BERKELEY HEIGHTS PUBLIC SCHOOLS
BERKELEY HEIGHTS, NEW JERSEY

COLUMBIA MIDDLE SCHOOL
COMPUTER DEPARTMENT

COMPUTER APPLICATIONS
Grade 6

Curriculum Guide

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Dr. Melissa Varley, Superintendent
Mr. Scott McKinney, Assistant Superintendent
Mr. James Finley, District Supervisor

Developed by: Mike Riley
Patti Schiffl

This curriculum may be modified through varying techniques,
strategies, and materials, as per an individual student's
Individualized Education Plan (IEP).

Approved by the Berkeley Heights Board of Education
at the regular meeting held on   12/5/19 .

VISION STATEMENT

In today's complex society, we must create opportunities for students to build knowledge and develop skills, to function as productive adults in the world of tomorrow. As young people prepare to enter and compete in the 21st Century, they must demonstrate computer and technological literacy. Educational systems need to prepare students to access and discern the validity of available information.

It is our vision that Computer Education will produce individuals who can participate in, interact with, and adapt to a dynamic technological society. Internet ethics and safety will be key aspects of the curriculum as students learn to utilize web resources, evaluate websites, and differentiate appropriate sources and information.

Students will be prepared to meet state expectations for computer-based standardized testing. Additionally, they will be introduced to and made aware of newly emerging technologies, including those available through mobile devices.

In our ever-evolving world, it is necessary to teach computer skills while acknowledging that students arrive in school with varying degrees of computer awareness. Our challenge is to address all the various levels of computer awareness while providing all students with current technology information and skills that apply to their academic and personal life. This preparation will enable our students to achieve lifelong success in our society and the workplace.

MISSION STATEMENT

The mission of the Computer Education program is to insure that students will continue to become technology literate and be successful in a technological world. The students will become interactive learners while exercising higher-level thinking skills. Technology shall be used by the teacher to create learning environments that link to other disciplines and enhance and challenge each student's approach to learning.

The following mission objectives are accomplished through a progression of activities developed by the teacher:

- To provide student learning using technology equipment, activities, and peer instruction to challenge the student to perform at high levels of proficiency

- To integrate technology into all content areas, thereby exposing the student to diverse, unique, "real-life" experiences

- To foster student skills in order to become seekers, navigators, and evaluators of information while keeping in mind the need for Internet safety and ethics

- To develop responsible citizens who utilize current services to gather information so that thoughts can be organized and communicated effectively

- To foster student growth as responsible Internet users while they utilize and evaluate Web resources for authority and differentiate appropriate sites for accurate information

- To provide students with the necessary skills to achieve success in a computer-based standardized testing format

- To introduce students to newly emerging technologies, including those on mobile devices

- To participate responsibly and communicate appropriately when utilizing social media

- To develop problem solving, critical thinking, and logical reasoning by engaging in computer programming experiences and tasks.

The foundation of technology instruction begins in elementary schools. Kindergarten and 1st grade students have tech integrated into classroom activities. The students in grades 2-8 receive formal instruction with a technology specialist in the computer lab. In addition, those students receive technology instruction from the media specialist, the classroom teacher, and/or special subject teachers to supplement the curriculum and to enrich learning.

This program addresses the New Jersey Standards for Educational Technology and 21st Century Life Skills. The district's goal is to update and modify this curriculum whenever necessary to ensure that we keep up with changing technologies.

COURSE PROFICIENCIES

COURSE OBJECTIVES

The K-8 computer education curriculum guide aims to expose and teach a broad selection of topics. In general, the students will be proficient in the following components appropriate to their grade level:

1. Understand and use technology systems.
2. Select and use applications effectively and productively
3. Utilize a variety of word processing and spreadsheet programs.
4. Apply existing knowledge to generate new ideas, products, or processes.
5. Create original works as a means of personal or group expression.
6. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
7. Evaluate and select information sources and digital tools based on the appropriateness for specific tasks
8. Identify and define authentic problems and significant questions for investigation
9. Plan and manage activities to develop solutions
10. Collect and Analyze data to identify solutions and/or make informed decisions
11. Use multiple processes and diverse perspectives to explore alternative solutions
12. Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media
13. Contribute to project teams to produce original works or solve problems
14. Utilize computational thinking and computer programming as tools used in design and engineering.
15. Advocate and practice safe, legal, and responsible use of information and technology.

STUDENT PROFICIENCIES

Knowledge and skill proficiencies are indicated on the scope and sequence chart for specific topics and grade levels.

In general, the students will be able to:

1. Recognize and identify the various components of the computer using proper terminology.

2. Properly utilize of hardware and software.

3. Apply technology tools and skills to specific curriculum assignments, e.g., research, problem-solving, and presentations.

4. Appropriately use the Internet.

5. Access and evaluate information from the Internet and other resources.

6. Develop an appreciation for the rapid, continuous advancement of technology and its impact on society.

7. Develop an awareness of the impact of technology on privacy, individual rights, and their role in respecting those rights.

8. Teach students to abide by, and be aware of, copyright laws.

9. Discuss safe and appropriate use of electronic equipment.

10. Utilize newly emerging technologies, including control systems, mobile devices and microprocessors.

11. Engage in a variety of developmentally appropriate learning activities for the purpose of online collaboration.

METHODS OF EVALUATION

In the Berkeley Heights Public Schools, computer skills are taught to students at all grade levels, K-6. The students will become technologically literate and will utilize computers, with proficiency, in their daily lives.

Students will be assessed using one or all of the following:

- Informal and anecdotal teacher observations, e.g., student verbal identification of computer hardware, notations regarding individual needs, or individual progress status.

- Checklists and rubrics, e.g., teacher grade books, grade level collaborative projects, and individual final projects grades

- Online Assessment Instruments, e.g., Progress on keyboarding websites and software grades, proficiency on coding, formal state computing assessment

- Project Work and presentations; e.g., applications assessed based on content, technology, and design

- Other Test/Quizzes

The teachers will use the results of these assessments to develop resources and services to support students, as well as to drive the curriculum.

MODIFICATIONS & ACCOMMODATIONS

Modifications and Accommodations for Special Education students, students with 504s, English Language Learners and Gifted and Talented students may include but are not limited to the following:

Special Education
- Individualized Education Plans (IEPs)
- Exemplars of varied performance levels
- Multimedia presentations
- Sheltered instruction
- Consultation with ESL teachers
- Manipulatives
- Tiered/Scaffolded Lessons
- Mnemonic devices
- Visual aids
- Modeling
- Guided note-taking
- Study Guides
- Modified homework
- Differentiated pre-typed class notes and example problems
- Use of the special education teacher to re-instruct in flexible small groups for the struggling learner
- Manipulatives
- Flipped Instruction
- Word banks
- Reduced choice on assessments
- Preferential seating
- Choice activities
- Modified time requirements
- Modified notes
- Modified lesson, assessment and study guide format
- Provide an enriched curriculum and activities
- Independent projects
- Contracts/behavior support plans
- Open-ended responses
- Project-based learning
- Group activities

- Guided Notes
- Functional learning incorporated into each lesson
- Exploration Activities
- Assessment read aloud
- Small group assessments
- Organizational Support
- Oral questioning assessments to supplement written response
- Pre-writing Structural Supports for extended writing tasks
- Ongoing teacher feedback as part of the writing process
- Interactive Study Guides
- Multi-sensory approach to instruction
- Written and spoken step-by-step directions
- Content-focused assessment (not grading for spelling/grammar)
- Graphic organizers
- Non-verbal cues to begin task/remain on task/refocus
- Individual monitoring for understanding/reinforced instruction
- Printed copies of class readings for application of Active Reading Strategies

Gifted & Talented
- Provide one-to-one teacher support
- Curriculum Compacting
- Advanced problems to extend the critical thinking skills of the advanced learner
- Supplemental reading material for independent study
- Elevated questioning techniques using Webb's Depth of Knowledge matrix
- Curriculum Compacting
- Flexible grouping
- Tiered assignments
- Topic selection by interest
- Manipulatives
- Tiered Lessons
- Flipped Instruction
- Multimedia Presentations
- Open-ended responses
- Project-based learning
- Group activities
- Guided Notes
- Conclusions and analysis of exploratory activities
- Career based learning incorporated into each lesson
- Exploration Activities

- Student choice

ELLs
- Exemplars of varied performance levels
- Multimedia presentations
- Sheltered instruction
- Consultation with ESL teachers
- Manipulatives
- Tiered/Scaffolded Lessons
- Mnemonic devices
- Visual aids
- Modeling
- Guided note-taking
- Study Guides
- Modified homework
- Differentiated pre-typed class notes and example problems
- Individualized instruction plans
- Manipulatives
- Flipped Instruction
- Words banks
- Reduced choice on assessments
- Preferential seating
- Choice activities
- Modified time requirements
- Modified notes
- Modify lesson, assessment and study guide format
- Provide an enriched curriculum and activities
- Contracts/management plans
- Open-ended responses
- Project-based learning
- Group activities
- Guided Notes
- Exploration Activities
- Assessment read aloud
- Small group assessments
- Oral questioning assessments to supplement written response
- Pre-writing Structural Supports for extended writing tasks
- Ongoing teacher feedback as part of the writing process
- Interactive Study Guides

- Multi-sensory approach to instruction
- Written and spoken step-by-step directions
- Graphic organizers
- Non-verbal cues to begin task/remain on task/refocus
- Individual monitoring for understanding/reinforced instruction
- Printed copies of class readings for application of Active Reading Strategies

504s

- Exemplars of varied performance levels
- Multimedia presentations
- Sheltered instruction
- Tiered/Scaffolded Lessons
- Mnemonic devices
- Visual aids
- Modeling
- Guided note-taking
- Study Guides
- Differentiated pre-typed class notes and example problems
- Manipulatives
- Words banks
- Reduced choice on assessments
- Preferential seating
- Modified time requirements
- Modified notes
- Modify lesson, assessment and study guide format
- Modified homework
- Independent projects
- Contracts/management plans
- Open-ended responses
- Project-based learning
- Group activities
- Guided Notes
- Exploration Activities
- Assessment read aloud
- Small group assessments
- Organizational Support
- Oral questioning assessments to supplement written response
- Pre-writing Structural Supports for extended writing tasks
- Ongoing teacher feedback as part of the writing process
- Interactive Study Guides
- Multi-sensory approach to instruction
- Written and spoken step-by-step directions
- Content-focused assessment (not grading for spelling/grammar)
- Graphic organizers

- Non-verbal cues to begin task/remain on task/refocus
- Individual monitoring for understanding/reinforced instruction
- Printed copies of class readings for application of Active Reading Strategies

Students at Risk of Failure
- Exemplars of varied performance levels
- Multimedia presentations
- Tiered/Scaffolded Lessons
- Modeling
- Guided note-taking
- Study Guides
- Differentiated pre-typed class notes and example problems
- Individualized instruction plans
- Words banks
- Reduced choice on assessments
- Preferential seating
- Choice activities
- Modified time requirements
- Modified notes
- Modified lesson, assessment and study guide format
- Modified homework
- Provide an enriched curriculum and activities
- Contracts/management plans
- Open-ended responses
- Project-based learning
- Group activities
- Guided Notes
- Exploration Activities
- Assessment read aloud
- Small group assessments
- Oral questioning assessments to supplement written response
- Pre-writing Structural Supports for extended writing tasks
- Ongoing teacher feedback as part of the writing process
- Interactive Study Guides
- Multi-sensory approach to instruction
- Written and spoken step-by-step directions
- Graphic organizers
- Non-verbal cues to begin task/remain on task/refocus
- Individual monitoring for understanding/reinforced instruction
- Printed copies of class readings for application of Active Reading Strategies

SCOPE AND SEQUENCE
COURSE OUTLINE/STUDENT OBJECTIVES

Duration: Ongoing	**Unit 1: Hardware and Computer Function**
Students Objectives	**Standard:** 8.1.8.A.1 **21st Century:** CRP2; CRP4; CRP6; CRP8; 9.3.ST-ET.3; 9.3.ST-SM.2; **Cross-Curricular:** RST.6-8.3; RST.6-8.4; RST.6-8.9; RST.6-8.10; RH.6-8.7;
Understand and use technology systems.	Demonstrate an understanding of the relationship between hardware and software. - Pair your iPad keyboard with the iSO system - Use Peripherals (e.g., Digital Camera, LCD Projector, etc) - Import files from peripherals - Expose students to available hardware - Understand the function of the internal computer components Demonstrate knowledge of a real world problem using digital tools.

Duration: 2 weeks	**Unit 2: Productivity Tools: Word Processing**
Students Objectives	**Standard:** 8.1.2.A.2 **21st Century:** CRP2; CRP4; CRP6; CRP8; 9.3.ST-ET.3; 9.3.ST-SM.2; **Cross-Curricular:** RST.6-8.3; RST.6-8.4; RST.6-8.9; RST.6-8.10; RH.6-8.7; MP.1
Select and use applications effectively and productively Students should be exposed to a variety of word processing programs. This should include but is not limited to Docs, Pages, and Word	Create a document (e.g. newsletter, reports, personalized learning plan, business letters or flyers) using one or more digital applications to be critiqued by professionals for usability. - Insert a table - Format cells - Add/Delete a rows or columns - Add footnotes/endnotes - Add headers/footers - Demonstrate fluency across platforms

Duration: 2 weeks	**Unit 3: Productivity Tools: Spreadsheets**
Students Objectives	**Standard:** 8.1.2.A.4; 8.1.2.A.5 **21st Century:** CRP2; CRP4; CRP6; CRP8; 9.3.ST-ET.3; 9.3.ST-SM.2; **Cross-Curricular:** RST.6-8.3; RST.6-8.4; RST.6-8.9; RST.6-8.10; RH.6-8.7; MP.1; MS-ETS1-2; MS-ETS1-3; MS-ETS1-4
Select and use applications effectively and productively: Spreadsheets Students should be exposed to a variety of spreadsheet programs. This should include but is not limited to Sheets, Numbers, and Excel	Graph and calculate data within a spreadsheet and present a summary of the results - Import data or collect data using a program like Google forms - Use a built-in formula - Create own formula - Create and format a graph or chart Create a database query, sort and , and - Conduct advanced sorting and filtering - Use PivotTable function to conduct basic analysis Create a report/ presentation explaining the report results, and describe the process (students may use - Open an existing presentation - Add slide transitions - Use the drawing toolbar - Create animation effects - Move manually through slides - Print handouts

Duration: 1 weeks	**Unit 4: Creativity and Innovation**
Students Objectives	**Standard:** 8.1.2.B.1 **21st Century:** CRP2; CRP4; CRP6; CRP8; 9.3.ST-ET.3; 9.3.ST-SM.2; **Cross-Curricular:** RST.6-8.3; RST.6-8.4; RST.6-8.9; RST.6-8.10; RH.6-8.7; MP.1; MS-ETS1-2; MS-ETS1-3; MS-ETS1-4
Apply existing knowledge to generate new ideas, products, or processes. Create original works as a means of personal or group expression.	Synthesize and publish information about a local or global issue or event - Utilize a desktop publishing tool - Choose a publication, layout, orientation - Recognize and use toolbars - Import and manipulate graphics - Resize frames, boxes, etc. - Create a pdf from the file - Post on a class blog for students to respond

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Duration: 1-2 week	**Unit 5: Internet, Research, and Social Media**
Students Objectives	**Standard:** 8.1.8.E.1; 8.1.8.F.1; 8.1.8.C.1 **21st Century:** CRP2; CRP4; CRP6; CRP8; 9.3.ST-ET.3; 9.3.ST-SM.2; **Cross-Curricular:** RST.6-8.3; RST.6-8.4; RST.6-8.9; RST.6-8.10; RH.6-8.7
Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media Evaluate and select information sources and digital tools based on the appropriateness for specific tasks	Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem. - Save a file, graphic, or sound - Perform searches, e.g., Boolean - Evaluate acquired information for validity and usefulness - Cite Internet sources - Use good practices of Internet copyright law
Part 2	
Identify and define authentic problems and significant questions for investigation Plan and manage activities to develop solutions Collect and Analyze data to identify solutions and/or make informed decisions Use multiple processes and diverse perspectives to explore alternative solutions	Explore a local issue by using digital tools to collect and analyze data to identify a solution and make an informed decision. (i.e. ArcGIS et. al.) Use a simulation that provides an environment to solve a real world problem (i.e. ArcGIS et. al.)
Part 3	
Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media Contribute to project teams to produce	Collaborate to develop and publish work that provides perspectives on a global problem for discussions with learners from other states, countries, or cultures - Utilize tools like Skype, Google Classroom, Wikispaces or blogs like VoicesofYouth.org - Perform searches - Acquire information such as text, audio, and graphics - Evaluate acquired information for validity and usefulness

original works or solve problems	

Duration: 1-2 weeks	**Unit 6: Programming**
Students Objectives	**Standard:** 8.2.8.F.1, 8.2.8.F.2, 8.2.8.F.3, 8.2.8.F.4 **21st Century:** CRP2; CRP4; CRP6; CRP8; 9.3.ST-ET.3; 9.3.ST-SM.2; 9.3.IT-PRG.5; 9.3.IT-PRG.6; 9.3.IT-PRG.7 **Cross-Curricular:** RST.6-8.3; RST.6-8.4; RST.6-8.9; RST.6-8.10; RH.6-8.7; MP.1; MP.2; MP.4; MS-ETS1-2; MS-ETS1-3; MS-ETS1-4
Utilize computational thinking and computer programming as tools used in design and engineering.	Identify ways computers are used that have had an impact across the range of human activity and within different careers where they are used. Demonstrate an understanding of the relationship between hardware and software. - Utilize computing system like Arduino and Raspberry Pis Develop an algorithm to solve an assigned problem using a specified set of commands and use peer review to critique the solution. - Expose students to various computer coding languages via online resources - Understand that the computer executes the user's commands Use appropriate terms in conversation

Duration: Ongoing	**Unit 7: Digital Citizenship**
Students Objectives	**Standard:** 8.1.8.D.1; 8.1.8.D.2; 8.1.8.D.3; 8.1.8.D.4; 8.1.8.D.5 **21st Century:** CRP2; CRP4; CRP6; CRP8; 9.3.ST-ET.3; 9.3.ST-SM.2; **Cross-Curricular:** RST.6-8.3; RST.6-8.4; RST.6-8.9; RST.6-8.10; RH.6-8.7
Advocate and practice safe, legal, and responsible use of information and technology.	Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media. Demonstrate the application of appropriate citations to digital content. Demonstrate an understanding of fair use and Creative Commons to intellectual property.
Demonstrate personal responsibility for lifelong learning. Exhibit leadership for digital citizenship.	Assess the credibility and accuracy of digital content. Understand appropriate uses for social media and the negative consequences of misuse.

Especially emphasized in "Internet and Social Media" and "Internet and Research"

SUGGESTED MATERIALS

Resources for Students

	Computer Based	**Cloud/Internet Based**	**Tablet**
Word Processing	Microsoft Word	Google Docs	Pages iOS
Spreadsheets	Microsoft Excel	Google Sheets	Numbers iOS
Presentation	Microsoft PowerPoint	Google Slides	Keynote iOS
Desktop Publishing	Microsoft Publisher		
Database		Google Forms	
Computer Programing / Coding		codecademy.com code.org scratch.com Tynker.com khanacademy.org	Tynker Hopscotch Swift
Keyboarding	Stickybear	Typing.com Dance Mat Typing	
Graphic Organizing	Inspiration		
Content Creation	KidPix Photoshop		iMovie
Research		easybib.com citationmachine.net	

teacher websites contain additional resources

Resources for Teachers:

New Jersey Student Learning Standards http://www.state.nj.us/education/cccs/2014/tech/
International Society for Technology and Education www.iste.org
Technology and Learning Journal www.techlearning.com
United Streaming www.streaming.discoveryeducation.com

District Online Subscriptions

- BrainPop Username: *bhpsnj* Password: *bhpsnj*
- Enchanted Learning: Contact school librarian for access information