NORTHERN VALLEY SCHOOLS CONSORTIUM
OFFICE OF CURRICULUM AND INSTRUCTION

TECHNOLOGY CURRICULUM GUIDE
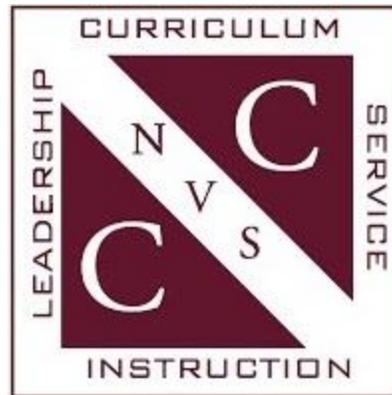
K – 12

NORTHERN VALLEY SCHOOLS CONSORTIUM

Office of Curriculum and Instruction

Member Districts

Closter
Demarest
Harrington Park
Haworth
Northvale
Norwood
Old Tappan
Northern Valley Regional

Bergen County, NJ

Northern Valley Schools
Technology Literacy
Curriculum Guide

K-12

Office Of Curriculum And Instruction
Northern Valley Schools
Curriculum Center
Demarest, New Jersey 07627

Ms. Kathleen O'Flynn, Director
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2016-2017

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Preface and Acknowledgments

Continuing a long tradition, the Northern Valley Schools have collaboratively worked to revise curriculum based on NJDOE approved standards. Teams of teachers and other school leaders have come together to look at the needed changes and supporting resources. This process has been the connection that brings educators from throughout the Valley to a common understanding of what students need to learn.

In each writing cycle it has been recognized that the process of curriculum writing must be collaborative and continuous. Change is constantly affecting the areas of professional learning for teachers, technology use and resources in education, and shifts in mandates from state and federal departments of education. The districts of the Northern Valley Schools are to be commended for their commitment to high quality instruction and their determination to devote resources to teacher learning and collaboration.

The NVCC looks forward to continuing the comprehensive collaborative review and revision of curriculum to meet the needs of all students. The office is confident that the work of educators and the documents produced, contribute to the goal of improving student achievement throughout the Northern Valley Schools.

Acknowledgments

A special expression of gratitude is extended to our administrative assistants and secretaries in the office of Curriculum and Instruction for their efforts in the preparation of this guide for publication.The numerous hours working on the collation of information and their attention to detail and technology skills are most evident in the final product.

Kathleen O'Flynn
Director of Curriculum and Instruction

New Teacher Academy and Professional Learning Opportunities:

All teachers new to the Northern Valley participate in the New Teacher Academy. This comprehensive sequence of workshops is designed to support Northern Valley educators with the resources to meet the needs of all learners including English language learners, students receiving special education services, students at risk of failing and students identified for gifted and talented services. In year one of employment educators attend "Getting off to a Great Start and Instructional Skills Seminar," which is a five-day learning experience with the intent of meeting the instructional needs of all learners. First year teachers also attend "Classroom Leadership" which is a one-day professional development offering designed to teach classroom management skills.

During year two of employment Northern Valley educators attend "Assessment: Strategies for Design" with the goal of honing assessment practices for effective differentiation of learning. This group also attends "Student Collaboration: Supporting Success with NJ Student Learning Standards." Educators in their second year also select a workshop from our instructional strategies, curriculum connections, social and emotional, or technology strands that best suits their pedagogical needs.

During year three of employment Northern Valley educators attend "Meeting Students Where They Are & Strategies for Growth" which is a full day learning experience that examines instructional strategies to ensure all learners can access skills designated in the New Jersey Student Learning Standards. Third year teachers also engage in one full day elective from the instructional strategies, curriculum connections, social and emotional, or technology strands and engage in an action research activity tailored to the needs of student learning and engagement.

Northern Valley also provides an award winning professional learning program. We offer over 80 full day workshops that take place during the school year. Our workshops allow for varied experiences in the areas of Instructional Strategies, Content Specific, Technology and Social-Emotional Wellbeing. All teachers in Northern Valley are offered a minimum of two full day learning experiences that align with their own professional goals.

Benchmark Assessments:

Teachers of the Northern Valley create grade level and department level assessments - several are utilized for Student Growth Objective target assessments. These assessments are rigorous and include multiple measures from Webb's Depth of Knowledge chart. Assessments may include portfolios, rubrics, journal assignments, literacy evaluations (i.e. Fountas & Pinnell, Independent Reading Level Assessment), projects, unit tests, or end of course exams. The Northern Valley is also committed to Criterion Reference Tests across schools and in multiple grades.

Special Education:

Throughout the Northern Valley Region special needs students receive a high quality specialized education to meet their individual social, emotional and educational needs. Within each individual school district there are programs designed to meet the needs of students in the "least restrictive environment". These programs, from least restrictive to most restrictive, include; In-Class-Support, whereby a special education teacher or instructional aide is assigned to assist special education students in the general education classroom and Resource Room replacement, whereby students are pulled from their general education class for Math or Language Arts to a separate room for small group instruction with a special education teacher. The students who require this level of support, in some cases, receive modified curriculum and differentiated instruction, study guides, extended time on assessments, assistive technology in the form of an iPad or computer programs such as co-writer/word predictor to assist with written assignments. All modifications are stated specifically in a student's Individual Education Plan or IEP to ensure that each student consistently receives the appropriate level of support.

In addition to the programs within the mainstream and/or resource room setting, throughout Northern Valley, districts utilize Region III Regional Programs and Services to meet the needs of special education students with a variety of disabilities. Self-Contained Programs include; Little Tots/Slice, for Pre-School age students, Valley, for primary and upper students on the autistic spectrum, TIP, for students who require social emotional and academic support, ACCESS Program– NVD, Bridge– NVD, and STEP – NVOT. Each school district in Northern Valley is encouraged to support the Regional Program model to ensure that all students receive a high quality, consistent level of education and services. Additional services include occupational therapy, physical therapy, speech therapy, behavior consultation, social skills, and counseling (individual and/or group). These "related services" are provided by Region III specialists certified in their respective fields.

For those students who are more significantly impaired, and a program cannot be provided by their school district or Regional Programs, there are specialized Out- of-District Programs, or "Private Schools". For these few students programs are researched and suggested by the Child Study Team, CST, in conjunction with the parent(s), to ensure that individual student needs are being met. In most cases these students receive transportation to and from school, specialized equipment, if necessary and all related services as per their IEP at no cost to the parent(s).

English Language Learners

All English Language learners receive instruction in accordance to the state adopted WIDA standards which are as follows:

- English Language Development Standard 1: English language learners communicate for Social and Instructional purposes within the school setting
- English Language Development Standard 2: English language learners communicate information, ideas and concepts necessary for academic success in the content area of Language Arts
- English Language Development Standard 3: English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics
- English Language Development Standard 4: English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science
- English Language Development Standard 5: English language learners communicate information, ideas and concepts necessary for academic success in the content area of Social Studies

https://wida.wisc.edu/resources

Growth for these standards are measured annually using the state mandated ACCESS for ELLs assessment.

In general, ELL and ESL students have the following accommodations:

- Use of a paper bilingual dictionary during class and during assessments
- Extended time for all assessments
- Word banks for tests and quizzes,
- Access to teacher-created PowerPoints and notes
- Simplification of requirements (for example, accepting a 2-page paper rather than 5, or Accepting a PowerPoint vs. paper)

In High School, ELL students take their midterms and final exams in the ESL room, where they can get extra time, access to dictionaries and clarification of directions and questions. Alternate assessment locations are also made available as appropriate at the elementary and middle school levels. Finally, the ESL teacher will work out accommodations, in collaboration with the classroom teacher, on a case-by-case basis, depending on the level of the student. For example, for students in need of greater support, teachers may allow those students to use their notes during an assessment, or to take their tests with the ESL teacher in the ESL room so instructions and the expectation for particular questions can be explained. In the case of students with more intensive literacy support, the ESL teacher may actually read the questions and answer choices out loud to students.

The accommodations for NJSLA are much more complex and are spelled out in detail in the NJSLA manual: https://nj.mypearsonsupport.com/resources/manuals/NJSLASpring2019AFA.pdf

Gifted and Talented:

The Northern Valley differentiates learning for our high achieving students by providing a specialized setting in each district for students identified as eligible for Gifted and Talented Programming services through the Northern Valley Screening/Identification Process.

In addition to in-district specialized programming, each district also provides out-of-district specialized settings through Outreach or multi-district convocation experiences. For example, all 7th, 8th and 9th grade Northern Valley Gifted and Talented students have the opportunity to participate in the Valley Interdisciplinary Approach Program: Explorations in Team Problem Solving. Other examples may include "Invengineering Expo", Bergen Brain Busters, Evolution Earth/World Game, Blokus Event, Dare to Fly, etc.

Each district supports their own schedule of Outreach Programming, which may include districts within the Northern Valley, County, or State. Northern Valley administrators and the Northern Valley Curriculum Center provide opportunities for Gifted and Talented staff to work together to develop and implement these curricula.

During the development process, appropriate standards are referenced from the New Jersey Student Learning Standards and the National Association for Gifted Children Gifted Program Standards Pre-K - Grade 12.

Gifted opportunities are also a part of the AP and Honors programs, as well as coursework that comes with awarding of college credits and Cap Stone Projects. Independent study projects are created for the gifted in need of specialized academic opportunities. Specialized co- curricular activities such as Math League, Science Team and Debate Club also allow for extensions of the gifted program.

Students in Danger of Failing

The purpose of the Intervention and Referral Team (I&RS) is to provide in-house professional assistance to an administrator or teacher for a pupil who demonstrates social, emotional or educational problems. The Principal is the chair and primary faculty contact for the I&RS team.

The I&RS committee provides assistance in understanding the pupil's problem(s) in developing strategies, which will, hopefully, help the pupil overcome the problem. The I&RS committee consists of a standing membership panel including the Principal, Assistant Principal, classroom teacher(s), Guidance Counselor, School Nurse, Child Study Team member(s) or any other professional assigned to the building who may have pertinent information regarding a specific student. Parent(s) and/or the student may be asked to participate where it is determined advisable.

When a child encounters a problem, the teacher, after in-class interventions and ongoing parental contact/conferences, may submit a student referral form to the I&RS Committee. The I&RS Committee will convene to review the form and determine if follow-up is warranted. Some or all of the following factors will be considered:

1. Mental Capacity

    a)   Ability

    b)   Expectancy

2. Academic

    a)   Strengths and weaknesses   b)   Test results

    c)   Functional levels   d)   Class work and participation

    e)   Homework   f)   Learning style

g)   Rate and degree of learning   h)   Abstract thinking

i)   Recall ability

3. Emotional

     a)   Personality   b)   Needs

     c)   Motivation   d)   Overt behavior

     e)   Cognition as influenced by affective factors

4. Social

     a)   Interpersonal relationships   b)   Participation

     c)   General behavior in school, home and community

5. Physical

     a)   Visual and auditory acuity   b)   General medical history

6. Work and Study

     a)   Classroom behavior   b)   Task orientation/ completion

     c)   Independent functioning   d)   Attending behavior

     e)   Class participation   f)   Quality of work

     g)   Following directions   h)   Organizing work

Intervention and Referral Service Procedure

1.   The teacher identifies a student with academic or behavioral difficulties. The teacher communicates concerns to the parents. After informal interventions in the classroom do not appear to be successful, the teacher refers the child to the I&RS Committee.

2.   The Principal schedules the first I&RS Committee meeting and notifies attendees: Committee members, parents/guardians, teacher(s), and designated staff.

3.   The Principal gathers information from teachers/staff who have information relevant to the identified problem, including the prior year's teacher where relevant.

4.   The teacher collects work samples and anecdotal notes to bring to the meeting to illustrate the problem. (Textbooks may also be brought). The teacher will be asked to discuss all interventions/accommodations attempted to date and their results/outcomes.

5.   The Principal chairs the scheduled meeting and outlines its purpose: to develop strategies, interventions, and/or accommodations to assist the student in the classroom and/or at home. A time frame to monitor and evaluate student progress with the interventions, strategies, and accommodation is designated. Staff responsible for implementing the intervention, strategies, and accommodations is determined and documented.

6.   The Principal will notify the parents/guardians of the meeting outcomes. The teacher and responsible staff will notify/update the Principal within the designated time period about the progress of the interventions. Updates will be shared with Committee members at a follow-up meeting. Parents/guardians may be invited to attend.

I&RS meetings follow a specific format: First, the student's background is reviewed and a main problem is identified. Discussion and analysis of the problem follows its identification. Subsequently, the members of the I&RS Committee list strategies to remedy or alleviate the problem(s). If the parents do not attend the meeting, the intervention plan is subsequently discussed with them.

Problem Solving Model

1)   Problem Identification

  a)   Teacher tentatively identifies the problem

  b)   Observation by CST member or Guidance Counselor where appropriate

2)   Data is collected

  a)   Samples of work depicting problem areas

  b)   Discussion

  c)   Problem is clarified

3)   Intervention

  a)   Brainstorming of interventions

  b)   Development of an intervention plan

  c)   Implementation of the plan

4)   Teacher evaluation of plan

  a)   Decision regarding further meetings/intervention

After the plan has been in effect for a reasonable amount of time, the I&RS Committee may recommend continuation of the recommended strategies or consider additional/alternative strategies. The student may be referred to the Child Study Team after all building resources have been exhausted and the student continues to demonstrate significant social, emotional, and/or educational difficulties.

If the intended action is a referral to the Child Study Team, Parents are notified and are provided with Notice of Referral, Parental Rights in Special Education and a copy of the strategies already attempted. All information gathered by the I&RS is included in the referral packet.

All questions regarding the I&RS process may be directed to the Principal and/or Committee Chairperson.

Assessments to Support and Monitor the Northern Valley Curriculum

To support the implementation of the curriculum and the monitoring of student learning across each grade level, districts will develop and collect appropriate assessments aligned to state standards.

Locally created formative and summative benchmark assessments are used at all grade levels.

To support this curriculum guide, assessments may include the use of the following but are not limited to this list:

- District level classroom assessments aligned to specific standards.
- Reading Benchmark assessment tools (ie: Fountas & Pinnell, TCRWP reading level assessments, Reading A-Z, Scholastic Independent Reading Assessment)
- Criterion Referenced Tests available to district schools through the Northern Valley Curriculum Center.
- Formative assessments from the NJ DOE support materials (i.e. Model Curriculum)
- Performance assessments from the Teachers College Reading and Writing Project
- (Northwest Evaluation Association) and the related MAP assessments
- Renaissance Learning and Assessment

Districts are encouraged to collect assessment items that support standards and utilize these educator assessment resources.

Technology

Curriculum Objectives

Unit 1: Operations and Concepts

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

Understanding/goals	Essential Question(s):
Students will: ● Understand and use technology systems. ● Select and use applications effectively and productively.	● How can technology and related digital tools be used to facilitate communication? ● How can technology and digital tools be used to access, manage, evaluate, and synthesize information? ● How can technology and digital tools be used to create, format and publish a product?

Student objectives:
Students will be able to:
- 8.1.P.A.1 Use an input device to select an item and navigate the screen
- 8.1.P.A.2 Navigate the basic functions of a browser.
- 8.1.2.A.1 Identify the basic features of a digital device and explain its purpose.

- 8.1.P.A.3 Use digital devices to create stories with pictures, numbers, letters and words.
- 8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
- 8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.
- 8.1.2.A.2 Create a document using a word processing application.
- 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.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.1.2.A.5 Enter information into a spreadsheet and sort the information.
- 8.1.2.A.6 Identify the structure and components of a database.
- 8.1.2.A.7 Enter information into a database or spreadsheet and filter the information.

Assessment Evidence	
Performance Task(s): Students will make or create: ● letters ● signs ● posters ● cards ● poems ● speeches ● stationary ● gather data via survey ● input data into a spreadsheet ● create a chart based on data	**Other Evidence:** **Examples of Cross Curricular Formative & Summative Final Projects:** ● ELA - word processing, letters, brochures ● Science - QR Codes, Infograph ● Social Studies - QR codes, Infograph, Timeline ● Math - Spreadsheets, Charts/Graphs
Suggested Materials and Resources	

Resources:
Seussville.com, Scholastic.com, Minecraft.net, ABCya, kids.sandiegozoo.org, Starfall.com, etc.

Google Docs, Google Slides, Google Sheets, Google Forms, Word, PowerPoint, Excel, Pages, Numbers, Keynote, Pixie, Wixie, PrintShop, and KidPix

Key vocabulary: monitor, screen, icon, CPU, keyboard, mouse, speakers, headphones, printer, cloud, icon, shortcut (MAC - apple/command key; PC - control key), scroll bar, software, drop-down menu, formatting palette/toolbar, tablet, laptop

Unit 2: Creativity and Innovation

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

Understanding/goals	Essential Question(s):
Students will: ● Apply existing knowledge to generate new ideas, products, or processes. ● Create original works as a means of personal or group expression.	● How can technology be used to support creative thinking and innovation? ● How can students use technology to demonstrate their thinking process?

Student objectives:
Students will be able to:
- 8.1.P.B.1 Create a story about a picture taken by the student on a digital camera or mobile device.
- 8.1.2.B.1 Illustrate and communicate original ideas and stories using multiple digital tools and resources.

Assessment Evidence

Performance Task(s):	Other Evidence:
● Graphic organizer ● Slideshow ● Animations ● Word Cloud	**Cross Curricular Formative & Summative Projects:** ● ELA - Webs, Plot Diagrams, How To Booklet/Slideshow/Video ● Science - Venn Diagrams, Engineering Design Notebook, ● Social Studies - T Charts, Cartoon, Comic Strip, PSAs,

Suggested Materials and Resources

Resources:
Kidspiration, Wixie, Pixie, KidPix, PowerPoint, Google Slides, ABCya, Frames, Wordle, Tagxedo, Smilebox
http://www.state.nj.us/education/aps/cccs/tech/

Unit 3: Communication and Collaboration

Content Standard:
- **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.**
- **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.*

Understanding/goals	Essential Question(s):
Students will: ● 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.	● 1. How can technology be used to facilitate communication and collaborative work? ● 2. How can technology be used to transfer, and access information electronically in a global environment?

Student objectives:
Students will be able to:
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
- 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.

[Assessment Evidence](#)

Performance Task(s):	Other Evidence:
● Video Communication ex. Skype ● Slideshow	**Examples of Cross Curricular Formative & Summative Final Projects:** ● ELA - Email, Skype, Twitter with authors ● Science - Live Webcam - Decorah Eagle, Penguin Cam ● Social Studies - Augmented Reality

Suggested Materials and Resources

Resources:
KidPix, Pixie, PowerPoint, Garage Band, Audacity, iChat, Skype, Google +

Unit 4: Digital Citizenship

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

Understanding/goals	Essential Question(s):
Students will: ● Advocate and practice safe, legal, and responsible use of information and technology.	● What are the ethical and legal aspects of technology? ● How can a student demonstrate ethical use of technology?

Student objectives:
Students will be able to:
- 8.1.2.D.1 Develop an understanding of ownership of print and nonprint information.

Assessment Evidence

Performance Task(s):	Other Evidence:
● Beginning citations ● Netiquette ● Safeguarding Password & Personal Information	**Examples of Cross Curricular Formative & Summative Final Projects:** ● ELA - Works Cited, Copyright, Putting information into own words ● Science - Identifying Ownership, Works Cited, ● Social Studies - Identifying Ownership, Works Cited

Suggested Materials and Resources

Resources:
CyberSmart, NetsSmartz, Common Sense Media

Unit 5: Research and Information Fluency

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

Understanding/goals	Essential Question(s):
Students will: ● 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.	● How can technology be used to investigate and explore a problem or an issue?

Student objectives:
Students will be able to:
- 8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.

Assessment Evidence

Performance Task(s):	Other Evidence:
● Plan a project to inform others	**Examples of Cross Curricular Formative & Summative Final Projects:** ● ELA - Digital Books ● Science - Engineering Design Process Projects ● Social Studies - Mapping

Suggested Materials and Resources

Resources:
BrainPop, Learn 360, World Book Encyclopedia Online, Google, GoogleEarth, World Almanac Online, PebbleGo, Ben's Guide, Kids.gov, Scholastic, Maps4kids.com, Speakaboos

Unit 6: Critical thinking, problem solving, and decision making

Content Standard:
- **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.**
- **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.*

Understanding/goals	**Essential Question(s):**
Students will: ● 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.	● How can technology help solve a problem? ● When is it appropriate to use technology? ● How can students use critical thinking skills & collaboration to plan, research and solve problems?

Student objectives:
Students will be able to:
- 8.1.2.F.1 Use geographic mapping tools to plan and solve problems.

[Assessment Evidence](#)	
Performance Task(s): ● Use Google Maps to tour American landmarks	**Other Evidence:** **Examples of Cross Curricular Formative & Summative Final Projects:** ● ELA - Persuasive writing ● Science - Develop a solution to a local or world-wide problem ● Social Studies - Develop a solution to a local or world-wide problem

Suggested Materials and Resources

Resources:
Google Maps, Google Earths, Map My Walk, Maps4Kids.com

Unit 1: Operations and Concepts

Content Standard(s):
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.

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

Understanding (s)/goals:	**Essential Question(s):**
Students will: ● Understand and use technology systems. ● Select and use applications effectively and productively.	● How can technology and related digital tools be used to facilitate communication? ● How can technology and digital tools be used to gather and organize information? ● How can technology and digital tools be used to create, format and publish a product?

Student objectives (outcomes):
Students 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](#)

Performance Task(s):	**Other Evidence:**
● Students will be able to create letters, signs, posters, cards, poems, etc. ● Students will be able to create a spreadsheet to show survey results, graph results ● Students will be able to create a simple database and use filter commands	● ELA - word processing, letters, brochures, comics ● Science - Posters, Powerpoint/Slides presentations, Explore.org ● Social Studies - Posters, Powerpoint/Slides presentations, Sutori ● Math - Spreadsheets, Charts

Suggested Materials and Resources

Materials & resources:
- Microsoft Word, Excel, Powerpoint
- Google Docs, Sheets, Slides, Draw, Forms

- Pixie
- Comic Life, Storyboardthat.com
- Kidspiration/Inspiration

Timeline: Addressed continuously throughout the years, to be completed by the end of 5th grade

Unit 2: Creativity and Technology

Content Standard(s):

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.

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

Understanding (s)/goals	Essential Question(s):
Students will: ● Apply existing knowledge to generate new ideas, products, or processes. ● Create original works as a means of personal or group expression.	● How can existing knowledge to generate new ideas, products, or processes? ● How can technology be used to create original works as a means of personal or group expression

Student objectives (outcomes):

Students 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

Performance Task(s):	Other Evidence:
● Create and use graphic organizers to categorize and present information. ● Determine the benefits of a wide range of digital tools by using them to solve problems. ● Collaborate to produce a digital story about a significant local event or issue based on first-person interviews.	● Includes pre-assessment, formative assessment, and summative assessment evidence ● Can be individual or group based ● Can include informal methods (such as formative assessments, quizzes, answers to questions on a worksheet, written reflection, essay ● ELA - Webs, Plot Diagrams, How To Booklet/Slideshow/Video ● Science - Venn Diagrams, Engineering Design Notebook, ● Social Studies - T Charts, Cartoon, Comic Strip, PSAs

Suggested Materials and Resources

Materials & resources:
- Kidspiration/Inspiration
- Digital Tools, such as camera, scanner, computer/laptop, SMART Board, document camera, electronic card catalog, etc.).
- Google Docs, Slides, Draw,
- Pixie
- Audacity/GarageBand

Timeline: Addressed continuously throughout the years, to be completed by the end of 5th grade

Unit 3: Communication and Collaboration

Content Standard(s):
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.

   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.*

Understanding (s)/goals	Essential Question(s):
Students will: ● 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.	● How can students use technology to interact, collaborate and publish with peers, experts, or others? ● How can students use technology to communicate information and ideas to multiple audiences? ● How can students use technology to develop cultural understanding and global awareness by engaging with learners of other cultures ● How can students use technology to contribute to project teams in order to produce original works or solve problems?

Student objectives (outcomes):
Students will be able to:
● 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	
Performance Task(s):	**Other Evidence:**
● 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.	● Includes pre-assessment, formative assessment, and summative assessment evidence ● Can be individual or group based ● Can include informal methods (such as formative assessments, quizzes, answers to questions on a worksheet, written reflection, essay ● ELA - Email authors ● Science - Live Webcam, Skype ● Social Studies - Augmented Reality

Suggested Materials and Resources

Materials & resources:
- Microsoft Word, Powerpoint
- Google Docs, Slides, Draw, Forms
- Social Media
- Comic Life, Storyboardthat.com
- ePals-(Global Community) http://www.epals.com/
- Google+ https://plus.google.com
- Global Classroom Connection- http://www.classroom-connection.org/index.html
- IEARN.ORG-International Education Resource Network http://www.iearn.org/
- Glogster-Interactive poster maker- http://www.glogster.com
- Skype-Internet free video chats-http://www.skype.com

Timeline: Addressed continuously throughout the year, to be completed by the end of 5th grade

Unit 4: Digital Citizenship

Content Standard(s):

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.

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

Understanding (s)/goals	Essential Question(s):
Students will: ● Advocate and practice safe, legal, and responsible use of information and technology. ● Demonstrate personal responsibility for lifelong learning. ● Exhibit leadership for digital citizenship.	● How can students advocate for and practice safe, legal, and responsible use of information and technology? ● How can students demonstrate personal responsibility and become lifelong learners? ● How can students exhibit leadership in the area of digital citizenship?

Student objectives (outcomes):

Students will be able to:
- 8.1.5.D.1 Understand the need for and use of copyrights.
- 8.1.5.D.2 Analyze the resource citations in online materials for proper use.
- 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.
- 8.1.5.D.4 Understand digital citizenship and demonstrate an understanding of the personal consequences of inappropriate use of technology and social media.

Assessment Evidence	

Performance Task(s):	Other Evidence:
● Develop an understanding of ownership of print and nonprint information. ● Understand the need for and use of copyrights. ● Demonstrate an understanding of the need to practice cyber safety, cyber security, and cyber ethics when using technologies and social media. ● Understand digital citizenship and demonstrate an understanding of the personal consequences of inappropriate use of technology and social media.	● Includes pre-assessment, formative assessment, and summative assessment evidence ● Can be individual or group based ● Can include informal methods (such as formative assessments, quizzes, answers to questions on a worksheet, written reflection, essay) ELA- works cited, posters, public service announcements, comics Science- works cited Social Studies- works cited

Suggested Materials and Resources

Materials & resources:
 	
    ● Common Sense Media - www.commonsensemedia.org
    ● Creative Commons - https://creativecommons.org/
    ● *CyberSmart*
    ● *NetsSmartz*
 	
Timeline: Addressed continuously throughout the year, to be completed by the end of 5th grade

Unit 5: Research and Information Fluency

Content Standard(s):

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.

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

Understanding (s)/goals	Essential Question(s):
Students will: ● 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.	● How can a computer be used to access, retrieve, synthesize, and evaluate information? ● How can technology be used to investigate and explore a problem or an issue? ● ELA - Digital Books, ● Science - Engineering Design Process Topics ● Social Studies - Mapping

Student objectives (outcomes):

Students will be able to:
● 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

Performance Task(s):	Other Evidence:
● Public Service announcement ● Research projects - Science, ELA	● Includes pre-assessment, formative assessment, and summative assessment evidence ● Can be individual or group based ● Can include informal methods (such as formative assessments, quizzes, answers to questions on a worksheet, written reflection, essay)

Suggested Materials and Resources

Materials & resources:
- Microsoft Word, Excel, Powerpoint
- Google Docs, Sheets, Slides, Draw, Forms
- Pixie
- Comic Life, Storyboardthat.com
- makebeliefscomix.com

Timeline: Addressed continuously throughout the year, to be completed by the end of 5th grade

Unit 6: Critical Thinking, Problem Solving, Decision Making

Content Standard(s): 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

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.*

Understanding (s)/goals	Essential Question(s):
Students will:	● How can technology help solve a problem?
● Identify and define authentic problems and significant questions for investigation.	● When is it appropriate to use technology?
	● How can students use critical thinking skills to plan, research and solve problems?
● Plan and manage activities to develop a solution or complete a project.	
● Collect and analyze data to identify solutions and/or make informed decisions.	

Student objectives (outcomes):
Students will be able to: **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.**
● 8.1.5.F.1 Apply digital tools to collect, organize, and analyze data that support a scientific finding.e accuracy of, relevance to, and appropriateness of using print and non-print electronic information sources to complete a variety of tasks.

Assessment Evidence

Performance Task(s):	Other Evidence:
● Identify and define authentic problems and significant questions for investigation.	● Includes pre-assessment, formative assessment, and summative assessment evidence
	● Can be individual or group based
● Plan and manage activities to develop a solution or complete a project.	● Can include informal methods (such as formative assessments, quizzes, answers to questions on a worksheet, written reflection, essay
● Collect and analyze data to identify solutions and/or make informed decisions.	
	● ELA - Persuasive writing
● Use multiple processes and diverse perspectives to explore alternative solutions.	● Science - Develop a solution to a local or world-wide problem, scientific method
	● Social Studies - Develop a solution to a local or world-wide problem

Suggested Materials and Resources

Materials & resources:
- Microsoft Word, Excel, Powerpoint
- Google Docs, Sheets, Slides, Draw, Forms
- Pixie
- Comic Life, Storyboardthat.com
- makebeliefscomix.com

Timeline: Addressed continuously throughout the year, to be completed by the end of 5th grade

Unit 1: Operations and Concepts

Content Standard(s):

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

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

Understanding (s)/goals Students will understand: ● Understand and use technology systems ● Select and use applications effectively and productively.	Essential Question(s): What leading questions can you ask of students to get them to understand the Big Ideas? ● How can a computer and related technologies be used to facilitate the writing and publishing process? ● How can inputting techniques be improved by the correct use of the keyboard and other devices?

Student objectives (outcomes):

Students will be able to:

1. 8.1.8.A.1 -Demonstrate knowledge of a real world problem using digital tools.
    a. Choose appropriate computer applications for organizing information
    b. Use appropriate graphic organizing software to create, construct or design a document.
2. 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.
    a. Demonstrate (Input) how to compose, revise, and insert special characters and/or merging documents.
    b. Demonstrate (Edit) how to cut, copy, paste, use the thesaurus, and use find/replace.
    c. Explain (format) how to create/use page breaks, columns, paragraph styles, margins, tabs, and text rulers.
    d. Demonstrate (Print) how to change orientation and scale.
    e. Utilize shortcut keystrokes
3. 8.1.8.A.3 - Use and/or develop a simulation that provides an environment to solve a real world problem or theory.
    a. Choose appropriate computer applications for simulating a real world problem or theory.
4. 8.1.8.A.4 - Graph and calculate data within a spreadsheet and present a summary of the results
    a. Enter and edit text and values
    b. Use mathematical formulas in a spreadsheet format
    c. Create and modify a spreadsheet by entering, formatting and manipulating cells.
5. 8.1.8.A.5 - Create a database query, sort and create a report and describe the process, and explain the report results
    a. Create a database
    b. Sort, search and arrange data
    c. Use data to produce a result

Assessment Evidence	
Performance Task(s): **Students will create-** - Friendly & Business Letters - Newsletter - Cards - Brochures - Booklets - Advertisement - Presentations - Invoices (Spreadsheet) - A Home Budget (Spreadsheet) - Chart (Based on Data) Students will analyze Data and create chart based off of the data (Spreadsheet)	**Other Evidence:** - Pre and post assessments - Group discussions - Quizzes & Exams - Analysis of exemplar work **Examples of Cross Curricular Formative & Summative Final Projects:** ELA - word processing, letters, brochures, booklets Science - Posters, Science lab charts, Presentations, virtual labs, databases Social Studies - Posters, Booklet, Brochures, Political Advertisements, Social media for historical figures, databases, Digital Presentation Math - Spreadsheets, Charts

Suggested Materials and Resources

Materials & resources:
- Google Apps for Education
    i. Doc's
    ii. Sheets
    iii. Slides
    iv. Drawing
    v. Forms
- Microsoft Applications
    i. Word
    ii. Excel
    iii. Powerpoint
- iWorks
    i. Numbers
    ii. Pages
    iii. Keynote

Communicate through networks and telecommunications.Timeline: These activities will be addressed continuously throughout the course of the school year

Also include any handouts, overhead transparencies/PowerPoint slides, and other relevant visuals and materials.

Web (Valid as of 3/2017)

prezi.com
piktochart.com
Canva.com
easel.ly
Powtoon.com
Quizlet.com
Thinglink.com

Key Vocabulary
Docs - Header, footer, margins, print area, table, sharing, permissions, comments, page break, add-ons
Sheets - Cell, Column, Row, Sort, Data, Charts, Formula, Cell Reference, Cell Range, Fill Handle
Slides/Presentations-Animations, Transitions, Themes, Images (GIF/JPEG), Voice Over, Sounds, WAVs, MP3, MP4, Link

Unit 2: Creativity and Innovation	
Content Standard(s): **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** **B. Creativity and Innovation:** *Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology*	
Understanding (s)/goals Students will understand: ● Apply existing knowledge to generate new ideas, products, or processes. ● Create original works as a means of personal or group expression.	**Essential Question(s):** What leading questions can you ask of students to get them to understand the Big Ideas? ● How can technology assist in the sharing of ideas, products, or processes? ● What technologies are appropriate for the dissemination of information?
Student objectives (outcomes): Students will be able to: 1. 8.1.8.B.1 -Synthesize and publish information about a local or global issue or event (ex. telecollaborative project, blog, school web). ● Create a movie, podcast, or blog discussing a local or global issue, or an event. ● Publish the movie, podcast, or blog to a shared hosted service	
[Assessment Evidence](#)	

Performance Task(s):
Students will make or create:
● Movies- (Subject matter topics such as Public Service Announcements, Science Topics, Heritage)
● Podcasts- (Subject matter topics Nursery Rhymes, Commercials, Poetry Reading, Book Talks, Interviews)
● Create Screencasts
● Infographic
● Create Blog entries and participate in a blogging community
● Create Website
● Topics can include
    ○ News Reporting
    ○ reports
    ○ Author Studies or Book Reviews
    ○ Infomercials
    ○ World Language
    ○ Artists and Works of Art
    ○ Engineering Process
    ○ Public Service Announcements
	Other Evidence:
	● Pre and post assessments
	● Group discussions
	● Quizzes & Exams
	● Analysis of exemplar work
	
	Other Evidence:
	Cross Curricular Formative & Summative Projects:
	● ELA - Create Infographics, Book Review Podcast, PSA Creation, Book Trailer Creation (iMovie), Writing Journal on Blog, Digital Storytelling, Book Review Website
	● Science - Charts, Engineering Design Notebook, Infographics, Blog Entries, Scientific Podcast, Imovie, Webstie creation
	● Social Studies - Cartoon, Comic Strip, PSAs, Infographics, Blog Entries

Suggested Materials and Resources

Materials & resources: List all.
 	
      iMovie   GarageBand   WeVideo
 	
     Quicktime   Final Cut Pro   Boinx
 	
 Storyboardthat.com   Screencastify   easel.ly
 	
  Google Drawings   Google Sites   Weebly.com
 	
Timeline: These activities will be addressed continuously throughout the course of the school year

Web (Valid as of 3/2017) easel.ly storyboardthat.com writecomics.com Screencastify Google Drawings **Key Vocabulary** Import, Export, Crop, Detach Audio, Split clip, Cut Away, Green Screen, Split Screen, Picture in Picture, Share,

Unit 3: Communication and Collaboration
Content Standard(s): **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** **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.*

Understanding (s)/goals Students will understand: ● 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.	**Essential Question(s):** What leading questions can you ask of students to get them to understand the Big Ideas? ● How can technology assist in the sharing of ideas, products, or processes? ● What technologies are appropriate for the dissemination of information?

Student objectives (outcomes): Students will be able to: ● 8.1.8.C.1-Collaborate to develop and publish work that provides perspectives on a global problem for discussions with learners from other countries. ● 8.1.8.C.1-Communicate through networks and telecommunications.

Assessment Evidence

Performance Task(s): ● 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.	**Other Evidence:** ● Pre and post assessments ● Group discussions ● Quizzes & Exams ● Analysis of exemplar work **Cross Curricular Formative & Summative Projects:** ● ELA - Email authors ● Science - Live Webcam, Skype ● Social Studies - Augmented Reality

Suggested Materials and Resources

Materials & resources: List all.
    ○ Google Apps for Education
        i. Doc's
        ii. Sheets
        iii. Slides
        iv. Drawing
        v. Forms
        vi. GMail
    ○ Microsoft Applications
        i. Word
        ii. Excel
        iii. Powerpoint
    ○ iWorks
        i. Numbers
        ii. Pages
        iii. Keynote
    ○ Glogster
    ○ Skype
    ○ Twitter
 	
Timeline: These activities will be addressed continuously throughout the course of the school year
Also include any handouts, overhead transparencies/PowerPoint slides, and other relevant visuals and materials.

Web (Valid as of 3/2017) Skype in Classroom Live Animal Cams - ePals - (Global Community) Glogster **Key Vocabulary** Share, permissions, collaborate, publish, synthesize

Unit 4: Digital Citizenship

Content Standard(s):
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

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

Understanding (s)/goals	Essential Question(s): What leading questions can you ask of students to get them to understand the Big Ideas?
Students will understand: ● Advocate and practice safe, legal, and responsible use of information and technology. ● Demonstrate personal responsibility for lifelong learning. ● Exhibit leadership for digital citizenship.	● How can a student demonstrate ethical use of technology? ● How can a student stay safe while operating in the online world? ● How can a student show an understanding of ownership and proper use of digital media?

Student objectives (outcomes):
Students will be able to:

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.
1. Exhibit legal and ethical behaviors when using information and technology.
2. Describe and practice "etiquette" when using the Internet and electronic mail.
3. Describe and practice safe Internet usage.
4. Explain the purpose of an Acceptable Use Policy and the consequences of inappropriate use of technology.

8.1.8.D.2 - Demonstrate the application of appropriate citations to digital content. Exhibit legal and ethical behaviors when using information and technology.

8.1.8.D.3 - Demonstrate an understanding of fair use and Creative Commons to intellectual property. Explain the purpose of an Acceptable Use Policy and the consequences of inappropriate use of technology.

8.1.8.D.4 - Assess the credibility and accuracy of digital content. Evaluate information to determine relevancy and accuracy.

8.1.8.D.5 - Understand appropriate uses for social media and the negative consequences of misuse.
1. Exhibit legal and ethical behaviors when using information and technology.
2. Describe and practice "etiquette" when using the Internet and electronic mail.
3. Describe and practice safe Internet usage.
4. Explain the purpose of an Acceptable Use Policy and the consequences of inappropriate use of technology.

Assessment Evidence	
Performance Task(s): ● Create a multimedia presentation exhibiting appropriate online behaviors (ex. iMovie, PowerPoint, Wix) ● Create an interactive poster explaining the school AUP (Glogster) ● Work/Create on a Cyber Safety Webquest ● Create an iBook using iBook Author on Cyber Safety/AUP/Cyber Ethics ● MLA citation creation	**Other Evidence:** ● Pre and post assessments ● Group discussions ● Quizzes & Exams ● Analysis of exemplar work **Cross Curricular Formative & Summative Projects:** ● ELA - DBQ on Ethical use of Technology, Analyze AUP, Newsela articles, Glogster on Ethical Use of Digital Tools ● Social Studies - Debate Ethical Use of Technology/Copyright law, Create a Propaganda Campaign for Digital Ethics, DBQ on Ethical Use of Technology, Infochart on Ethical hacking

Suggested Materials and Resources

Materials & resources: List all.

www.netzsmartz.org	Common Sense Media
esafety.gov.au/education-resources/classroom-resources	www.isafe.org
http://www.cybersmart.org	http://www.missingkids.com
http://cyberbullying.us/	http://foxborough.k12.ma.us/cyberquoll/html
Cyber Netrix-http://www.sk.qld.edu.au/school-information/woody/Cybernetrix/resources/student/bedroom/bedroom_03.htm	nsteens.org

Timeline: These activities will be addressed continuously throughout the course of the school year

Works Cited Websites
BibMe
EasyBib

Digital Citizenship
Cybernetrix
Netsmartz
NSTeens
CyberQuoll
Cybersmart
iSafe
Common Sense Media

esafety.gov.au/education-resources/classroom-resources
Brain Pop
In Ctrl
iSafe
iCivics

Unit 5: Research and Information Fluency

Content Standard(s):

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

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

Understanding (s)/goals	Essential Question(s): What leading questions can you ask of students to get them to understand the Big Ideas?
Students will understand: ● the proper usage of digital tools in a learning environment ● how to apply their knowledge of digital tools to gather and evaluate information	● How can technology assist in the sharing of ideas, products, or processes? ● What technologies are appropriate for the dissemination of information? ● How can technology be used to access, retrieve, synthesize, and evaluate information?

Student objectives (outcomes):

Students 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.
  - Communicate through networks and telecommunications
  - Use computer applications to modify information independently and/or collaboratively to solve problems.

Assessment Evidence

Performance Task(s):	Other Evidence:
● 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.	● Pre and post assessments ● Group discussions ● Quizzes & Exams ● Analysis of exemplar work **Examples of Cross Curricular Formative & Summative Final Projects:** ● ELA - Research Project ● Science - Engineering Design Process Projects ● Social Studies - Research Projects

Suggested Materials and Resources	
Materials & resources:	

Google Apps for Education
    ○ Doc's
    ○ Sheets
    ○ Slides
    ○ Drawing
    ○ Forms
    ○ GMail
    ○ Google Earth
	Microsoft Applications
	    ○ Word
	    ○ Excel
	    ○ Powerpoint

Twitter	Bibliographies BibMe EasyBib

Apple
    ○ Numbers
    ○ Pages
    ○ Keynote
    ○ iMovie
    ○ Garageband
	iCivics

Glogster	iSafe.org
Skype	Prezi
Kahoot	Edpuzzle.com
Quizlet	PearDeck
GeoGuesser	Canva
Picktochart	Diigo
WeVideo	iMovie
Brain Pop	Learn 360
YouTube	Discovery Video

Maps4kids.com	World Almanac Online

Unit 6: Critical Thinking, problem solving, decisions making	
Content Standard(s): **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** **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.*	
Understanding (s)/goals Students will understand: ● appropriate use of digital tools and resources in a learning environment ● how to solve a problem using appropriate technology	**Essential Question(s):** What leading questions can you ask of students to get them to understand the Big Ideas? ● How can technology help solve a problem? ● When is it appropriate to use technology? ● What is the appropriate digital tool to be used to solve a problem? ● How can students use critical thinking skills to plan, implement the plan and evaluate their results of their actions?
Student objectives (outcomes): Students will be able to: ● 8.1.12.F.1-Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.	
Assessment Evidence	
Performance Task(s): ● Use multiple processes and diverse perspectives to explore alternative solutions. ● Collect and analyze data to identify solutions and/or make informed decisions. ● Plan and manage activities to develop a solution or complete a project. ● Identify and define authentic problems and significant questions for investigation.	**Other Evidence:** ● Pre and post assessments ● Group discussions ● Quizzes & Exams ● Analysis of exemplar work **Examples of Cross Curricular Formative & Summative Final Projects:** ● ELA - Persuasive writing ● Science - Case studies on technologies, Venn Diagrams ● Social Studies - Case Studies

Suggested Materials and Resources

Materials & resources:

Google Apps for Education
  ○ Doc's
  ○ Sheets
  ○ Slides
  ○ Drawing
  ○ Forms
  ○ GMail
  ○ Google Earth
	Microsoft Applications
	  ○ Word
	  ○ Excel
	  ○ Powerpoint

Twitter	BibMe/EasyBib-(Bibliographies)

Apple
  ○ Numbers
  ○ Pages
  ○ Keynote
  ○ iMovie
  ○ Garageband
	iCivics

Web (valid as of 3/2017)

Maps4kids.com	Brainpop	Common Sense Media
Youtube	Kahoot	EdPuzzle.com
Glogster	isafe	Skype
Twitter	Prezi	Canva
Quizlet	Geoguesser	Easy bib
Pear Deck	Piktochart	WeVideo
World Almanac	Discovery Video	

Key Vocabulary
investigate, analyze, compare and contrast

Technology Grades 9-12

Technology and Engineering

The Technology Education Department offers programs designed to develop one's ingenuity and a wide variety of other skills and abilities for college, career, and life. The learning experiences include problem solving, creative thinking, technical documentation, experimentation, design construction, and evaluation, all of which assist students in making informed and meaningful decisions. The department's courses offer a wide variety of opportunities to fulfill the needs and interests of all students.

TECHNOLOGY AND ENGINEERING FOUNDATIONS   Full Year

9-12

The Technology and Engineering Foundations course will provide the requisite skills and knowledge necessary for students interested in STEM career pathways. This course also serves as the best course for students that wish to explore STEM interests and/or fulfill a course requirement for graduation with a technology and engineering course. The course is highly hands-on and project oriented and students gain foundational experiences in hand sketching and drawing, computer aided design (CAD), engineering design, electronics, computer programming, and the use of hand, machine, and prototyping tools. This course is the foundational course for three career pathway programs: engineering, information technology and computer science, and health and biomedical sciences.

BIOMEDICAL TECHNOLOGY 1   Full Year

10, 11

This is a first year course for students interested in pursuing a Biomedical Sciences career pathway. Students will participate in hands-on activities focusing on applications of biomedical engineering including the design and construction of medical devices, diagnostics, and monitoring equipment. Science, mathematics, and technology will be integrated and applied to ethically solving real-world problems. Speakers and field trips will also be utilized to provide students with an introduction as to how the studies of biomedical engineering and biomedical science provide career opportunities in one of New Jersey's key industries. Recommended prior course: Technology and Engineering Foundations

BIOMEDICAL TECHNOLOGY 2   Full Year

11, 12

Prerequisite: Biomedical Technology 1, 1H

This is a second year course for students interested in pursuing a Biomedical Sciences career pathway. Students will participate in hands-on activities focusing on applications of biomedical engineering including the design and construction of medical devices, diagnostics, and monitoring equipment. Science, mathematics, and technology will be integrated and applied to ethically solving real-world problems in areas including, but not limited to, prosthetics and robotic surgery. Speakers and field trips will also be utilized to provide students with an introduction as to how the studies of biomedical engineering and biomedical science provide career opportunities in one of New Jersey's key industries. Recommended prior course: Technology and Engineering Foundations

INNOVATION AND INVENTION **Full Year**

10-12

The Innovations and Invention course provides a context for young people to develop and apply their ingenuity. Developing the power of creative imagination in young people is crucial to their future success and also to the nation's economic prowess. This course seeks to develop students' ability to apply clever ideas to solve problems and meet technological challenges. The course ideal is one in which students are able to research and imagine a range of possible solutions to problems, make appropriate decisions, develop and implement effective solutions, and recognize opportunities for entrepreneurial success.

TECHNICAL AND ARCHITECTURAL DESIGN 1 **Full Year**

10-12

This is the introductory course for students interested in engineering, architecture, design, or any technical career. Extensive use of computer-aided drawing and design (CAD) will give the student necessary background information and experiences consistent with those needed as undergraduates in any of the aforementioned majors.

TECHNICAL AND ARCHITECTURAL DESIGN 2 **Full Year**

11, 12

Prerequisite: Technical and Architectural Design 1

This course continues with the principles taught in Technical Drawing and Design I, but with opportunities for broader computer application. This includes practice in perspectives, development of surfaces, sections, threads, assemblies, and exploded views. Creative problem solving, material analysis, technical research, and documentation problems will be employed to further the technical education of those students electing this course.

TECHNICAL AND ARCHITECTURAL DESIGN 3 **Full Year**

12

Prerequisite: Technical and Architectural Design 2

This course is designed to instruct students in the fundamentals of engineering graphics using computer-aided drawing and design (CAD). Students will learn to draw cams, gears, assemblies, and exploded views on both CAD and traditional systems, using creative problem solving techniques and the development of an invention. Students will be given the opportunity to create designs and prepare working drawings and prototypes to substantiate their designs.

WOODWORKING PROCESSES AND PRODUCTS 1   **Full Year**

10-12

Through the use of creative problem solving, and the use of technological innovations, students will be instructed in the safe use of hand and power tools, characteristics of various woods, assembly techniques, design, characteristics of various natural woods and synthetic materials, finishing and the efficient use and conservation of resources. Projects will be used as a medium to develop student skills.

WOODWORKING PROCESSES AND PRODUCTS 2   **Full Year**

11, 12

Prerequisite: Woodworking Processes and Products 1

Using the skills learned in Woodworking Processes and Products I, the students will learn more advanced power tool operations, fabrication techniques, joinery, glues, fasteners, and spray finishing techniques. Technical documentation, the use of robots in manufacturing, CAD, and creative problem solving techniques will be employed to further the technological education of the students in this field. Projects will be used as a medium to develop skills.

WOODWORKING PROCESSES AND PRODUCTS 3   **Full Year**

12

Prerequisite: Woodworking Processes and Products 2

This advanced course will stress individual student needs in developing project design using various natural and synthetic materials, along with project construction and techniques consistent with those of a high tech manufacturing firm. Completion of the three woodworking courses will expose the students to advanced level technological experiences which they will be able to translate into a future career and vocational situations.

THEORY OF PRODUCTION   **Full Year**

11, 12

This is a full year course in which the students will collaboratively develop a concept to manufacture and produce a product of their own design. During the first part of the school year, students will research a problem and design and prototype a product to address it. During the second part of the school year, students will focus on preparing for an appropriately scaled production run of that product. Other concepts to be explored through this course will include methods of manufacturing, tooling and processes, methods of prototyping, materials and material science, and entrepreneurial thinking.

COMPUTER PROGRAMMING   (formerly Introduction to Computer Programming)   **Full Year**

10-12

The primary goal of this course is to provide students with an introductory experience to computer programming. Students will be introduced to the main concepts of the design and engineering of computer applications through software principles such as object-oriented design, decomposition, encapsulation, abstraction, and testing. The course will provide an introductory experience and orientation to the C programming language. The emphasis of the course will be on good programming practices that draw upon the basic principles of engineering applied in software design.

COMPUTER SCIENCE PRINCIPLES   **Full Year**

11, 12

Prerequisite: (Computer Programming, Introduction to Programming)

Computer Science Principles introduces students to the foundational concepts of computer science and challenges them to explore how computing and technology can impact the world. With a unique focus on creative problem solving and real-world applications, Computer Science Principles prepares students for college and career. The focus of the course is computational thinking and conceptual understandings of creativity, abstraction, data and information, algorithms, programming, the Internet, and global impact, communicating, and collaborating. Students may engage in projects using a variety of programming languages in creating applications for variety of projects such as mobile and computer applications, microcontrollers, and robotics.

OPEN INGENUITY LAB   **Full Year**

11, 12

The main goal of this course is to provide eleventh and twelfth grade students with an opportunity for a student driven, teacher guided, semi-structured project/problem based learning experience. This course provides an opportunity for students who are interested in integrative Science, Technology, Engineering, and Mathematics (STEM) topics to engage in a related project based experience. Students will work with their teacher to identify their core ingenuity competencies, to propose a comprehensive project, and identify resources needed to accomplish their project. They will then carry their project to fruition including a comprehensive presentation and assessment based upon the core ingenuity competencies.