

# Unit 5: Preparing for Adobe Illustrator Certification Exam

Content Area: **CTE**  
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## **Title Section**

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## **Department of Curriculum and Instruction**



**Belleville Public Schools**

**Curriculum Guide**

## Graphic Communications, GRADE 11 & 12 Preparing for Adobe Illustrator Certification Exam

**Belleville Board of Education**

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Board Approved:

## **Unit Overview**

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Illustrator is a vector-based digital imaging program.

Illustrator has many commercial uses, such as creating logos.

Illustrator can be used in combination with Photoshop to create images.

Students will learn to use the pen tool to place anchor points and define paths, which is the basis for vector artwork.

Students will be introduced to the design world as active participants, engaging with its form and content as they research and discuss the design process and solve design problems.

Students will apply their knowledge create vector-based digital images.

## **Enduring Understanding**

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In Illustrator, vector images are defined by mathematical formulas and algorithms.

Images created using vectors can be enlarged indefinitely without losing quality.

Illustrator shapes are comprised of Strokes and Fills.

The Pen Tool puts down Anchor Points to create paths which define shapes.

Images can be imported into Illustrator. Copyrighted images cannot be legally used without permission.

An object must be Selected in order for a tool to have an effect on it. Objects can be Grouped and Ungrouped.

There are many characteristics of Type that determine how text elements are perceived. A message is communicated by these visual characteristics as well as by the meaning of the words themselves.

The effectiveness of a poster or an advertisement depends on identifying a target audience and using design elements that appeal to that audience.

## **Essential Questions**

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How do you create logos?

Why don't vector images ever lose quality?

How to Warp and simplify to make primitive shapes cleaner?

How to use Colors, fill, stroke and rearranging objects?

Building irregular shapes from primitives?

Creating reflections using shades and tints?

What is the best way to work more with colors and objects?

Best way to use Rectangular grids for easy control panels.

## **Exit Skills**

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By the end of Unit, the student should be able to:

Using Illustrator's Stroke and Fill functions to solve design problems.

Creating, editing and combining shapes to create logos using the Pathfinder and other tools in Illustrator.

Importing images from the internet in compliance with legal and ethical guidelines.

Using the pen tool to trace images and to create new images.

Using the scale and align tools to create balanced designs.

Create logos and redraw artwork using the tracing options.

Students will be able to pass the Adobe Illustrator ACA Certification test through Certiport.

## New Jersey Student Learning Standards (NJSL-S)

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9.3.12.AR-PRT	Printing Technology
9.3.12.AR-PRT.1	Manage the printing process, including customer service and sales, scheduling, production and quality control.
9.3.12.AR-PRT.2	Demonstrate the production of various print, multimedia or digital media products.
9.3.12.AR-PRT.3	Perform finishing and distribution operations related to the printing process.
CS.9-12.8.1.12.CS.2	Model interactions between application software, system software, and hardware.
CS.9-12.8.1.12.CS.3	Compare the functions of application software, system software, and hardware.
TECH.9.4.12.CI	Creativity and Innovation
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT	Critical Thinking and Problem-solving
TECH.9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
TECH.9.4.12.CT.3	Enlist input from a variety of stakeholders (e.g., community members, experts in the field) to design a service learning activity that addresses a local or global issue (e.g., environmental justice).
TECH.9.4.12.DC	Digital Citizenship
TECH.9.4.12.DC.1	Explain the beneficial and harmful effects that intellectual property laws can have on the creation and sharing of content (e.g., 6.1.12.CivicsPR.16.a).
TECH.9.4.12.DC.2	Compare and contrast international differences in copyright laws and ethics.
TECH.9.4.12.DC.3	Evaluate the social and economic implications of privacy in the context of safety, law, or ethics (e.g., 6.3.12.HistoryCA.1).
TECH.9.4.12.DC.7	Evaluate the influence of digital communities on the nature, content and responsibilities of careers, and other aspects of society (e.g., 6.1.12.CivicsPD.16.a).
TECH.9.4.12.DC.8	Explain how increased network connectivity and computing capabilities of everyday objects allow for innovative technological approaches to climate protection.
TECH.9.4.12.GCA	Global and Cultural Awareness
TECH.9.4.12.GCA.1	Collaborate with individuals to analyze a variety of potential solutions to climate change effects and determine why some solutions (e.g., political, economic, cultural) may work better than others (e.g., SL.11-12.1., HS-ETS1-1, HS-ETS1-2, HS-ETS1-4, 6.3.12.GeoGI.1,

7.1.IH.IPERS.6, 7.1.IL.IPERS.7, 8.2.12.ETW.3).

TECH.9.4.12.IML

Information and Media Literacy

Network connectivity and computing capability extended to objects, sensors and everyday items not normally considered computers allows these devices to generate, exchange, and consume data with minimal human intervention. Technologies such as Artificial Intelligence (AI) and blockchain can help minimize the effect of climate change.

With a growth mindset, failure is an important part of success.

Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.

Innovative ideas or innovation can lead to career opportunities.

Solutions to the problems faced by a global society require the contribution of individuals with different points of view and experiences.

Laws govern the use of intellectual property and there are legal consequences to utilizing or sharing another's original works without permission or appropriate credit.

Successful troubleshooting of complex problems involves multiple approaches including research, analysis, reflection, interaction with peers, and drawing on past experiences.

Advanced search techniques can be used with digital and media resources to locate information and to check the credibility and the expertise of sources to answer questions, solve problems, and inform the decision-making.

## **Interdisciplinary Connections**

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LA.RH.11-12

Reading History

Key Ideas and Details

LA.RH.11-12.1

Accurately cite strong and thorough textual evidence, (e.g., via discussion, written response, etc.), to support analysis of primary and secondary sources, connecting insights gained from specific details to develop an understanding of the text as a whole.

LA.RH.11-12.3

Evaluate various perspectives for actions or events; determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.

LA.RST.11-12

Reading Science and Technical Subjects

Key Ideas and Details

LA.RST.11-12.1

Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.

LA.RST.11-12.2

Determine the central ideas, themes, or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

## **Learning Objectives**

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Students will demonstrate the ability to:

Combine shapes using the Pathfinder and Shape tools to create an original logo.

Create Paths using the Pen Tool.

Design a poster that communicates a message to a target audience.

Compare advertising images from different eras and hypothesize about why the artist made the choices that he or she did.

Assess the effectiveness of an image in communicating a message.

**Action Verbs:** Below are examples of action verbs associated with each level of the Revised Bloom's Taxonomy.

<b>Remember</b>	<b>Understand</b>	<b>Apply</b>	<b>Analyze</b>	<b>Evaluate</b>	<b>Create</b>
Choose	Classify	Choose	Categorize	Appraise	Combine
Describe	Defend	Dramatize	Classify	Judge	Compose
Define	Demonstrate	Explain	Compare	Criticize	Construct
Label	Distinguish	Generalize	Differentiate	Defend	Design
List	Explain	Judge	Distinguish	Compare	Develop
Locate	Express	Organize	Identify	Assess	Formulate
Match	Extend	Paint	Infer	Conclude	Hypothesize
Memorize	Give Examples	Prepare	Point out	Contrast	Invent
Name	Illustrate	Produce	Select	Critique	Make
Omit	Indicate	Select	Subdivide	Determine	Originate
Recite	Interrelate	Show	Survey	Grade	Organize
Select	Interpret	Sketch	Arrange	Justify	Plan
State	Infer	Solve	Breakdown	Measure	Produce
Count	Match	Use	Combine	Rank	Role Play
Draw	Paraphrase	Add	Detect	Rate	Drive
Outline	Represent	Calculate	Diagram	Support	Devise
Point	Restate	Change	Discriminate	Test	Generate
Quote	Rewrite	Classify	Illustrate		Integrate
Recall	Select	Complete	Outline		Prescribe
Recognize	Show	Compute	Point out		Propose
Repeat	Summarize	Discover	Separate		Reconstruct
Reproduce	Tell	Divide			Revise
	Translate	Examine			Rewrite
	Associate	Graph			Transform
	Compute	Interpolate			
	Convert	Manipulate			
	Discuss	Modify			
	Estimate	Operate			
	Extrapolate	Subtract			
	Generalize				
	Predict				



### **Suggested Activities & Best Practices**

Students are to complete the online learning experience of the MSI test Prep Software.

Upon completion, students will take the certification test for ACA Adobe Illustrator on the Certiport website.

Identify Famous African Americans in the field of graphic design and the contributions made to society by these figures.

Understand and develop better eco friendly knowledge in regards to copiers, printers and scanners.

## **Assessment Evidence - Checking for Understanding (CFU)**

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Exit tickets for the purpose of checking for understanding prior to taking Adobe certification test.-formative assessment

Practical and written quizzes online in Gmetrix prior to students taking certification test.

For example, teacher will give topics to students and students will create their own study guides prior to tests.-alternate assessment

Students are to complete the online learning experience of the ACA test Prep Software. Upon completion, students will take the certification test for ACA Adobe Illustrator on the Certiport website.-summative assessment

Multimedia reports-benchmark assessment

- Admit Tickets
- Anticipation Guide
- Common Benchmarks
- Compare & Contrast
- Create a Multimedia Poster
- DBQ's
- Define
- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- Illustration
- Journals
- KWL Chart
- Learning Center Activities
- Multimedia Reports
- Newspaper Headline
- Outline
- Question Stems
- Quickwrite
- Quizzes

- Red Light, Green Light
- Self- assessments
- Socratic Seminar
- Study Guide
- Surveys
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Top 10 List
- Unit review/Test prep
- Unit tests
- Web-Based Assessments
- Written Reports

## **Primary Resources & Materials**

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Classroom in a Book: Illustrator - Adobe Press

Virtual Quickstart Guides: Illustrator

Teacher-made handouts

Web based ACA Test Prep software

MSi Test Prep Software

## **Ancillary Resources**

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SmartTV

Internet

youTube

## **Technology Infusion**

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Chromebooks, iPads, Google Classroom, Internet, YouTube, Smart Tv's, online research of professional websites, business websites to research topics, such as product knowledge and show demos on topics covered in unit, for example proper manipulations.

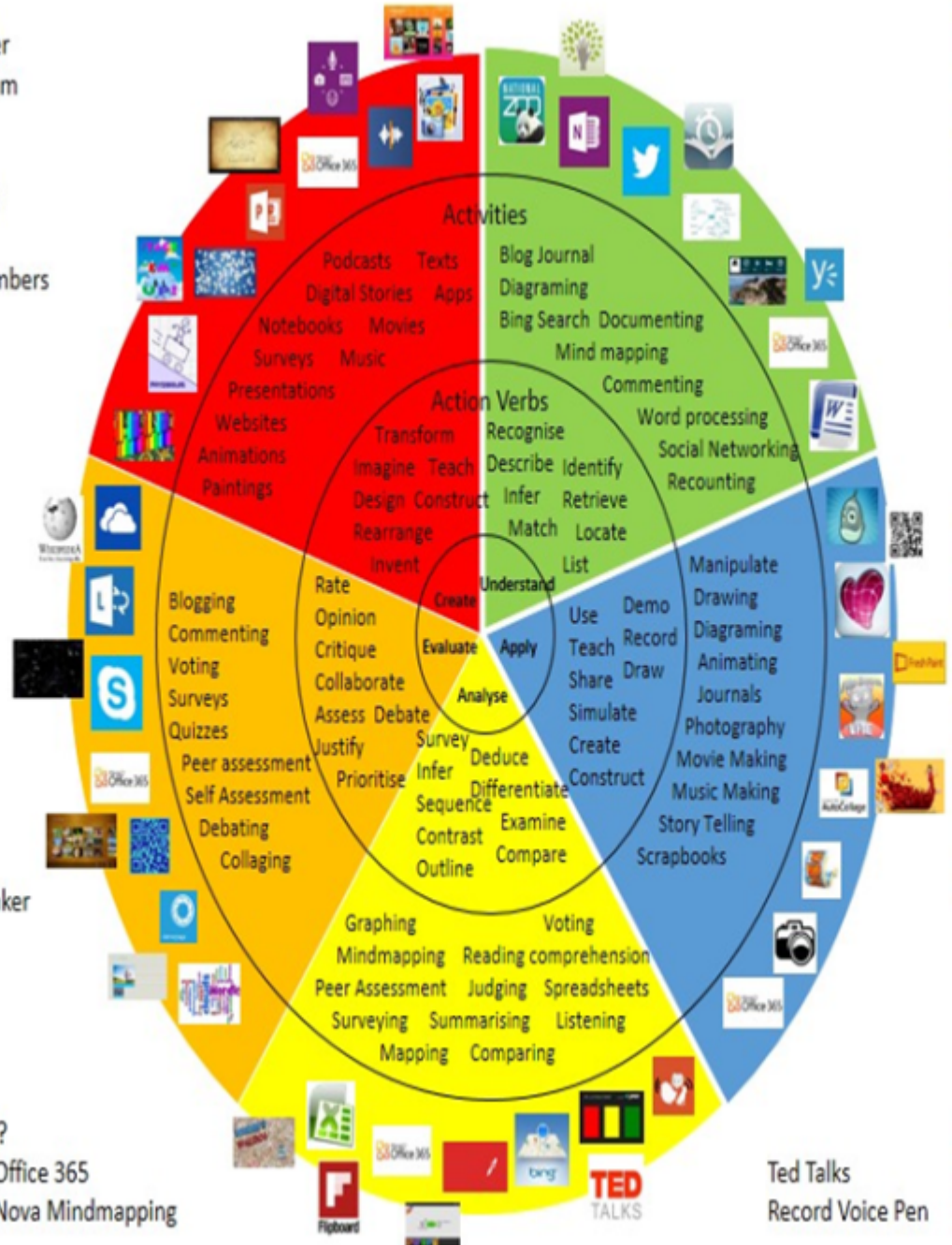
# Win 8.1 Apps/Tools Pedagogy Wheel

Podcasts  
 Photostory 3  
 Kid Story Builder  
 Music Maker Jam  
 Paint A Story  
 Office 365  
 MS PowerPoint  
 Stack 'Em Up  
 NqSquared Numbers  
 Physamajig  
 Xylophone 8

Wikipedia  
 Skydrive  
 Lync  
 SkyMap  
 Skype  
 Office 365  
 Puzzle Touch  
 Easy QR  
 Memorylage  
 Life Moments  
 Word Cloud Maker

Where's Waldo?  
 MS Excel      Office 365  
 Flipboard      Nova Mindmapping

Ted Talks  
 Record Voice Pen



Originally taken from <http://www.coetail.com/vzimmer/files/2013/02/JPedagogy-Wheel.001.jpg>  
 And adapted for Windows 8.1 devices by Charlotte Beckhurst @CharBeckhurst

## Alignment to 21st Century Skills & Technology

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WRK.9.2.12.CAP	Career Awareness and Planning
WRK.9.2.12.CAP.1	Analyze unemployment rates for workers with different levels of education and how the economic, social, and political conditions of a time period are affected by a recession.
WRK.9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
WRK.9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth.
TECH.9.4.12.CI	Creativity and Innovation
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT	Critical Thinking and Problem-solving
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).
TECH.9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
TECH.9.4.12.CT.3	Enlist input from a variety of stakeholders (e.g., community members, experts in the field) to design a service learning activity that addresses a local or global issue (e.g., environmental justice).
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TECH.9.4.12.GCA	Global and Cultural Awareness
TECH.9.4.12.GCA.1	Collaborate with individuals to analyze a variety of potential solutions to climate change effects and determine why some solutions (e.g., political, economic, cultural) may work better than others (e.g., SL.11-12.1., HS-ETS1-1, HS-ETS1-2, HS-ETS1-4, 6.3.12.GeoGI.1, 7.1.IH.IPERS.6, 7.1.IL.IPERS.7, 8.2.12.ETW.3).  Innovative ideas or innovation can lead to career opportunities.  Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.

Solutions to the problems faced by a global society require the contribution of individuals with different points of view and experiences.

There are strategies to improve one's professional value and marketability.

Laws govern the use of intellectual property and there are legal consequences to utilizing or sharing another's original works without permission or appropriate credit.

Cultivating online reputations for employers and academia requires separating private and professional digital identities.

Digital communities influence many aspects of society, especially the workforce. The increased connectivity between people in different cultures and different career fields have changed the nature, content, and responsibilities of many careers.

With a growth mindset, failure is an important part of success.

Laws govern many aspects of computing, such as privacy, data, property, information, and identity. These laws can have beneficial and harmful effects, such as expediting or delaying advancements in computing and protecting or infringing upon people's rights.

## **21st Century Skills/Interdisciplinary Themes**

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Upon completion of this section, please remove all remaining descriptions, notes, outlines, examples and/or illustrations that are not needed or used.

Please list only the **21st Century/Interdisciplinary Themes** that will be incorporated into this unit.

- Communication and Collaboration
- Creativity and Innovation
- Critical thinking and Problem Solving
- ICT (Information, Communications and Technology) Literacy
- Information Literacy
- Life and Career Skills
- Media Literacy

## **21st Century Skills**

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Upon completion of this section, please remove all remaining descriptions, notes, outlines, examples and/or illustrations that are not needed or used.

Please list only the **21st Century Skills** that will be incorporated into this unit.

- Civic Literacy
- Environmental Literacy
- Financial, Economic, Business and Entrepreneurial Literacy

- Global Awareness
- Health Literacy

## **Differentiation**

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Teacher will demonstrate assignments in small groups.

Teacher will give study guide notes based on specific topics.

### **Differentiations:**

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives
- Center-based instruction
- Token economy
- Study guides
- Teacher reads assessments allowed
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches
- Additional time
- Preview vocabulary
- Preview content & concepts
- Story guides
- Behavior management plan
- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology
- Auditory presentations
- Large print edition
- Dictation to scribe
- Small group setting

### **Hi-Prep Differentiations:**

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Guided Reading
- Independent research and projects
- Interest groups
- Learning contracts
- Leveled rubrics

- Literature circles
- Multiple intelligence options
- Multiple texts
- Personal agendas
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

#### **Lo-Prep Differentiations**

- Choice of books or activities
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Reading buddies
- Varied journal prompts
- Varied supplemental materials

## **Special Education Learning (IEP's & 504's)**

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A few examples for Special Education Learning are...

To teach practical lessons in small groups and model the design lesson assignment more than once for student with IEP.

Student will repeat the procedure with peer help.

- printed copy of board work/notes provided
- additional time for skill mastery
- assistive technology
- behavior management plan

- Center-Based Instruction
- check work frequently for understanding
- computer or electronic device utilizes
- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content
- modified test format
- modified test length
- multi-sensory presentation
- multiple test sessions
- preferential seating
- preview of content, concepts, and vocabulary
- Provide modifications as dictated in the student's IEP/504 plan
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- shortened assignments
- student working with an assigned partner
- teacher initiated weekly assignment sheet
- Use open book, study guides, test prototypes

## **English Language Learning (ELL)**

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Please identify the **English Language Learning** adaptations that will be employed in the unit, using the ones identified below.

- teaching key aspects of a topic. Eliminate nonessential information
- using videos, illustrations, pictures, and drawings to explain or clarify
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of work presented or required
- having peers take notes or providing a copy of the teacher's notes
- modifying tests to reflect selected objectives
- providing study guides

- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using computer word processing spell check and grammar check features
- using true/false, matching, or fill in the blank tests in lieu of essay tests

## **At Risk**

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Please identify Intervention Strategies that will be employed in the unit, using the ones identified below.

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic. Eliminate nonessential information
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- allowing students to select from given choices
- allowing the use of note cards or open-book during testing
- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of work presented or required
- having peers take notes or providing a copy of the teacher's notes
- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

## **Talented and Gifted Learning (T&G)**

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A few examples for Talented and Gifted students are ...

To have students begin creating a portfolio of their work.

Give students challenging assignments

- Above grade level placement option for qualified students
- Advanced problem-solving

- Allow students to work at a faster pace
- Cluster grouping
- Complete activities aligned with above grade level text using Benchmark results
- Create a blog or social media page about their unit
- Create a plan to solve an issue presented in the class or in a text
- Debate issues with research to support arguments
- Flexible skill grouping within a class or across grade level for rigor
- Higher order, critical & creative thinking skills, and discovery
- Multi-disciplinary unit and/or project
- Teacher-selected instructional strategies that are focused to provide challenge, engagement, and growth opportunities
- Utilize exploratory connections to higher-grade concepts
- Utilize project-based learning for greater depth of knowledge

## **Sample Lesson**

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Unit Name: Preparing of Certification Adobe Illustrator

NJSLS:

Interdisciplinary Connection: Business Preparation

Statement of Objective: SWDAT Use Adobe Illustrator to create vector based art

Do Now: Why are vectors so AWESOME?

Anticipatory Set/Do Now:

Read Introduction to Adobe Illustrator

Learning Activity: Students will apply the knowledge of Illustrator

Project 5- Building a robot

Students will watch the following video tutorials

- 301- Setup – Set up a new document with artboards.
- 302- Enter your Initials – We'll make a logo with your initials. Get some tips here about how text and fonts influence your design.
- 303- Nothing is Something! – Learn to see nothing as something with Negative Space!
- 304- Creativity Cheat Sheet– Find the resources on Brainbuffet that will help you start to engage your creative brain!
- 305- Bending Your Letters– Learn to combine objects and group them together for creativity.
- 306- Synectic Triggers and Shape Builder – Stuck? Use the Synectic Triggers to help jog creative ideas when you're stuck- and use the Shape Builder tool to make it happen!
- 307- Go Low– Get 5-10 ideas with uppercase letters- then go lowercase!
- 308- On Creativity... – A quick note from Rob on Creativity. DO. NOT. QUIT! (adobe Video)
- 309- Mix It Up and Shortcuts – Mix upper and lowercase- and also get some shortcuts from Rob.
- 310- Shape Up – Add some shapes in there to get things happening!

- 311- Warp and Distort – Get even more shapes by distorting and transforming the ones you already know how to build!
- 312- Iterate! -Here’s how you get to level 2... experiment with and combine your first ideas to level up!
- 313- Save multiple versions -Save your document, and then save for earlier versions with limited artboards.
- 314- Save for the web -Save a single artboard for the web and wrap it up!

Student Assessment/CFU's:

CFU #(s):

10. Self Assessment

12. Portfolio check

17. Debriefing

27. Oral questioning

Materials:

Smartboard, Computers, CS Software, ACA Test Prep software

21st Century Themes and Skills:

Differentiation:

Hands on Activities and Guided Instruction

Integration of Technology: Online learning

9.3.12.AR-PRT	Printing Technology
9.3.12.AR-PRT.1	Manage the printing process, including customer service and sales, scheduling, production and quality control.
9.3.12.AR-PRT.2	Demonstrate the production of various print, multimedia or digital media products.
9.3.12.AR-PRT.3	Perform finishing and distribution operations related to the printing process.
WRK.9.2.12.CAP	Career Awareness and Planning
WRK.9.2.12.CAP.1	Analyze unemployment rates for workers with different levels of education and how the economic, social, and political conditions of a time period are affected by a recession.
WRK.9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
WRK.9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth.
WRK.9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.

WRK.9.2.12.CAP.5	Assess and modify a personal plan to support current interests and post-secondary plans.
WRK.9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.
WRK.9.2.12.CAP.7	Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.
WRK.9.2.12.CAP.8	Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.
WRK.9.2.12.CAP.9	Locate information on working papers, what is required to obtain them, and who must sign them.
WRK.9.2.12.CAP.10	Identify strategies for reducing overall costs of postsecondary education (e.g., tuition assistance, loans, grants, scholarships, and student loans).
TECH.9.4.12.CI	Creativity and Innovation
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
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TECH.9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
TECH.9.4.12.CT.3	Enlist input from a variety of stakeholders (e.g., community members, experts in the field) to design a service learning activity that addresses a local or global issue (e.g., environmental justice).
TECH.9.4.12.CT.4	Participate in online strategy and planning sessions for course-based, school-based, or other project and determine the strategies that contribute to effective outcomes.
TECH.9.4.12.DC	Digital Citizenship
TECH.9.4.12.DC.1	Explain the beneficial and harmful effects that intellectual property laws can have on the creation and sharing of content (e.g., 6.1.12.CivicsPR.16.a).
TECH.9.4.12.DC.2	Compare and contrast international differences in copyright laws and ethics.
TECH.9.4.12.DC.3	Evaluate the social and economic implications of privacy in the context of safety, law, or ethics (e.g., 6.3.12.HistoryCA.1).
TECH.9.4.12.DC.4	Explain the privacy concerns related to the collection of data (e.g., cookies) and generation of data through automated processes that may not be evident to users (e.g., 8.1.12.NI.3).
TECH.9.4.12.DC.7	Evaluate the influence of digital communities on the nature, content and responsibilities of careers, and other aspects of society (e.g., 6.1.12.CivicsPD.16.a).
TECH.9.4.12.DC.8	Explain how increased network connectivity and computing capabilities of everyday objects allow for innovative technological approaches to climate protection.
TECH.9.4.12.GCA	Global and Cultural Awareness
TECH.9.4.12.GCA.1	Collaborate with individuals to analyze a variety of potential solutions to climate change effects and determine why some solutions (e.g., political, economic, cultural) may work better than others (e.g., SL.11-12.1., HS-ETS1-1, HS-ETS1-2, HS-ETS1-4, 6.3.12.GeoGI.1, 7.1.IH.IPERS.6, 7.1.II.IPERS.7, 8.2.12.ETW.3).
TECH.9.4.12.IML	Information and Media Literacy
	Laws govern the use of intellectual property and there are legal consequences to utilizing or sharing another's original works without permission or appropriate credit.

There are strategies to improve one's professional value and marketability.

Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.

Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Innovative ideas or innovation can lead to career opportunities.

Laws govern many aspects of computing, such as privacy, data, property, information, and identity. These laws can have beneficial and harmful effects, such as expediting or delaying advancements in computing and protecting or infringing upon people's rights.

Digital communities influence many aspects of society, especially the workforce. The increased connectivity between people in different cultures and different career fields have changed the nature, content, and responsibilities of many careers.

Solutions to the problems faced by a global society require the contribution of individuals with different points of view and experiences.

With a growth mindset, failure is an important part of success.

Network connectivity and computing capability extended to objects, sensors and everyday items not normally considered computers allows these devices to generate, exchange, and consume data with minimal human intervention. Technologies such as Artificial Intelligence (AI) and blockchain can help minimize the effect of climate change.