve their solar oven designs, taking into account the evaluation of a prior design
Instructional Plan	
Suggested Activities	Resources
<p>Students will read the story, <i>Lerato Cooks Up a Plan</i> and trace the use of the Engineering Design Process. The main character, Lerato, lives in Botswana. Students will read and learn about</p>	<ul style="list-style-type: none"> • <i>Lerato Cooks Up a Plan</i> • World map

their culture and discuss how different everyday life is there. Students will discover that schooling and electricity is a luxury and many residents are not fortunate enough to enjoy either. Students will discuss how our life would be different if we lived in Botswana.	
Students will discuss the life cycle assessments and brainstorm ways to reduce the environmental impact of using paper.	<ul style="list-style-type: none"> • Notebooks to record results • All supplies needed for this activity are listed in the teacher's edition under Lesson #2
Students will conduct a controlled experiment to determine how well different materials perform as thermal insulators.	<ul style="list-style-type: none"> • Notebooks to record results • All supplies needed for this activity are listed in the teacher's edition under Lesson #3
Students will use their knowledge of thermal properties and environmental impact of materials, the Engineering Design Process, and their creativity to design a solar oven with minimal environmental impact.	<ul style="list-style-type: none"> • Notebooks to record results • All supplies needed for this activity are listed in the teacher's edition under Lesson #4
Students will present and test their final project based on criteria presented at the beginning of the unit.	<ul style="list-style-type: none"> • Notebooks to record results
Students will reflect on effectiveness of project and document improvements that could be made.	<ul style="list-style-type: none"> • Notebooks to record results
Literature	
<ul style="list-style-type: none"> • <i>Lerato Cooks Up a Plan</i> 	
Websites	
www.eie.org	Engineering is Elementary
http://eqfi-k12.org	
http://csengin.org	Center for Sustainable Engineering
https://mysteryscience.com/weather/mystery-3/climate-geography-global-weather-patterns/98?r=3368718&t=student	Mystery Science - Stormy Skies Mystery 3
Accommodations & Modifications	
English Language Learners <ul style="list-style-type: none"> • Provide extra time • Pre-Teach vocabulary using visuals and gestures • Chunk texts 	

- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cuing
- Activate schema
- Build background knowledge
- Work toward longer passages as skills in English increase
- Use visuals
- Teacher models reading aloud daily
- Provide peer tutoring
- Use a strong student as a “buddy” (does not necessarily have to speak the primary language)

Basic Skills

- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cuing
- Activate schema
- Build background knowledge

Economically Disadvantaged

- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cuing

- Activate schema
- Build background knowledge

Special Education/504 Plans

- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications/504 plan

Gifted and Talented

- Higher level questioning
- Students design questions
- Choice board to extend learning
- Expose to sophisticated vocabulary
- Extend reading response to further enrich understanding (see extension activities in unit binder)
- Discuss how readers and writers are connected
- Create comic strip showing connections to reading lives: illustrate and caption
- Create poem using rich adjectives and detailed illustrations
- Write paragraph in notebook about things they are passionate about
- Have students choose someone in their family they would write a biography about and why
- Collect artifacts to decorate notebook at home- discuss with class
- Have students create a poster showing their favorite reading spot
- Have students create anchor charts to explain strategy taught to hang around the room
- Students can expand on discussions with family members in their notebooks
- Expand reading genre while independent reading to reflect a well-rounded book bag
- Complete appendix pages at home with independent reading
- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum •
- Organize and offer flexible small group learning activities
- Teach cognitive and methodological skills
- Use center, stations, or contracts
- Organize integrated problem-solving simulations
- Propose interest-based extension activities

Students at risk of school failure

- Provide peer tutoring
- Use a strong student as a “buddy”
- Use books on tape
- Allow extra time to complete assignments or tests
- Work in a small group
- One on one instruction
- Provide immediate praise and feedback
- Provide high interest topics
- Create a nurturing environment
- Provide visuals
- Be flexible with assignments and time frames
- Provide needed academic resources

Unit 3: 3D Printing		Duration: 26 Days (March – June)
Standards		
Language Arts Standards		
SL.4.4.	Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.	
SL.4.1.B	Follow agreed-upon rules for discussions and carry out assigned roles.	
SL.4.1.C	Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.	
SL.4.1.D	Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.	
Math Standards		
4.MD.A.1	Know relative sizes of measurement units within one system of units including km, m, cm. mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. <i>For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...</i>	
4.MD.A.2	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	
4.MD.A.3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems. <i>For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.</i>	
Technology Standards		
8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.	
8.2.4.B.1	Develop a product using an online simulation that explores the design process.	
21st Century Life and Careers		
<p>Century Life and Career Skills: 21st century life and career skills enable students to make informed decisions that prepare them to engage as active citizens in a dynamic global society and to successfully meet the challenges and opportunities of the 21st century global workplace.</p> <p>http://www.state.nj.us/education/aps/cccs/career/</p>		
9.1 Personal Financial Literacy		
<p>This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers.</p>		

9.2 Career Awareness, Exploration, and Preparation

This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.

9.3 Career and Technical Education

This standard outlines what students should know and be able to do upon completion of a CTE Program of Study.

Career Ready Practices

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP5. Consider the environmental, social and economic impacts of decisions.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP10. Plan education and career paths aligned to personal goals.
- CRP11. Use technology to enhance productivity.
- CRP12. Work productively in teams while using cultural global competence

Essential Understandings

Students will understand that...

- Increase their planning, critical thinking, reasoning, and creative skills
- Develop strong communications and collaboration skills
- Practice visualization and decision making
- Know how and when to use the technology and how to choose appropriate tools
- Learn the importance of iteration in the design cycle
- Understand how to use a 3D printer

Essential Questions

- How can you use a series of steps, called the Engineering Design Process, to design solutions to problems utilizing a 3D printer?
- How do we utilize a 3D printer to offer a rich way to enhance and reinforce science, technology, engineering, art, math, and design skills already being taught in the classroom?
- How to engage students with a hands on approach to problem solving by presenting real world challenges?

Evidence of Student Learning

Performance Tasks: *Activities to provide evidence for student learning of content and cognitive skills.*

Using the Engineering Design Process - Ask, Imagine, Plan, Create, and Improve - to solve a problem related to specific task presented and design and print the final piece using a 3D printer.

Other Assessments

Formative Assessments

- Observe students' contribution to class discussions
- Note taking for each lesson

Summative Assessments

	<ul style="list-style-type: none"> • Design, 3D print, and test objects that they create <p>Benchmark Assessments</p> <ul style="list-style-type: none"> • Teacher Created Rubric to assess each student's design and creation using Tinkercad <p>Alternative Assessments</p> <ul style="list-style-type: none"> • Stop & Jot Activities • Student Conversation Rubric • Drawing a Sketch or Picture to Show Comprehension of an Assignment with Verbal Explanation • Teacher Created Projects with Scoring Rubrics • Work Samples • Teacher Observation Checklist
Knowledge and Skills	
Content	Skills
<p><i>Students will know...</i></p> <ul style="list-style-type: none"> • Learn how to engage effectively in a range of collaborative discussions and activities • Learn how to ask and answer questions to clarify understanding of student centered activities • Discover how 3D printing can enhance the outcome of any design challenge • Create a specific piece of technology that can solve individual problems. 	<p><i>Students will be able to ...</i></p> <ul style="list-style-type: none"> • Complete online tutorials on how to utilize 3D software using Tinkercad • Conduct research on a topic that has been chosen • Develop a representation of a 3D object using that software • Print an object using the 3D printer • Reflect on their design and possible alternative options
Instructional Plan	
Suggested Activities	Resources
Teacher introduce topic of 3D printing and discuss pros and cons and limitations to this technology, if any.	Teacher handouts / online videos
Students will view videos on extent of what 3D printing can do and different types of 3D printing software.	Overhead projector / videos
Students will complete online tutorials on how to utilize Tinkercad - 3D software.	Tinkercad software
Students will design a project to show knowledge base of software. In order to design within size guidelines of this first	Tinkercad software

project, students must be able to figure out volume of their project and make sure it does not exceed the limitations provided.	
Students will complete research on final project.	Notebooks to record results
Students will utilize the Engineering Design Process to create final project in 3D software - Tinkercad. The design in their notebook must be labeled with length, width, and height. The volume of their final project cannot exceed a certain limit set forth at the beginning of the unit. Students will need to recreate the exact replica in Tinkercad. Balancing out the length, width, and height of the boat is important in order for it to stay afloat in the water.	Notebook and Tinkercad
Students will present and test final project based on criteria presented at the beginning of the unit.	Notebook/3D printed object, variety of online options
Students will reflect on effectiveness of the project and document improvements that could be made.	Notebooks to record results
Literature	
<ul style="list-style-type: none"> Self-selected reading at their just right level. These books will be used to spark ideas and in turn will be a part of the final project. 	
Websites	
www.youtube.com	Videos on 3D printing
https://www.thingiverse.com	Thingiverse
www.tinkercad.com	Tinkercad
www.schrockguide.net/3d-printing.html	Kathy Schrock's 3D Printing in the Classroom
www.makerbot.com	Makerbot home page
Accommodations & Modifications	
English Language Learners <ul style="list-style-type: none"> Provide extra time Pre-Teach vocabulary using visuals and gestures Chunk texts Summarize as you go Preview lessons 	

- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cuing
- Activate schema
- Build background knowledge
- Work toward longer passages as skills in English increase
- Use visuals
- Teacher models reading aloud daily
- Provide peer tutoring
- Use a strong student as a “buddy” (does not necessarily have to speak the primary language)

Basic Skills

- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cuing
- Activate schema
- Build background knowledge

Economically Disadvantaged

- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight key words
- Sentence starters
- Prompting and cuing
- Activate schema
- Build background knowledge

Special Education/504 Plans

- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications/504 plan

Gifted and Talented

- Higher level questioning
- Students design questions
- Choice board to extend learning
- Expose to sophisticated vocabulary
- Extend reading response to further enrich understanding (see extension activities in unit binder)
- Discuss how readers and writers are connected
- Create comic strip showing connections to reading lives: illustrate and caption
- Create poem using rich adjectives and detailed illustrations
- Write paragraph in notebook about things they are passionate about
- Have students choose someone in their family they would write a biography about and why
- Collect artifacts to decorate notebook at home- discuss with class
- Have students create a poster showing their favorite reading spot
- Have students create anchor charts to explain strategy taught to hang around the room
- Students can expand on discussions with family members in their notebooks
- Expand reading genre while independent reading to reflect a well-rounded book bag
- Complete appendix pages at home with independent reading
- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum •
- Organize and offer flexible small group learning activities
- Teach cognitive and methodological skills
- Use center, stations, or contracts
- Organize integrated problem-solving simulations
- Propose interest-based extension activities

Students at risk of school failure

- Provide peer tutoring
- Use a strong student as a “buddy”

- Use books on tape
- Allow extra time to complete assignments or tests
- Work in a small group
- One on one instruction
- Provide immediate praise and feedback
- Provide high interest topics
- Create a nurturing environment
- Provide visuals
- Be flexible with assignments and time frames
- Provide needed academic resources

**Stafford Township School District
Grade 4
Gifted and Talented Pacing Guide**

Unit 1: Designing a Submersible – Ocean Engineering	September – December 22 Days
Unit 2: Designing Solar Ovens – Green Engineering	December-March 26 Days
Unit 3: 3D Printing	March-June 26 Days