

Randolph Township Schools
Randolph Middle School

Creative Computing and Design Curriculum

“Technology is best when it brings people together.”

-Matt Mullenweg

Department of Science, Technology, Engineering, and Math

Gabriel Maffei
Supervisor

Curriculum Committee

Ralph Scimeca
Nick Lavender

Curriculum Developed:

July 2018

Date of Board Approval:

August 21, 2018

Randolph Township Schools
Department of Science, Technology, Engineering, and Mathematics
Creative Computing and Design

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Randolph Township Schools

Mission Statement

We commit to inspiring and empowering all students in Randolph schools to reach their full potential as unique, responsible and educated members of a global society.

**Randolph Township Schools
Affirmative Action Statement**

Equality and Equity in Curriculum

The Randolph Township School district ensures that the district's curriculum and instruction are aligned to the state's standards. The curriculum provides equity in instruction, educational programs and provides all students the opportunity to interact positively with others regardless of race, creed, color, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, religion, disability or socioeconomic status.

N.J.A.C. 6A:7-1.7(b): Section 504, Rehabilitation Act of 1973; N.J.S.A. 10:5; Title IX, Education Amendments of 1972

RANDOLPH TOWNSHIP BOARD OF EDUCATION

EDUCATIONAL GOALS

VALUES IN EDUCATION

The statements represent the beliefs and values regarding our educational system. Education is the key to self-actualization, which is realized through achievement and self-respect. We believe our entire system must not only represent these values, but also demonstrate them in all that we do as a school system.

We believe:

- The needs of the child come first.
- Mutual respect and trust are the cornerstones of a learning community.
- The learning community consists of students, educators, parents, administrators, educational support personnel, the community and Board of Education members.
- A successful learning community communicates honestly and openly in a non-threatening environment.
- Members of our learning community have different needs at different times. There is openness to the challenge of meeting those needs in professional and supportive ways.
- Assessment of professionals (i.e., educators, administrators and educational support personnel) is a dynamic process that requires review and revision based on evolving research, practices and experiences.
- Development of desired capabilities comes in stages and is achieved through hard work, reflection and ongoing growth.

Randolph Township Schools
Department of Science, Technology, Engineering, and Mathematics
Creative Computing and Design

Introduction

This cycle course promotes the newest web and design applications available and provides students with the knowledge necessary to successfully participate and succeed in the latest technology advances. Students will begin this course by exploring the fundamental concepts of graphic design along with its impact on daily lives. Students will explore bias created by the media while creating multimedia presentations and audio clips. Using software such as Photoshop and Illustrator, students will learn the basic concepts of how to manipulate graphics and develop creative designs relevant to the scope and scale of different real-life projects.

Finally, students will explore creative application development concepts to promote, advertise, and display information. Using code, students will be able to add functionality to their designs and discover how different applications work and are developed. They will explore the creation and communication via video podcasts and will learn to safely and securely track and upload within the intranet. By the end of this course, students will have a foundation of graphic design and a complex understanding of Creative Computing and Design applications and how they can be used both safely and effectively.

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Curriculum Pacing Chart
Creative Computing and Design

SUGGESTED TIME ALLOTMENT	UNIT NUMBER	CONTENT - UNIT OF STUDY
3 weeks	I	Introduction to Graphic Design
3 weeks	II	Logo and Illustration Development
3 week	III	Application and Animation Design

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Creative Computing and Design
UNIT I: Introduction to Graphic Design

STANDARDS / GOALS:	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p>NJCCCS Technology: 8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.</p> <p>8.1.8.A.3 Use and/or develop a simulation that provides an environment to solve a real world problem or theory.</p> <p>8.1.8.D.1 Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media.</p> <p>8.1.8.D.4 Assess the credibility and accuracy of digital content.</p> <p>8.1.8.D.5 Understand appropriate uses for social media and the negative consequences of misuse.</p> <p>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.</p> <p>8.2.8.A.2 Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system.</p> <p>8.2.8.C.1 Explain how different teams/groups can contribute to the overall design of a product.</p>	<p>Content from multimedia sources change the way people view products and can change the decisions we make.</p> <p>Multimedia content is created through a process of exploration and development.</p> <p>Media may carry a bias and produce known results or consequences.</p>	<ul style="list-style-type: none"> • What responsibilities do advertisers and media companies have on the audience that views their content? • How can multimedia content be created in an effective and efficient way? • What motivates the expression of media and advertising on large networks of individuals?
	KNOWLEDGE	SKILLS
	<p>Students will know: Media can be considered in many different forms such as words, pictures, videos, and images.</p> <p>Media can be displayed in a variety of different ways such as posts, television, and billboards.</p> <p>Media campaigns can have different levels of effectiveness due to various factors such as audience, type of media, and how it is displayed.</p> <p>Advertisements have drastically changed over the course of history with the advent of the radio, television, and the</p>	<p>Students will be able to: Define media and different forms that exist.</p> <p>Identify different aspects of our lives where multimedia exists.</p> <p>Examine factors of the effectiveness of media towards an audience and classify different types of media by functionality and origin.</p> <p>Analyze how media has changed and developed with the introduction of new technology.</p>

<p>8.2.8.E.2 Demonstrate an understanding of the relationship between hardware and software.</p>	<p>internet where information can be shared to large masses instantly.</p> <p>Effective marketing and advertisement are essential in the development and distribution of products; businesses need marketing to increase revenue and to continue making profit.</p> <p>Effective advertisement is determined by the overall image of the company, the quality of the advertisement and the effect it has on the audience.</p> <p>Different marketing strategies can have different results; through simulations we can understand more about our results.</p> <p>Marketing campaigns are created by teams and generate interest into products and help consumers decide on purchasing useful products.</p> <p>Media companies have a duty to give truthful information to their audience.</p> <p>KEY TERMS: Media, Bias, Propaganda, Marketing, Advertisement, Graphics, Marketing Campaign, Advertisement, Effectivity, Business Model</p>	<p>Illustrate a cycle where marketing and media play key roles and explain media's role in product development and distribution.</p> <p>Apply knowledge of media to choose effective advertisement while evaluating the effectiveness of a marketing campaign.</p> <p>Compare two marketing strategies with similar effectiveness and trade-offs.</p> <p>Prepare and produce a media marketing campaign for local businesses.</p> <p>Judge the efficacy of media's role in society.</p>
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KEY LEARNING EVENTS AND INSTRUCTION:

- Students will explore and analyze different media types and their influence on daily life.
- Students will apply their knowledge of the influence of different media types to create a marketing campaign.

ASSESSMENT EVIDENCE: *Students will show their learning by the following, including, but not limited to:*

- Comparing different marketing campaigns while providing evidence to the effectiveness of each one.
- Presenting a creative multimedia poster on a marketing campaign.

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Creative Computing and Design
UNIT I: Introduction to Graphic Design

SUGGESTED TIME ALLOTMENT	CONTENT-UNIT OF STUDY	SUPPLEMENTAL UNIT RESOURCES
3 Weeks	<p style="text-align: center;">UNIT I: Introduction to Graphic Design</p> <p style="text-align: center;">Digital Media</p> <p style="text-align: center;">Advertisements</p> <p style="text-align: center;">Marketing Campaign</p>	<p style="text-align: center;"><u>BOOKS:</u> Readings taken from various relevant sources</p> <p style="text-align: center;"><u>Suggested Supplies:</u> Computers Measuring and drafting tools: rulers, triangle straight edges, graphing paper Various objects from around the technology classroom</p> <p style="text-align: center;"><u>Suggested Activities:</u> Multimedia Types Multimedia Campaigns of the past Effective Advertisement Build your own Marketing Campaign</p>

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Creative Computing and Design
UNIT II: Logo and Illustration Development

STANDARDS / GOALS:	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p>NJCCCS Technology: 8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.</p> <p>8.1.8.A.3 Use and/or develop a simulation that provides an environment to solve a real world problem or theory.</p> <p>8.1.8.D.1 Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media.</p>	<p>Computer software can be used to create, enhance, and distribute graphics and information.</p>	<ul style="list-style-type: none"> • How can the development of tools and technologies affect a system?
<p>8.1.8.D.4 Assess the credibility and accuracy of digital content.</p>	<p>Drawing applications utilize pixels or vectors, which can have different impacts on your final image.</p>	<ul style="list-style-type: none"> • How can the creation process affect the outcome?
<p>8.1.8.D.5 Understand appropriate uses for social media and the negative consequences of misuse.</p>	<p>Software tools enable users to create and modify artwork.</p>	<ul style="list-style-type: none"> • How can the proper utilization of tools change the resulting product?
<p>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.</p>	<p>KNOWLEDGE</p>	<p>SKILLS</p>
<p>8.2.8.A.2 Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system.</p>	<p>Students will know: Different software applications exist to construct graphics and artwork.</p>	<p>Students will be able to: Define software applications to construct graphics.</p>
<p>8.2.8.C.1 Explain how different teams/groups can contribute to the overall design of a product.</p>	<p>Each software application is designed for a specific task; similar applications can complete similar tasks with different tools/manufacturers.</p>	<p>Classify different applications by their function and identify which software application to use for different products.</p>
	<p>Drawing tools such as the color picker, brush, and pen tools give users the ability to construct and customize the canvas.</p>	<p>Define the various tools in Photoshop and Illustrator and identify when to use them.</p>
	<p>Existing photos can be altered using the brush tool and clone tool.</p>	<p>Change an existing photo by utilizing various tools.</p>
	<p>The final photograph is not necessary a representation of the original.</p>	<p>Judge the credibility of various photos using knowledge of editing tools.</p>

<p>8.2.8.E.2 Demonstrate an understanding of the relationship between hardware and software.</p>	<p>Photographs can share information and ideas.</p> <p>Pixel artwork changes small rectangles, which cannot be enlarged easily while vectors use math to construct lines and can be made as large as billboards without losing fidelity.</p> <p>When working on photos and web graphics, final products should be in pixel form to save memory. While working on print and large format projects, vectors should be utilized.</p> <p>The brush and pen tool along with the properties panel can give users the ability to construct artwork that then can be modified to fit their needs.</p> <p>Brainstorming different ideas is an essential part to visualize concepts and to construct connections.</p> <p>Multiple ideas should be brought forward and tested to determine ideal solutions.</p> <p>Determining ideal solution should include comparing each design and describing benefits and trade-offs.</p> <p>The effectiveness of a graphic in a campaign can be anticipated by simulations and understanding the audience and scope.</p>	<p>Develop a scenario where an edited picture can change an idea or message.</p> <p>Compare vector artwork to pixel artwork.</p> <p>Explain scenarios where pixel or vector would be beneficial/detrimental.</p> <p>Reproduce a piece of vector art and modify an illustration by changing color, line width, and shape.</p> <p>Discuss different correlations and sketch several ideas of a logo that can be used for a local business.</p> <p>Generate various drafts of artwork using ideas and correlations with a team.</p> <p>Summarize the requirements for a specific graphic to be successful and select the most effective artwork by measurement and discussion.</p> <p>Anticipate the effectiveness of the chosen artwork applied to a marketing media campaign through video creation.</p>
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	KEY TERMS: Pixel, Vector, Color Picker, Brush Tool, Pen Tool, Vector Artwork, Raster Artwork, Original, Edited	
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KEY LEARNING EVENTS AND INSTRUCTION:

- Students will engage in creative tutorials to develop and expand upon their digital skills.
- Students will construct digital art utilizing Photoshop and Vector Art programs.

ASSESSMENT EVIDENCE: *Students will show their learning by the following, including, but not limited to:*

- Completing tutorials on software applications.
- Completing matching activity with software and function.
- Judging photos on their validity.
- Creating original illustrations.
- Designing and constructing a logo for local businesses.

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Creative Computing and Design
UNIT II: Logo and Illustration Development

SUGGESTED TIME ALLOTMENT	CONTENT-UNIT OF STUDY	SUPPLEMENTAL UNIT RESOURCES
<p>3 Weeks</p>	<p style="text-align: center;">UNIT II: Logo and Illustration Development</p> <p style="text-align: center;">Adobe Illustrator and Photoshop</p> <p style="text-align: center;">Photo Editing</p> <p style="text-align: center;">Illustration Collaboration</p> <p style="text-align: center;">Team Logo Design</p>	<p style="text-align: center;"><u>BOOKS:</u> Readings taken from various relevant sources</p> <p style="text-align: center;"><u>Suggested Supplies:</u> Computers Adobe Illustrator and Photoshop Measuring and drafting tools: rulers, triangle straight edges, graphing paper Various objects from around the technology classroom</p> <p style="text-align: center;"><u>Suggested Activities:</u> “Illustrator vs Photoshop” “Editing Photos Tools Tutorial” “Illustration Tools and Their Uses” “Logo Challenge”</p>

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Creative Computing and Design
UNIT III: Application and Animation Design

STANDARDS / GOALS:	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p>NJCCCS Technology: 8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.</p> <p>8.1.8.A.3 Use and/or develop a simulation that provides an environment to solve a real world problem or theory.</p> <p>8.1.8.D.1 Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media.</p>	<p>Software applications are designed to accomplish a set task.</p> <p>Understanding the needs of the final product can determine the effectivity of a software application.</p> <p>Adding logical functionality through code can produce a better experience for users and provide more information for companies.</p>	<ul style="list-style-type: none"> • How can software applications change the way we live? • How can the various needs of a software application change the overall product? • How can code be used to change a graphic or program to make it perform better?
<p>8.1.8.D.4 Assess the credibility and accuracy of digital content.</p>	KNOWLEDGE	SKILLS
<p>8.1.8.D.5 Understand appropriate uses for social media and the negative consequences of misuse.</p> <p>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.</p> <p>8.2.8.A.2 Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system.</p> <p>8.2.8.C.1 Explain how different teams/groups can contribute to the overall design of a product.</p>	<p>Students will know: We use applications on devices to solve a variety of different tasks from entertainment to utility.</p> <p>Using applications can save time, help others, and be entertaining.</p> <p>Applications are constantly developing and changing due to consumers and developers.</p> <p>Different businesses and products require different tasks to be completed.</p>	<p>Students will be able to: Recall different applications we use every day and identify different types of applications and their functions.</p> <p>Recognize different aspects of life that are improved or changed using applications.</p> <p>Predict the future availability and functionality of applications.</p> <p>Identify a task to complete to assist a process or business.</p>

<p>8.2.8.E.2 Demonstrate an understanding of the relationship between hardware and software.</p>	<p>Identifying the needs of a software application can assist development by understanding exactly what task needs to be completed and how to solve it.</p> <p>Breaking down tasks into more manageable steps can improve development and functionality.</p> <p>Working in a team requires each member to understand the purpose of each other's roles along with what is important to complete.</p> <p>Prototype applications are developed on paper and have rough notes of each element of the application.</p> <p>For each asset such as a button or text field, a flow chart can help organize and improve understanding.</p> <p>Code is utilized to add changes and logic to an application, documentation is a tool that displays all code use along with how it works.</p> <p>Creating a chart with strengths, weaknesses, opportunities, and threats can help understand parts of the application that work well compared to others that need improvement.</p> <p>KEY TERMS: Software, Applications, Compile, Asset, Usability, Prototype, Goals, Button, Text Field, Flow Chart, Tasks, Function, Organization, Delegation</p>	<p>Describe the set of goals an application needs to accomplish to succeed at a task.</p> <p>Break-down goals into simple tasks.</p> <p>Organize and prioritize steps in the construction process.</p> <p>Design a prototype application using information and resources gathered.</p> <p>Create different assets and describe and organize how each asset would function.</p> <p>Compile code to add functionality and logic to an application.</p> <p>Justify the usability and effectiveness of an application.</p>
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KEY LEARNING EVENTS AND INSTRUCTION:

- Students will explore the fundamentals of digital animation.
- Students will construct and analyze an application focusing on ease of use and functionality.

ASSESSMENT EVIDENCE: *Students will show their learning by the following, including, but not limited to:*

- Brainstorming ways applications work and improve our lives.
- Completing an analysis of application goals.
- Predicting future applications.
- Working with a team to organize and categorize their goals into tasks.
- Building an application prototype.

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Creative Computing and Design
UNIT III: Application and Animation Design

SUGGESTED TIME ALLOTMENT	CONTENT-UNIT OF STUDY	SUPPLEMENTAL UNIT RESOURCES
3 Weeks	<p style="text-align: center;">UNIT III: Application and Animation Design</p> <p style="text-align: center;">Application Uses</p> <p style="text-align: center;">The Future of Applications</p> <p style="text-align: center;">Application Prototype and Design</p>	<p style="text-align: center;"><u>BOOKS:</u> Readings taken from various relevant sources</p> <p style="text-align: center;"><u>Suggested Supplies:</u> Computers Adobe Animate CC Measuring and drafting tools: rulers, triangle straight edges, graphing paper Various objects from around the technology classroom</p> <p style="text-align: center;"><u>Suggested Activities:</u> “Different Applications, Different Uses” “Predicting Future Tech – Applications” “Prototype Brainstorm Sheet” “Prototype Organization and Roles” “Prototype Reflection”</p>

APPENDIX A

Resources:

Suggested Web Addresses:

www.google.com

www.tinkercad.com

<http://pbskids.org/designsquad/>

<http://tryengineering.org/play-games>

Software Names:

Microsoft Word

Microsoft PowerPoint

Microsoft Excel

TinkerCAD

123D-Design

Retina-Engrave

Adobe Photoshop

Adobe Illustrator

Adobe Animate

Internet Sources

APPENDIX B

Assessments

Class Discussions

Rubric for Classroom Discussion

Task Description: (Teacher may explain specific assignment in this space.)					
Criteria	weight	Exemplary	Effective	Minimal	Unsatisfactory
Level of Engagement	50%	<input type="checkbox"/> Contributes to class activities by offering quality ideas and asking appropriate questions on a regular basis <input type="checkbox"/> Actively engages others in class discussions by inviting their comments <input type="checkbox"/> Constructively challenges the accuracy and relevance of statements made <input type="checkbox"/> Effectively identifies and summarizes main points	<input type="checkbox"/> Contributes to class activities by offering ideas and asking questions on a regular basis <input type="checkbox"/> Often engages others in class discussions by inviting their comments <input type="checkbox"/> Challenges the accuracy and relevance of statements made <input type="checkbox"/> Identifies and summarizes main points	<input type="checkbox"/> Occasionally contributes to class activities by offering ideas and asking questions <input type="checkbox"/> Sometimes engages others in class discussions <input type="checkbox"/> Sometimes has an understanding of main points <input type="checkbox"/> Identifies and summarizes some of the main points	<input type="checkbox"/> Fails to contribute to class activities <input type="checkbox"/> Fails to invite comment/opinions from other students <input type="checkbox"/> Demonstrates little understanding of main points <input type="checkbox"/> Does not identify or summarize main points
Preparedness	25%	<input type="checkbox"/> Always prepared for class with assignments and required materials <input type="checkbox"/> Accurately expresses foundational knowledge pertaining to issues raised during the discussion	<input type="checkbox"/> Usually prepared with assignments and required materials <input type="checkbox"/> Expresses basic foundational knowledge pertaining to class discussions	<input type="checkbox"/> Seldom prepared with assignments and required materials <input type="checkbox"/> Expresses limited foundational knowledge pertaining to class discussions	<input type="checkbox"/> Consistently unprepared for class <input type="checkbox"/> Expresses no relevant foundational knowledge
Attitude	25%	<input type="checkbox"/> Consistently positive, cooperative attitude during class <input type="checkbox"/> Always supportive of other students' ideas	<input type="checkbox"/> Usually positive and cooperative with classroom projects and discussions <input type="checkbox"/> Often supportive of other students' ideas	<input type="checkbox"/> Seldom actively participates in classroom projects and discussions <input type="checkbox"/> Sometimes supportive of other students' ideas	<input type="checkbox"/> Rarely if ever participates in classroom projects and discussions <input type="checkbox"/> Occasional disruptive behavior

Assignment Score _____ + Bonus _____ =Final Score _____