Verona Public School District Curriculum Overview

CompSci 5 - Introduction to Computers



Curriculum Committee Members:

Andor Kish

Supervisor:

Glen Stevenson

Curriculum Developed:

Summer 2014 Revised Spring 2019 Revised Fall 2020 Revised Summer 2020 Revised Summer 2022

Board Approval Date:

March 25, 2015 June 25, 2019 November 10, 2020 August 30, 2022

Verona Public Schools 121 Fairview Ave., Verona, NJ 07044 www.veronaschools.org

Verona Public Schools Mission Statement:

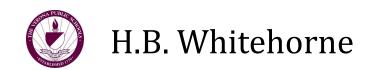
In partnership with a supportive community, we inspire our students to be creative, critical thinkers and compassionate global citizens through dynamic teaching, meaningful curricula, and enriching experiences.

Course Description:

Introduction to Computers familiarizes students with the basic functions of the computer which are vital to becoming computer literate in the 21stcentury. Students will employ the basic set of rules for proper technological etiquette and digital citizenship. Additional topics will include Web 2.0 apps, typing, digital photography, and image editing.

Prerequisite(s):

None



Standard 8: Technology Standards

The curricular expectation for the Standard 8: Computer Science and Design Thinking standards in classes that are not specifically focused on computer science or engineering is <u>infusion</u> and <u>integration</u> throughout the curriculum. These are not intended to be standards for separate, stand alone lessons. The computer science and design thinking standards and practices are to be incorporated into other disciplines and contexts as appropriate.

8.1: Computer Science	8.2: Design Thinking
 X Computing Systems (CS) X Networks and the Internet (NI) X Impacts of Computing (IC) X Data & Analysis (DA) X Algorithms & Programming (AP) 	 X Engineering Design (ED) X Interaction of Technology and Humans (ITH) X Nature of Technology (NT) Effects of Technology on the Natural World (ETA) Ethics and Culture (EC)

Computer Science and Design Thinking Practices

- X 1. Fostering an Inclusive Computing and Design Culture
- X 2. Collaborating Around Computing and Design
- X 3. Recognizing and Defining Computational Problems
- X 4. Developing and Using Abstractions
- X 5. Creating Computational Artifacts
- X 6. Testing and Refining Computational Artifacts
- X 7. Communicating About Computing and Design

SEL Competencies and Career Readiness, Life Literacies, and Key Skills Practices

The curricular expectation for the Standard 9: Career Readiness, Life Literacies, and Key Skills standards is <u>infusion</u> and <u>integration</u> throughout the curriculum. These are not intended to be standards for separate, stand alone lessons. The CLKS are to be incorporated into other disciplines and contexts as appropriate.	
Social and Emotional Learning Core Competencies: These competencies are identified as five interrelated sets of cognitive, affective, and behavioral capabilities	Career Readiness, Life Literacies, and Key Skills Practices: Career Readiness, Life Literacies, and Key Skills Practices describe the habits of the mind that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. These practices should be taught and reinforced in all content areas with increasingly higher levels of complexity and expectation as a student advances through a program of study.
Self-awareness: The ability to accurately recognize one's emotions and thoughts and their influence on behavior. This includes accurately assessing one's strengths and limitations and possessing a well-grounded sense of confidence and optimism.	X CLKS6 Model integrity, ethical leadership, and effective management. CLKS7 Plan education and career paths aligned to personal goals.
Self-management: The ability to regulate one's emotions, thoughts, and behaviors effectively in different situations. This includes managing stress, controlling impulses, motivating oneself, and setting and working toward achieving personal and academic goals	CLKS2 Attend to financial well-being. X CLKS4 Demonstrate creativity and innovation. X CLKS5 Utilize critical thinking to make sense of problems and persevere in solving them. X CLKS8 Use technology to enhance productivity, increase collaboration, and communicate effectively.
Social awareness: The ability to take the perspective of and empathize with others from diverse backgrounds and cultures, to understand social and ethical norms for behavior, and to recognize family, school, and community resources and supports.	 X CLKS1 Act as a responsible and contributing community member and employee. X CLKS6 Model integrity, ethical leadership, and effective management.
Relationship skills: The ability to establish and maintain healthy and rewarding relationships with diverse individuals and groups. This includes communicating clearly, listening actively, cooperating, resisting inappropriate social pressure, negotiating conflict constructively, and seeking and offering help when needed.	X CLKS6 Model integrity, ethical leadership, and effective management. CLKS9 Work productively in teams while using cultural global competence.
Responsible decision making: The ability to make constructive and respectful choices about personal behavior and social interactions based on consideration of ethical standards, safety concerns, social norms, the realistic evaluation of consequences of various actions, and the well-being of self and others.	CLKS3 Consider the environmental, social, and economic impact of decisions. X CLKS5 Utilize critical thinking to make sense of problems and persevere in solving them. X CLKS6 Model integrity, ethical leadership, and effective management.

Course Materials	
Core Instructional Materials : These are the board adopted and approved materials to support the curriculum, instruction, and assessment of this course.	Differentiated Resources : These are teacher and department found materials, and also approved support materials that facilitate differentiation of curriculum, instruction, and assessment of this course.
 Teacher Developed Materials Google Classroom GAFE 	 Nearpod YouTube Common Sense Media Photopea

Unit Duration: 4-5 Days Unit Title / Topic: Basic Computer Functions in GAFE

Stage 1: Desired Results

Established Subject Area Goals (NJSLS):

Established Goals:

- 8.1.5.CS.2: Model how computer software and hardware work together as a system to accomplish tasks.
- 8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.
- 8.1.5.IC.2: Identify possible ways to improve the accessibility and usability of computing technologies to address the diverse needs and wants of users.
- 8.2.5.ED.1: Explain the functions of a system and its subsystems.
- 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
- 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Interdisciplinary Standards (NJSLS):

- 1.5.5.Cr1a: Brainstorm and curate ideas to innovatively problem solve during artmaking and design projects.
- 1.5.5.Cr1b: Individually and collaboratively set goals, investigate, choose, and demonstrate diverse approaches to art-making that is meaningful to the makers.
- 1.5.5.Cr2a: Experiment and develop skills in multiple art-making techniques and approaches, through invention and practice.
- 1.5.5.Cr3a: Reflect, refine, and revise work individually and collaboratively, and discuss and describe personal choices in artmaking
- 5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- 5.NF.B.4.B Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
- 5.NF.B.5.A Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
- 5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Technology Integration (NJSLS 8):

See Above

21st Century Skills Integration (NJSLS 9):

- **CLKS1** Act as a responsible and contributing community member and employee.
- **CLKS4** Demonstrate creativity and innovation.
- **CLKS5** Utilize critical thinking to make sense of problems and persevere in solving them.
- **CLKS6** Model integrity, ethical leadership and effective management.
- **CLKS9** Work productively in teams while using cultural/global competence.
- 9.4.5.DC.1: Explain the need for and use of copyrights.
- 9.4.5.DC.2: Provide attribution according to intellectual property rights guidelines using public domain or creative commons media.
- 9.4.5.DC.3: Distinguish between digital images that can be reused freely and those that have copyright restrictions.
- 9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology.
- 9.4.5.DC.5: Identify the characteristics of a positive and negative online identity and the lasting implications of online activity.
- 9.4.5.DC.6: Compare and contrast how digital tools have changed social interactions.
- 9.4.5.DC.7: Explain how posting and commenting in social spaces can have positive or negative consequences.

Transfer Goal:

Students will be able to <u>independently</u> use their learning to...

- 1) demonstrate computer literacy by properly using hardware to access and run apps and produce digital products.
- 2) understand basic functions of the computer are vital to becoming computer literate in the 21st century

Students will understand that:

- 1. Digital etiquette/citizenship is a basic set of rules you should follow in order to make the internet better for others, and better for you.
- 2. Web 2.0 apps and desktop apps works seamlessly with one another
- 3. Typing is a vital skill not only in education, but also in everyday life.
- 4. Digital photo and image editing is a skill that is widely used to enhance all types of media.

Essential Questions:

- 1. What is the function of a computer?
- 2. What does it mean to be cross-platform?
- 3. What is an input?
- 4. What is a gradient and where have you seen one before?

Students will know:

- 1. How to login.
- 2. How to copy, cut, and paste (4 different ways)
- 3. Locate and use the search feature from the desktop.
- 4. Create a new folder in their documents folder and save successfully.
- 5. How different programs save differently, i.e., file extensions.
- 6. The layout of the keyboard.
- 7. Navigate the Web for images or use ClipArt for images.

Students will be able to:

- 1. Use hotkeys and other shortcuts.
- 2. Use the search feature to locate programs quickly and efficiently.
- 3. Use Google Slides to demonstrate basic computer understandings.
- 4. Create Google Slides by changing font, background, cutting, pasting, copying, and other functions about themselves.
- 5. Design and implement a gradient background.

Stage 2: Acceptable Evidence

Transfer Task and Unit Assessments:

Students will be able to independently use their learning to...

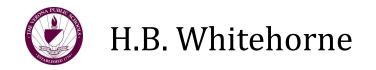
Create a Google Slide presentation about themselves that will be shared with the class on Google Classroom. Students will comment on others' Google Slides.

Other Evidence:

Formal:

• Providing written/oral response to the EQs

- Teacher observation of daily progress
- Discussions
- Participation
- Acceptable use of ICT



Teacher Created Materials in Google Classroom

Stage 3: Activities to Foster Learning

Learning Activities

Create a Google Slide presentation about themselves that will be shared with the class on Google Classroom. Students will comment on others' Google

Accommodations and Modifications

Differentiation for Students with IEPs, 504s. and/or Students at Risk of Failure (IEP/504/RF)

- Use of calculator
- Use of a math grid
- Access to electronic texts
- Preferential Seating
- Provide extended time (Tests, Projects, Quizzes, Classwork, etc.)
- Provide written notes
- Modified assignments and/or given in shorter segments
- Provide graphic organizers
- Provide study guides for assessments
- Provide written directions for longer assignments
- 11. Provide orals directions as well as written
- 12. Establish a non-verbal cue to redirect attention
- 13. Check for understanding
- 14. Include student in small group instruction
- 15. Advance notice of large assignments and assessments
- 16. Call on student only when he/she volunteers
- 17. Oral follow-up/ brainstorming
- Pair with friend for assignments
- 19. Directions/ tests read aloud
- 20. Close and consistent communication with home
- Allow use of ChromeBook
- 22. Allow use of voice typing
- 23. Create electronic lab sheets
- Allow frequent and active movement breaks
- Include sensory breaks if and when needed
- Allow to stand during written work
- Teach organizational and time management strategies
- Encourage appropriate socialization with peers
- Breaking up of larger assignments when appropriate
- Assignments will be given in shorter segments/ checked for correctness
- Simplify complex directions 31.
- Do not penalize for spelling errors
- 33. Positive Reinforcement System
- Test in smaller group setting 35. Provide visuals to teach concepts
- Have students engage in hands on learning
- Small group teaching when possible
- Model and use gestures to aid in understanding
- Model tasks by giving one or two examples before releasing students to work independently
- Self-paced tutorials/walkthroughs that the students may use to recall

Differentiation for English Language Learners

- Provide alternate ways for the student to respond (verbal/pictographic answers instead of written)
- Substitute a hands-on activity or use of different media in projects for a written activity
- 3. Provide word banks / word walls
- Prepare and distribute advance notes
- Provide model sentence frames and sentence starters for both oral responses and written responses
- Provide additional time to complete assessments and assignments
- Model and use gestures to aid in understanding
- Model tasks by giving one or two examples before releasing students to work independently
- Present instructions both verbally and visually
- 10. Simplify written and verbal instructions
- 11. Allow students to use eDictionaries
- 12. Avoid slang and idiomatic expressions.
- 13. Speak clearly and naturally, and try to enunciate words, especially their ending sounds.
- 14. Provide Sensory Supports (Real-life objects, Manipulatives, Pictures & photographs, Illustrations, Diagrams, & drawings, Magazines & newspapers, Physical activities, Videos & films, Broadcasts, Models & figures)
- 15. Provide Graphic Supports (Charts, Graphic organizers, Tables, Graphs,
- 16. Provide Interactive Supports(Pair or Partner work, Group work, Peer
- 17. Simplify the language, format, and directions of the assessment
- 18. Accept correct answers on test or worksheets in any written form such as lists, phrases, or using inventive spelling
- 19. Allow editing and revision before grading
- 20. Design projects and assessment for student that require reduced sentence or paragraph composition
- 21. Give alternative homework or class work assignments suitable to the student's linguistic ability for activities and assessments
- 22. Utilize alternate reading assignments/materials at the student's reading
- 23. Allow for alternate seating for proximity to peer helper or teacher as necessarv
- 24. Assist student in building a picture file of key vocabulary (Pics4Learning, Webster's Visual Dictionary Online, ClipArt Etc, Shahi Visual Dictionary)
- 25. When showing video used Closed Captioning. Some videos also allow for a slower replay so the speech is not as fast.
- 26. Provide wait-time sufficient for English language learners who are trying to translate terms while formulating an explanation - Sufficient wait time is often said to be about 7-10 seconds
- 27. Check for understanding consistently ask students one-on-one what their questions are, monitor their progress on independent work and redirect as needed. They may not understand or be hesitant to verbalize what they do not understand at first, so monitor and give examples.
- 28. Support use of student's primary language by translating key words in directions, or key vocabulary terms or giving students opportunities to communicate in their primary language (written or orally)

<u>Additional Resources:</u>

- 20 strategies to Support EAL Children
- What English Language Learners Wish Teachers Knew Education Week A Starting Point: Tips and resources for working with ESL newcome

Differentiation for Enrichment:

- Know their interests by doing an interest inventory
- Keep them active/offer flexible seating
- Share and discuss current events solve real world problems
- Vary groupings (from working alone to larger groups and/or cross-grade groupings)
- Allow them to incorporate other subject and topics
- Teach decision-making
- Model organization strategies based on "real-world" scenarios
- Use brain breaks (puzzles, doodle notes)
- Encourage reading of all types biography, scientific journals, etc
- Pre-assess to avoid rehashing prior knowledge Teach them to practice mindfulness
- 12. Find a mentor within their interest area (possibly Skype with scientists/engineers, etc.)
- Practice like professionals
- Submit inventions
- Community Service Learning
- Model curiosity
- Provide opportunities for open-ended, self-directed activities
- Provide instruction in research skills needed to conduct an independent study in student's interest area
- Provide independent learning opportunities
- Use advanced supplementary/reading materials
- Encourage the use of creativity
- Ask higher level questions
- Provide opportunities to develop depth and breadth of knowledge in a subject area
- Enrichment packets

Additional Resources:

Serving Gifted Students in General Ed Classrooms

Unit Title / Topic: Digital Etiquette/Citizenship Unit Duration: 3-4 Days

Stage 1: Desired Results

Established Subject Area Goals (NJSLS):

- 8.1.5.IC.1: Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes.
- 8.1.5.IC.2: Identify possible ways to improve the accessibility and usability of computing technologies to address the diverse needs and wants of users.
- 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.
- 8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data.
- 8.1.5.DA.4: Organize and present climate change data visually to highlight relationships or support a claim.
- 8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data.
- 8.1.5.NI.2: Describe physical and digital security measures for protecting sensitive personal information.
- 8.2.5.ITH.1: Explain how societal needs and wants influence the development and function of a product and a system.

Interdisciplinary Standards (NJSLS):

- 1.5.5.Cr1a: Brainstorm and curate ideas to innovatively problem solve during artmaking and design projects.
- 1.5.5.Cr1b: Individually and collaboratively set goals, investigate, choose, and demonstrate diverse approaches to art-making that is meaningful to the makers.
- 1.5.5.Cr2a: Experiment and develop skills in multiple art-making techniques and approaches, through invention and practice.
- 1.5.5.Cr3a: Reflect, refine, and revise work individually and collaboratively, and discuss and describe personal choices in artmaking
- 5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- 5.NF.B.4.B Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
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- 5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Technology Integration (NJSLS 8):

See Above

21st Century Skills Integration (NJSLS 9):

CLKS1 Act as a responsible and contributing community member and employee.

- **CLKS4.** Demonstrate creativity and innovation.
- CLKS5. Utilize critical thinking to make sense of problems and persevere in solving them.
- CLKS6. Model integrity, ethical leadership and effective management.

CLKS9 Work productively in teams while using cultural/global competence.

- 9.4.5.DC.1: Explain the need for and use of copyrights.
- 9.4.5.DC.2: Provide attribution according to intellectual property rights guidelines using public domain or creative commons media.
- 9.4.5.DC.3: Distinguish between digital images that can be reused freely and those that have copyright restrictions.
- 9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology (e.g., 8.1.5.NI.2).
- 9.4.5.DC.5: Identify the characteristics of a positive and negative online identity and the lasting implications of online activity.
- 9.4.5.DC.6: Compare and contrast how digital tools have changed social interactions (e.g., 8.1.5.IC.1).
- 9.4.5.DC.7: Explain how posting and commenting in social spaces can have positive or negative consequences.

Transfer Goal:

Students will be able to independently use their learning to demonstrate proper digital etiquette while interacting in the class .

Digital etiquette/citizenship is a basic set of rules you should follow in order to make the internet better for others, and better for you.

Students will understand that:

- 1. Digital etiquette is ever changing and evolves as quickly as technology itself.
- 2. Digital etiquette applies to every digital device and not just a computer.
- 3. Understand and explain why it is important to practice safe internet and computer skills at school and at home.
- 4. Describe appropriate communication with a computer and internet as tools.
- 5. Understand how to protect yourself and your computer when online.

Students will know:

- 1. How should people act online? Why is it different from their offline behaviors?
- 2. Define Digital Etiquette in your own words.

Essential Questions:

- 1. How should people act online? Why is it different from their offline behaviors?
- 2. Define Digital Etiquette in your own words.

Students will be able to:

- 1. Determine if they are being Phished
- 2. Know when and where to share specific information
- 3. Know what to do in the event of a cyber-bullying incident.

Stage 2: Acceptable Evidence

Transfer Task and Unit Assessments:

Students will be able to independently use their learning to...

Understand how one's online behavior can affect others. Identify appropriate times and places for technology use. Understand the consequences for cyberbullying and negative online behaviors.

Other Evidence:

Formal:

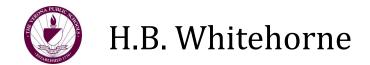
Providing written/oral response to the EQs

Informal:

- Teacher observation of daily progress
- Discussions
- Participation
- Acceptable use of ICT

Reference Materials

Teacher Created Materials in Google Classroom, Common Sense Media, and Nearpod.



Stage 3: Activities to Foster Learning

Learning Activities

- Understand how one's online behavior can affect others. Identify appropriate times and places for technology use.
- Understand the consequences for cyberbullying and negative online behaviors.

Accommodations and Modifications

Differentiation for Students with IEPs, 504s, and/or Students at Risk of Failure (IEP/504/RF)

- Use of calculator
- Use of a math grid
- Access to electronic texts
- Preferential Seating
- Provide extended time (Tests, Projects, Quizzes, Classwork, etc.)
- Provide written notes
- Modified assignments and/or given in shorter segments
- Provide graphic organizers
- Provide study guides for assessments
- Provide written directions for longer assignments
- Provide orals directions as well as written
- Establish a non-verbal cue to redirect attention
- 13 Check for understanding
- Include student in small group instruction
- Advance notice of large assignments and assessments
- 16. Call on student only when he/she volunteers
- 17 Oral follow-up/ brainstorming
- Pair with friend for assignments
- Directions/ tests read aloud
- Close and consistent communication with home 20.
- 21. Allow use of ChromeBook
- Allow use of voice typing
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- Allow frequent and active movement breaks
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- Allow to stand during written work
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- 28. Encourage appropriate socialization with peers
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- Simplify complex directions
- Do not penalize for spelling errors
- Positive Reinforcement System Test in smaller group setting
- Provide visuals to teach concepts
- 36. Have students engage in hands on learning
- Small group teaching when possible
- Model and use gestures to aid in understanding
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Differentiation for English Language Learners

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- 14. Provide Sensory Supports (Real-life objects, Manipulatives, Pictures & photographs, Illustrations, Diagrams, & drawings, Magazines & newspapers, Physical activities, Videos & films, Broadcasts, Models &
- 15. Provide Graphic Supports (Charts, Graphic organizers, Tables, Graphs, Timelines, Number lines)
- 16. Provide Interactive Supports(Pair or Partner work, Group work, Peer Mentor)
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- 18. Accept correct answers on test or worksheets in any written form such as lists, phrases, or using inventive spelling
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- 20. Design projects and assessment for student that require reduced sentence or paragraph composition
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- When showing the video used Closed Captioning. Some videos also allow for a slower replay so the speech is not as fast. 26. Provide wait-time sufficient for English language learners who are trying to
- translate terms while formulating an explanation Sufficient wait time is often said to be about 7-10 seconds 27. Check for understanding consistently - ask students one-on-one what their questions are, monitor their progress on independent work and

redirect as needed. They may not understand or be hesitant to verbalize

what they do not understand at first, so monitor and give examples. 28. Support use of student's primary language by translating key words in directions, or key vocabulary terms or giving students opportunities to communicate in their primary language (written or orally)

Additional Resources:

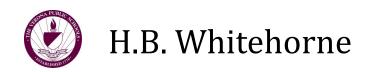
- 20 strategies to Support EAL Children
- What English Language Learners Wish Teachers Knew Education Week
- A Starting Point: Tips and resources for working with ESL newcomer

Differentiation for Enrichment:

- Know their interests by doing an interest inventory
- Keep them active/offer flexible seating
- Share and discuss current events solve real world problems
- Vary groupings (from working alone to larger groups and/or cross-grade
- Allow them to incorporate other subject and topics
- Teach decision-making
- Model organization strategies based on "real-world" scenarios
- Use brain breaks (puzzles, doodle notes)
- Encourage reading of all types biography, scientific journals, etc
- Pre-assess to avoid rehashing prior knowledge
- Teach them to practice mindfulness
- Find a mentor within their interest area (possibly Skype with scientists/engineers, etc.)
- Practice like professionals
- Submit inventions
- Community Service Learning
- Model curiosity
- Provide opportunities for open-ended, self-directed activities
- Provide instruction in research skills needed to conduct an independent study in student's interest area
- Provide independent learning opportunities
- Use advanced supplementary/reading materials
- Encourage the use of creativity
- Ask higher level questions
- Provide opportunities to develop depth and breadth of knowledge in a subject area
- Enrichment packets

Additional Resources:

Serving Gifted Students in General Ed Classrooms Practical Recommendations and Interventions: Gifted Student



Unit Title / Topic: Google Drive, Apps, and the Desktop Unit Duration: 2 Days

Stage 1: Desired Results

Established Subject Area Goals (NJSLS):

- 8.2.5.ED.1: Explain the functions of a system and its subsystems.
- 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
- 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.
- 8.2.5.ED.4: Explain factors that influence the development and function of products and systems (e.g., resources, criteria, desired features, constraints).
- 8.2.5.ED.5: Describe how specifications and limitations impact the engineering design process.
- 8.2.5.ED.6: Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process.
- 8.2.5.NT.2: Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries, and societies.
- 8.2.5.NT.3: Redesign an existing product for a different purpose in a collaborative team.
- 8.2.5.NT.4: Identify how improvement in the understanding of materials science impacts technologies

Interdisciplinary Standards (NJSLS):

- 1.5.5.Cr1a: Brainstorm and curate ideas to innovatively problem solve during artmaking and design projects.
- 1.5.5.Cr1b: Individually and collaboratively set goals, investigate, choose, and demonstrate diverse approaches to art-making that is meaningful to the makers.
- 1.5.5.Cr2a: Experiment and develop skills in multiple art-making techniques and approaches, through invention and practice.
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- 5.NF.B.4.B Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
- 5.NF.B.5.A Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. 5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Technology Integration (NJSLS 8):

See Above

21st Century Skills Integration (NJSLS 9):

CLKS1 Act as a responsible and contributing community members and employee.

- CLKS4. Demonstrate creativity and innovation.
- CLKS5. Utilize critical thinking to make sense of problems and persevere in solving them.
- CLKS6. Model integrity, ethical leadership and effective management.

CLKS9 Work productively in teams while using cultural/global competence.

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- 9.4.5.TL.5: Collaborate digitally to produce an artifact
- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

Transfer Goal:

Students will be able to independently use their learning to...

Students will understand that:

- 1. The file/folder hierarchy is the same regardless of the OS.
- 2. Google searches have certain inputs to narrow down choices and options.
- 3. File name and file format are often overlooked.
- 4. Browsing for a file to upload to the Web is identical to browsing for one to open on a desktop.

Essential Questions:

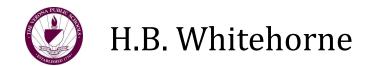
- 1. What do a desktop app and a Web app have in common? Different?
- 2. How can a file be saved differently?
- 3. What is a file extension and please provide an example of one?

Students will know:

- 1. What do a desktop app and a Web app have in common? Different?
- 2. How can a file be saved differently?
- 3. What is a file extension and please provide an example of one?

Students will be able to:

- 1. Know the layout of the keyboard.
- 2. Work back-and-forth between two different windows.
- 3. Know the file extensions for images and for Microsoft Word.
- 4. Use Google to search for a .jpg, .jpeg, and .gif.
- 5. Save an image as a .jpg or a .jpeg.
- 6. Browse the desktop for a file.
- 7. Upload a file to the Web.
- 8. Download an image from the Web as a specific file.



Stage 2: Acceptable Evidence

Transfer Task and Unit Assessments:

Students will be able to <u>independently</u> use their learning to...

- Upload various file types to Google Drive and Google Classroom
- Download various file types from Google Drive and the Web and save them to the appropriate locations on the
- Share files with teacher and classmate(s).

Other Evidence:

Providing written/oral response to the EQs

- Teacher observation of daily progress
- Discussions
- Participation
- · Acceptable use of ICT

Reference Materials

Teacher Created Materials in Google Classroom

Stage 3: Activities to Foster Learning

Learning Activities

- Upload various file types to Google Drive and Google Classroom
- Download various file types from Google Drive and the Web and save them to the appropriate locations on the desktop.
- Share files with teacher and classmate(s).

Accommodations and Modifications

Differentiation for Students with IEPs, 504s, and/or Students at Risk of Failure (IEP/504/RF)

- Use of a math grid
- Access to electronic texts
- Preferential Seating
- Provide extended time (Tests, Projects, Quizzes, Classwork, etc.) Provide written notes
- Modified assignments and/or given in shorter segments
- Provide graphic organizers
- Provide study guides for assessments
- Provide written directions for longer assignments
- 11. Provide orals directions as well as written Establish a non-verbal cue to redirect attention
- 13. Check for understanding
- 14. Include student in small group instruction
- 15. Advance notice of large assignments and assessments
- Call on student only when he/she volunteers
- 17. Oral follow-up/ brainstorming
- 18. Pair with friend for assignments
- Directions/ tests read aloud Close and consistent communication with home
- 21. Allow use of ChromeBook
- 22. Allow use of voice typing
- 23. Create electronic lab sheets
- Allow frequent and active movement breaks
- Include sensory breaks if and when needed
- Allow to stand during written work Teach organizational and time management strategies
- Encourage appropriate socialization with peers
- 29. Breaking up of larger assignments when appropriate 30.
- Assignments will be given in shorter segments/ checked for correctness
- Simplify complex directions Do not penalize for spelling errors
- Positive Reinforcement System
- Test in smaller group setting
- Provide visuals to teach concepts
- Have students engage in hands on learning
- 37. Small group teaching when possible
- Model and use gestures to aid in understanding
- Model tasks by giving one or two examples before releasing students to Self-paced tutorials/walkthroughs that the students may use to recall
- information

Differentiation for English Language Learners

- Provide alternate ways for the student to respond (verbal/pictographic answers instead of written)
- Substitute a hands-on activity or use of different media in projects for a written activity
- Provide word banks / word walls
- Prepare and distribute advance notes
- Provide model sentence frames and sentence starters for both oral responses and written responses
- 6. Provide additional time to complete assessments and assignments
- Model and use gestures to aid in understanding
- Model tasks by giving one or two examples before releasing students to work independently
- Present instructions both verbally and visually
- 10. Simplify written and verbal instructions 11. Allow students to use eDictionaries
- 12. Avoid slang and idiomatic expressions.
- 13. Speak clearly and naturally, and try to enunciate words, especially their ending sounds.
- 14. Provide Sensory Supports (Real-life objects, Manipulatives, Pictures & photographs, Illustrations, Diagrams, & drawings, Magazines & newspapers, Physical activities, Videos & films, Broadcasts, Models & figures)
- 15. Provide Graphic Supports (Charts, Graphic organizers, Tables, Graphs, Timelines, Number lines)
- 16. Provide Interactive Supports(Pair or Partner work, Group work, Peer
- Mentor) 17. Simplify the language, format, and directions of the assessment
- 18. Accept correct answers on test or worksheets in any written form such as
- lists, phrases, or using inventive spelling
- 19. Allow editing and revision before grading 20. Design projects and assessment for student that require reduced sentence or paragraph composition
- 21. Give alternative homework or class work assignments suitable to the student's linguistic ability for activities and assessments
- 22. Utilize alternate reading assignments/materials at the student's reading 23. Allow for alternate seating for proximity to peer helper or teacher as
- 24. Assist student in building a picture file of key vocabulary (Pics4Learning, Webster's Visual Dictionary Online, ClipArt Etc, Shahi Visual Dictionary)
- 25. When showing video used Closed Captioning. Some videos also allow for a slower replay so the speech is not as fast.
- 26. Provide wait-time sufficient for English language learners who are trying to translate terms while formulating an explanation - Sufficient wait time is often said to be about 7-10 seconds 27. Check for understanding consistently - ask students one-on-one what their questions are, monitor their progress on independent work and

redirect as needed. They may not understand or be hesitant to verbalize

what they do not understand at first, so monitor and give examples. 28. Support use of student's primary language by translating key words in directions, or key vocabulary terms or giving students opportunities to communicate in their primary language (written or orally)

Additional Resources:

- 20 strategies to Support EAL Children
- What English Language Learners Wish Teachers Knew Education Week
- A Starting Point: Tips and resources for working with FSI newcome

Differentiation for Enrichment:

- Know their interests by doing an interest inventory
- Keep them active/offer flexible seating
- Share and discuss current events solve real world problems
- Vary groupings (from working alone to larger groups and/or cross-grade groupings)
- Allow them to incorporate other subject and topics
- Teach decision-making
- Model organization strategies based on "real-world" scenarios Use brain breaks (puzzles, doodle notes)
- Encourage reading of all types biography, scientific journals, etc

Pre-assess to avoid rehashing prior knowledge

- Teach them to practice mindfulness
- 12. Find a mentor within their interest area (possibly Skype with scientists/engineers, etc.)
- 13. Practice like professionals
- Submit inventions
- Community Service Learning
- Model curiosity Provide opportunities for open-ended, self-directed activities
- 18. Provide instruction in research skills needed to conduct an independent study in student's interest area
- Provide independent learning opportunities
- Use advanced supplementary/reading materials Encourage the use of creativity
- Ask higher level questions
- Provide opportunities to develop depth and breadth of knowledge in a Enrichment packets
- Additional Resources:

Serving Gifted Students in General Ed Classrooms Practical Recommendations and Interventions: Gifted Student

Unit Title / Topic: Photopea Unit Duration: 8-10 Days

Stage 1: Desired Results

Established Subject Area Goals (NJSLS):

- 8.1.5.IC.1: Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes.
- 8.1.5.IC.2: Identify possible ways to improve the accessibility and usability of computing technologies to address the diverse needs and wants of users.
- 8.1.5.AP.4: Break down problems into smaller, manageable sub-problems to facilitate program development.
- 8.1.5.AP.5: Modify, remix, or incorporate pieces of existing programs into one's own work to add additional features or create a new program.
- 8.2.5.ITH.2: Evaluate how well a new tool has met its intended purpose and identify any shortcomings it might have.
- 8.2.5.ITH.3: Analyze the effectiveness of a new product or system and identify the positive and/or negative consequences resulting from its use.
- 8.2.5.ITH.4: Describe a technology/tool that has made the way people live easier or has led to a new business or career.

Interdisciplinary Standards (NJSLS):

- 1.5.5.Cr1a: Brainstorm and curate ideas to innovatively solve during artmaking and design projects.
- 1.5.5.Cr1b: Individually and collaboratively set goals, investigate, choose, and demonstrate diverse approaches to art-making that is meaningful to the makers.
- 1.5.5.Cr2a: Experiment and develop skills in multiple art-making techniques and approaches, through invention and practice.
- 1.5.5.Cr3a: Reflect, refine, and revise work individually and collaboratively, and discuss and describe personal choices in artmaking
- 5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- 5.NF.B.4.B Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
- 5.NF.B.5.A Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
- 5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Technology Integration (NJSLS 8):

See Above

21st Century Skills Integration (NJSLS 9):

CLKS1 Act as a responsible and contributing community members and employee.

- CLKS4. Demonstrate creativity and innovation.
- CLKS5. Utilize critical thinking to make sense of problems and persevere in solving them.
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Transfer Goal:

Students will be able to independently use their learning to... create an original image through photography and digital image manipulation.

digitally edit a photo and an image to create an entirely new image.

Students will understand that:

- 1. Image editing software refers to a computer program that allows you to create digital images and animations.
- 2. Digital images are used in graphic applications, advertising, and publishing on the Web.
- 3. Multiple programs are often used to create digital images.
- 4. Various tools can get the same job done.
- 5. Tools are not a one size fits all mean.
- 6. Digital editing requires attention to detail.
- 7. Working with layers is a process of stacking images, text, and other objects.

Students will know:

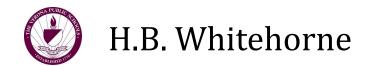
- 1. What the toolbar of the application is.
- 2. How the canvas is laid out.
- 3. How universal shortcuts apply to image editing as well.
- 4. How make a selection around an object.
- 5. How to properly remove one object from another.
- 6. What is the proper technique for adding and using layers.
- 7. When and how to enhance the image through various color corrections and filters.
- 8. How to save the image in the application's native file extension and for use on the Web.

Essential Questions:

- 1. Can you list software programs that are used to make magazines, newspapers, advertisements, and other publications?
- 2. What digital editing program do you prefer? (MS Paint or Paint.net)
- 3. Why is it important to make a digital image as "real" as possible?
- 4. How can images be edited, repaired, or enhanced?
- 5. How would you explain what layers are to someone on the street?

Students will be able to:

- 1. The tools and functions are nearly identical across applications.
- 2. The canvas can be manipulated to fit one's needs.
- 3. Copy, cut, paste, etc. can be used across applications.
- 4. Making a selection around an object can be achieved with different selection tools.
- 5. The creation of a mixed media image is done using layering techniques.
- 6. Enhancements to an image are done through filters, saturation, brightness and hue, contrast, etc.
- 7. Saving an image will flatten the layers down.
- 8. Saving an image for the Web is similar to saving to/from the Web using other programs.



Stage 2: Acceptable Evidence

Transfer Task and Unit Assessments:

Students will be able to independently use their learning to...

- Create a project that understands how to cut out objects from one image and move it to another
- Create a project that differentiates the hue and saturation of the image
- Create a project that is a digital collage that represents all the digital imaging skills that were learned.

Other Evidence:

Providing written/oral response to the

Informal:

- Teacher observation of daily progress
- Discussions
- Participation
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Stage 3: Activities to Foster Learning

Learning Activities

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