BLOOMFIELD PUBLIC SCHOOLS Department of Instruction

Curriculum Guide

TECHNOLOGY CURRICULUM GRADES K-12

Prepared by:

Joanne Decker, Supervisor

Jason Bing, Superintendent of Schools Katherine Martinez, Director of Instruction & Testing, K-12

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DISTRICT INFORMATION

Bloomfield, New Jersey is a community that values education and learning, and the entire community has a responsibility to support programs that reflect those values and beliefs.

Bloomfield Public School district is a K-12 school district with an enrollment of approximately 6,000 students with an expenditure of \$8,200.80 per student and an average class size of 22 students. There are eight elementary schools, one middle school and one high school. The staff comprises of approximately 750 teaching and support personnel.

The Bloomfield Public Schools does not discriminate on the basis of race, color, sex, age national origin, religion or disability in matters affecting employment or in providing access to programs.

OUR MISSION

"The Bloomfield Public School district, a culturally diverse system, is committed through cooperative efforts within an educational community to provide an equal opportunity for all learners to achieve individual success and to be prepared to meet the needs of an evolving Society."

OUR PHILOSOPHY

The Bloomfield Public Schools are organized to meet the needs of the students from the time they enter kindergarten until they graduate from high school. Teachers and administrators are sincerely interested in the welfare and progress of each individual.

The students who attend our schools come first. We have an obligation to provide a cost-effective education program that meets the instructional needs of each student. It is also our responsibility to welcome the children into an educational environment that is conducive to the teaching/learning process. The positive learning environment is created to assist students in developing to their fullest potential

Jason Bing, DISTRICT SUPERINTENDENT

TECHNOLOGY IN BLOOMFIELD SCHOOL DISTRICT

This curriculum guide is designed to promote knowledge of and involvement in computer, information literacy, and in technology education. Technology is multi-disciplinary by nature. The knowledge and skills acquired in using technology is used across the curriculum. Technology is a tool that adds an active dimension to the educational process, from hands-on tools, various software and media resources, to the ever-evolving worldwide web.

Globally, technology is the conduit by which humans modify nature to meet their needs and wants. Educational technological literacy promotes the use of specific computer hardware and available educational software, but does not propose to teach discreet technology skills in isolation. Classroom teachers, who employ technology as an essential set of tools, can enhance the learning process, enrich academic performance, and equip students with the skills necessary to achieve success in life. Technology provides educators with the means to teach students in new and exciting ways and to have the students become active participants in the learning process. It extends the walls of the classroom by offering links to information and providing tools to explore, research, organize, and synthesize information.

This philosophy is grounded in the belief that our students are immersed in an ever-changing world that requires equally dynamic learning environments to meet and exceed its challenges. The curriculum will provide learning tools to enhance the student's conceptual understanding, procedural knowledge, and problem solving skills in technological skills and uses, its nature and impact, and its social, ethical, and human aspects.

The strength of technology is that it provides an excellent platform where students can receive and collect information in multiple formats and then organize, link, and discover relationships between facts and events. An array of tools for acquiring information allows students dynamic ways to enter the learning enterprise successfully and to live productive lives in the global, digital, and information-based future they all face.

CURRICULUM INTEGRATION OVERVIEW

(The use of Technology as an Instructional Tool: not used in Isolation)

The State of New Jersey developed a new technology standard to ensure the literacy needed by all students to succeed in a highly technological world. Business and industry has clearly stated the need for technological skills in the workplace in the 21st Century. The Bloomfield School District has chosen to establish this comprehensive curriculum guide to ensure the competency of all of our students in areas of design and technology skills so that they are well prepared to meet the challenges of the future.

According to Education World, integrating technology into the curriculum is a priority in today's schools. Most educational technologists agree that *technology* should be integrated as a tool to promote and extend student learning on a daily basis in opposed to becoming a separate subject or provide as a means to oncein-a-while projects. Teachers continuously face the challenge of finding ways to successfully integrate and implement technology in student learning in a way that enhances and enriches the value of our core curriculum subject areas.

Studies from Kulik's Meta-Analysis, Sivin-Kachala's Review of the Research, and The Apple Classroom of Tomorrow* have shown that remarkable results in student achievement have come from students immersed in learning environments that are rich in higher order uses of technology. Additional benefits such as academic achievement; improved student attitude; increased student participation; overall positive class enthusiasm; and the conversion of the "sage on the stage" didactic teacher to the coach/collaborative facilitator, who supports the constructivist approach to authentic student learning, have also been found. Technology is not a "cure all", but it can be a potent tool for enhancing the achievement of all students. It is only effective in the classroom, however, if the teacher has been adequately professionally developed and is continually updated on the latest technological innovations and their potential uses. Lack of personal experience with technology may present a challenge for many teachers.

In order to integrate technology-based lessons and projects into their curriculum, teachers first must find the time to learn to use technology tools and skills necessary for facilitating technology-integrated projects or activities. District technology leaders take on their roles as "flash light holders" providing resources, empowering and enabling teachers to become proficient in the use of technology (via staff development and modeling) and collaborative partners, working with teachers to plan and deliver innovative and compelling curriculum driven lessons and projects. In turn, teachers are able to evolve to meet their new roles that involve utilizing technological literacy, communication, research, productivity, and problem-solving tools to further enhance the educational program (via classroom and computer lab facilitation).

The Curriculum Integration Matrix provides an outline of appropriate hardware, software applications and other technology resources one can use in order to effectively utilize technology. Within the matrix are hyperlinks that demonstrate lesson plans and best practices in technology-curricular area integration.

ISTE (International Society for Technology in Education) clearly states that the term "curriculum integration" conveys the importance of integrating the use of technology throughout the curriculum. Its purpose is to focus the technology use on the curriculum-discipline-specific, content-area curriculum, using technology as a tool to foster higher-level outcomes. In turn, students will have a thorough understanding that technology is not used in isolation; they will know that it is an essential tool that can be used to improve efficiency and productivity in the areas of research, publishing, creating, data manipulation and interpretation, problem solving and much more.

Resources:

National Education Technology Standards for Students-Connecting Curriculum and Technology, published by ISTE NETS Project, 2000 Sabastian, Judith; *Educational Technology, the Teacher's Role*, <u>http://www.altp.org/SSP/TeachersRoleWhitePaper.htm</u>, 1996 * Schacter, John; *The Impact of Education Technology on Student Achievement*, <u>http://www.mff.org/pubs/ME161.pdf</u>, p.4-8. Star, Linda et al; *The Changing Face of Classroom Technology*, <u>http://www.educationworld.com/a_tech/tech/tech192.shtml</u>, 2004 Star, Linda; *Technology Integration Made Easy*, <u>http://www.educationworld.com/a_tech/tech146.shtml</u>, 2002 NJ Department of Education; NJ Core Curriculum Content Standards Introduction to Technology Education

BLOOMFIELD SCHOOL DISTRICT CURRICULUM INTEGRATION MATRIX*

Representational Appropriate Applications of Technology in Specific Curricular Areas

* Matrix concept adapted from <u>www.muskegon.k12.mi.us</u> TECHNOLOGY DEPARTMENT

BLOOMFIELD SCHOOL DISTRICT SCOPE OF NJ CCCS 8.1 (NJ CCCS 8.1 - COMPUTER AND INFORMATION LITERACY)



BLOOMFIELD SCHOOL DISTRICT SCOPE AND SEQUENCE

Standard 8.1 (Computer and Information Literacy)	BASI	C COMPUTER SKILLS AND T	TOOLS
Basic Operations and Concepts	Use basic technology vocabulary Use basic features of an operating system (e.g., accessing programs, identifying and	Use appropriate technology vocabulary . Use common features of an operating system (e.g., creating and organizing files and folders).	
	selecting a printer, finding help).	Demonstrate effective input of text and data , using touch keyboarding with proper technique.	-
	appropriate keyboarding techniques or other input devices.	accurately through proficient use of other input devices, such as the mouse.	
	Create and maintain files and folders .	Use network resources for storing and retrieving data.	
	Use basic computer icons .	Create organize and manipulate shortcuts .	
Software Applications	Produce a simple finished document using word processing software.	Create documents with advanced text formatting and graphics using word processing .	Create a multi-page document with citations using word processing software in conjunction with other tools that demonstrates the ability to format, edit, and print.
	Use a graphic organizer .	Choose appropriate electronic graphic organizers to create, construct, or design a document.	Create documents including a resume and a business letter using professional format.
		Plan and create a simple database , define fields, input data, and produce a report using sort and query.	Construct a database (based on a hypothesis), define fields, input data from multiple records, produce a report using sort and query, and interpret the data.
	Produce and interpret a simple graph or chart by entering and editing on a prepared spreadsheet template.	Construct a simple spreadsheet , enter data, and interpret the information.	Construct a spreadsheet , enter data, use mathematical or logical functions to manipulate and process data, generate charts and graphs, and interpret the results.
		Create a file containing customized information by merging documents .	Merge information from one file to another.
	Create and present a multimedia presentation using appropriate software.	Design and produce a basic multimedia project .	Produce a multimedia project using text, graphics, moving images, and sound
			Produce and edit page layouts in different formats using desktop publishing and graphics software.
			Develop a document or file for inclusion into a website or web page .
			Discuss and/or demonstrate the capability of emerging technologies and software in the creation of documents or files .

BLOOMFIELD SCHOOL DISTRICT SCOPE AND SEQUENCE

Standard 8.1	APPLICATION AND PRODUCTIVITY TOOLS							
(Computer and Information								
Literacy)		1						
Social, Ethical, and Human	Explain the purpose of an Acceptable Use Policy and the consequences of	Explain the purpose of an Acceptable Use Policy and the consequences of	Explain the purpose of an Acceptable Use Policy and the consequences of					
Issues	inappropriate use of technology.	inappropriate use of technology.	inappropriate use of technology.					
	Describe and practice safe Internet usage.	Describe and practice safe Internet usage.	Describe and practice safe Internet usage.					
	Practice appropriate Internet etiquette.	Describe and practice " etiquette " when using the Internet and electronic mail.	Use appropriate language when communicating with diverse audiences using computer and information literacy.					
	Discuss the common uses of computer applications and identify their advantages and disadvantages.	Demonstrates an understanding of how changes in technology impact the workplace society .	Describe the potential and implications of contemporary and emerging computer applications for personal, social, lifelong learning, and workplace needs.					
	Recognize and practice responsibilities social and ethical behaviors when using technology , and understand the consequences of inappropriate use including: Internet access Copyrighted materials On-line library resources Personal security and safety issues	Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse.	Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse.					
	Recognize the ethical and legal implications of plagiarism of copyrighted materials.	Recognize the ethical and legal implications of plagiarism of copyrighted materials.	Recognize the ethical and legal implications of plagiarism of copyrighted materials.					
			Make informed choices among technology systems, resources, and services in a variety of contexts.					
Information Access								
Research Tools	Recognize the need for accessing and using information .	Choose appropriate tools and information resources to support research and solve real world problems, including but not limited to: On-line resources and database Search engines and subject directories	Select and use specialized databases for advanced research to solve real world problems.					
	Identify and use web browsers, search engines, and directories to obtain information to solve real problems .	Evaluate the accuracy , relevance , and appropriateness of print and non-print electronic information sources .	Identify new technologies and other organizational tools to use in personal, home, and/or work environments for information retrieval, entry, and presentation.					
	Locate specific information by searching a database.		Evaluate information sources for accuracy , relevance , and appropriateness.					
	Recognize accuracy and/or bias information .		Compose , send, and organize e-mail messages with and without attachments.					

BLOOMFIELD SCHOOL DISTRICT SCOPE AND SEQUENCE

Standard 8.1 (Computer and Information Literacy)	APPLICA	ATION AND PRODUCTIVIT	Y TOOLS
Problem Solving and	Solve problems individually and/or	Use computer applications to modify	Create and manipulate information,
Decision Making Tools	collaboratively using computer applications.	information independently and/or	independently and/or collaboratively to solve
		collaboratively to solve problems.	problems and design and develop products.
	Identify basic hardware problems and solve	Identify basic hardware problems and solve	Identify, diagnose, and suggest solutions for
	simple problems.	common problems.	non-functioning technology systems.
		Determine when technology tools are	Identify a problem in a content area and
		appropriate to solve a problem and make a	formulate a strategy to solve the problem
		decision	using brainstorming, flowcharting, and
			appropriate resources.
			Integrate new information into an existing
			knowledge base and communicate the results
			in a project or presentation.

BLOOMFIELD SCHOOL DISTRICT SKILLS ARRAY NJ CCCS 8.1 - COMPUTER AND INFORMATION LITERACY

BASIC COMPUTER SKILLS AND TOOLS										APPL	[CAT	ION OI	F PROI	DUCT	IVITY	TOOL	S										
GRADE	Technology vocabulary	Understanding and using features of an operating system	Grade appropriate effective input of text and data.	Use files, folders, or network resources to store or retrieve data.	Use computer icons.	Create, organize and manipulate shortcuts .	Produce grade appropriate documents using age appropriate software.	Create and use graphic organizers to create, construct or design a document.	Plan and create a database , define fields, input data, produce a report using sort and query.	Produce and interpret graphs and charts by entering data on a spreadsheet .	Merging information from one document to another.	Create and produce a grade appropriate multimedia presentation/project.	Produce and edit page layouts in different formats using desktop publishing and graphics software.	File development for website or webpage inclusion	Explain the purpose of an Acceptable Use Policy and consequence for inappropriate use of technology.	Practice safe internet usage and appropriate internet and email etiquette	Demonstrating an understanding of current and future technology impact on society.	Recognize, exhibit social., legal and ethical behaviors when using information and technology: understands consequences for misuse (i.e. plagiarism of copyrighted material)	Make informed choices among technology resources in a variety of contexts.	Choose appropriate technology information resources to support research and solve real world problems.	Identify and use appropriate, accurate and relevant electronic information sources to solve real problems	Compose, send, and organize email messages with and without attachments.	Locate specific information by searching a database; evaluate the accuracy and relevance of that information.	Utilize and manipulate computer applications to independently or collaboratively solve problems.	Identify hardware problems and suggest solutions to solve them.	Identify a problem and formulate a strategy to solve the problem using technology tools, brainstorming, flowcharting, and appropriate resources.	Integrate new information into a knowledge base and communicate the results in a project or presentation.
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Let - concept / skill is introduced and practiced *in integration with the core curriculum subjects* (i.e. Mathematics, Language Arts, Science, Social Studies, Health/Physical Education, Visual/Performing Arts, and World Language)

Grades K-4

Benchmark	Skills	Example Software/ Resources				
Basic Operations and Concepts						
 Technology Vocabulary Features of an Operating System Text and Data Input Data Storage and Retrieval Use of Shortcuts 	 Demonstrate correct use of common technology terms (e.g. hardware, software, CD, hard drive, stand alone, network, file server, LAN, network resources) Identify the function of common peripheral devices (e.g., input-keyboard, scanner; output-headphones, speakers; processing-printer). Demonstrate appropriate login and shutdown of computer. Demonstrate correct finger placement on home row keys. Locate and use letters, numbers and special keys (e.g. arrow keys, space bar, insert, enter/return, backspace, and delete) on the keyboard. Open, scroll and close application windows. Know how to open and save files in a program. Locate and retrieve prior work, accesses files from external resource or network server. Demonstrates ability to create shortcuts to files and applications on desktop. Identify and articulate the benefits of networked and non-networked computers. Recognize and demonstrate the features/functions of computing devices (e.g. creating, retrieving, saving, printing data) Select appropriate technology tools (e.g. probeware, digital cameras, handhelds) to collect, analyze and display data. 	Windows Operating System				

Resources:

PLEASE NOTE, the State assessments for students in grades K-4 is via checklist. It is done in the MEDIA/TECH class of the Specials' rotation which is taught by the district Media Specialists. * Skills should not be taught in isolation. It is suggested that skills are integrated through rich technology-integrated lessons.

TECHNOLOGY DEPARTMENT

Grades K-4

Benchmark	Skills	Example Software/ Resources				
Software Applications						
Word Processing	 Use and demonstrate basic word processing terms/concepts (e.g. desktop, menu/toolbar, text, document, print preview, WYSIWIG, page set-up, thesaurus, spell check). Use word processing as a tool to enter words, numbers, and phrases. Identify and use basic word processing terms (e.g. file, open, close, menu bar, save, print). Recognize and use word-processing as a tool to enter/edit, print, and save assignments. Use word processing as a tool for writing, editing, and publishing sentences, paragraphs, stories and assignments. Identify and use menu/toolbar features/functions (e.g. print preview, spell check, thesaurus) to edit and make corrections to word processing documents. Identify and use formatting terms and concepts (e.g. font size/style, line spacing, margins, italics) to format and change the appearance of word processing documents. Use published documents (e.g. letter, memo, newspaper) to identify and layout as a class. 	 Word Kid Works Deluxe Alpha Smart Kidspiration Inspiration KidPix Grade Appropriate Content Software 				

Resources:

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Grades K-4

Benchmark	Skills	Example Software/ Resources				
Software Applications (ctd.)						
Graphic Organizer	 Identify and record information (pictorial or written) on given conceptual map or web to demonstrate knowledge of topic (e.g. sorting, classifying, comparing/contrasting, sequencing). Complete a partially filled graphic organizer completed by the teacher. Categorize information visually using graphic organizer templates. Explore new ideas with thought webs and visual mapping. Select and apply from a group of graphic organizers (e.g. Venn diagrams, concept maps, timelines) the appropriate one to complete a given task. Use appropriate conceptual mapping tools to shape ideas prior to producing a published document (e.g. brainstorming, KWL, web, outline, Venn diagrams) Use a graphic organizer to gather information, develop ideas, make decisions or organizer timking. Save the graphic organizer in an appropriate format (e.ggif, .html, or .rtf) to be used in other applications. 	 Kidspiration Inspiration Grade Appropriate Content Software 				

Resources:

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Grades K-4

Benchmark	Skills	Example Software/ Resources					
Software Applications (ctd.)							
Software Applications (ctd.) Spreadsheet	 Use spreadsheet data and graphs to make predictions, solve problems and make decisions in content areas. Observe and use software to enter, calculate display data and interpret results as a class/group. Identify and demonstrate spreadsheet terms/concepts (e.g. sort, classify, line graphs, cell, column, row, values, labels, chart, graph, formula) Use manipulatives and graphing software to display and organize data in a graph. Recognize, demonstrate and use graphs to display and interpret data in prepared spreadsheets; identify and cite sources. Utilize spreadsheets as a tool to organize, calculate and graph data to make predictions. Enter/edit data in a prepared spreadsheet and observe changes that occur to make predictions. Enter/edit data in prepared spreadsheets to perform calculations using simple formulas (+, -, *, /) and observe the changes that occur. Use spreadsheets and graphs to organize, calculate and display data in content areas. Identify and demonstrate how spreadsheets are used to calculate and 	Excel Grade Appropriate Content Software					
	 graph data in various settings (schools, government, business, industry). Use spreadsheet software in content areas to enter, display and identify sources of data 						

Resources:

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TECHNOLOGY DEPARTMENT

Grades K-4

Benchmark	Skills	Example Software/ Resources					
Software Applications (ctd.)							
Multimedia Presentation	 Use multimedia software to identify and practice numbers, letters, shapes and colors. Use multimedia software to illustrate words, phrases and concepts. Identify and use multimedia terms/concepts (e.g. storyboard, linear/sequential, audio/video clips, images, navigation buttons, transitions, links/hyperlinks, animation) Identify, demonstrate and use multimedia tools (e.g. capture, create, edit, publish). Identify and demonstrate and use multimedia tools to present ideas, concepts, and information in a variety of ways. Identify and demonstrate the use of multimedia tools to report content area information. Recognize and demonstrate guideline for media (e.g. personal information, images, content, and languages) to consider and develop multimedia projects. Modify multimedia projects and storyboard with menus, branching, and/or multiple outcomes for content areas; citing sources. Recognize, demonstrate and use rubrics to evaluate elements (e.g. content, organization, appropriateness of materials, citation) of multimedia projects/products. Identify and use multimedia tools to combine text and graphics as a collaborative or individual assignment. Identify, demonstrate and cite resources for a collaborative/individual multimedia project. 	 Hyperstudio PowerPoint 					

Resources:

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Grades K-4

Benchmark	Skills	Example Software/ Resources			
Social, Ethical, and Human Issues					
Acceptable Use Policy Internet and Email Etiquette Current and Future Impact of	Recognize and model responsible and safe behavior using online resources. Identify and display responsible and safe online behavior and articulate its importance.	AUP/AUA Email User Policy Web-Based Email Client			
Technology	 Work cooperatively and collaboratively with peers and others when using technology 	 Internet 			
 Legal/Ethical Use of Information and Technology 	 Practice responsible use of technology systems and software. 				
 Informed Choices of Technology Resources 	 and software. Understand common uses of technology in daily life and the advantages/disadvantages their use provide. Utilize personal technology responsibly and understand the consequences of inappropriate use. Demonstrate knowledge of current changes in information technology and the effect those changes have on the workplace and society. Use teacher-selected internet resource/ information to explore, identify and discuss responsible use. Use teacher selected internet resources/ information to identify, discuss and chart elements that make an online resource useful, appropriate teacher-selected internet resources for specific assignments; discuss and compare findings for usefulness as a class. Explore internet resources and information using teacher-created bookmarks/favorites and discuss the variety and types of information found. Recognize and demonstrate responsible ethical and safe behaviors when using technology resources (AUP/AUA). Recognize that copyright laws protect creative work of individuals, groups and companies by citing sources. 				
	explaining selection and use of resources.				

Resources:

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TECHNOLOGY DEPARTMENT

Grades K-4

Benchmark	Skills	Example Software/ Resources				
Information Access Research Tools						
 Appropriate Technology/Electronic Information Resource Selection to Support Research and Real Problem Solutions Email Messages Accurate and Relevant Database Search 	 Identify terms/concepts (e.g. online, browser, resources, navigation, web address, web page, web links, URL, keyword, web browser, search engine) Use teacher-selected internet resources to locate, discuss and compare information about the local community as a class/ group. Identify and utilize telecommunications/ internet as a tool of communication and collaboration as a class. Identify and discuss collaborative tools (e.g. email, messaging, videoconferencing) Plan, discuss and use search strategies with two or more criteria to find information on line about a given research topic. Identify, discuss and use online collaborative tools (e.g. email, surveys, video conference) to collect data for content area assignments/projects. Select and use technology tools (e.g. probeware, digital cameras, scanners) to collect, analyze and display information for content assignments. Select from a given set of search results for URL appropriate for the task. Choose between search results to address an area of inquiry. Use a rubric as a guide to select, evaluate digital resources and information for content and usefulness in content area assignments. Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness and bias of electronic information resources concerning real world problems. 	 CD ROMS/ Digital Media Internet Electronic Reference Software Grade Specific Content Software 				

Resources:

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TECHNOLOGY DEPARTMENT

Grades K-4

Benchmark	Skills	Example Software/ Resources
Problem Solving and Decision Making Tools		
 Computer Application Manipulation for Problem Solving Troubleshooting and Strategies for Problem Solving Hardware Problem Solutions Integration of Information into a Knowledge Base 	 Preplans for a report/presentation using graphic organizers and timeliners Select appropriate troubleshooting method to solve a simple computer problem (e.g. freezing, lost in an application, etc.) Solve problems using required skills or knowledge through the use of rich media projects Select appropriate formatting for project and audience Select appropriate software tool for the task. 	 Troubleshooting Guide Inspiration Kidspiration Grade Specific Content Software

Resources:

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BLOOMFIELD SCHOOL DISTRICT STUDENT ACHIEVEMENT RUBRIC*- Grades 5-8

		Emergent	Developing	Proficient	Advanced Proficient
		Concept/skill is started and	Concept/skill is continued	Concept/skill has been	Students excel working
		used with teacher guidance	and practiced with or	mastered and is used within	independently,
			without teacher guidance	the class without teacher	incorporating style and
			-	assistance	creativity to create original
					work. Content is more
\mathbf{S}					important than skills.
Ld	TECHNOLOGY	Students use limited	Students use terminology to	Students recognize and use	Students recognize and use
E	VOCABULARY	terminology to describe	describe hardware, software,	terminology to describe	accurate terminology to
Ž		hardware, software, multimedia	storage media	hardware, software, multimedia	describe hardware, software,
$\tilde{\mathbf{c}}$		services and storage media.	storage media.	services and storage media.	storage media.
	FEATURES OF AN	Students use input (e.g.	Students independently use	Students use input (e.g.	Students use appropriate input
Z	OPERATING SYSTEM	keyboard, mouse) and output	input (e.g. keyboard, mouse)	keyboard, mouse) and output	(e.g. keyboard, mouse) and
SA		devices (e.g. monitor).	and output devices (e.g.	devices (e.g. monitor), access	output devices (e.g. monitor),
Ž			monitor).	use peripherals (e.g. scappers	use common peripherals (e.g.
IC				digital cameras) via guidance.	scanners, digital cameras).
LV					
ER	DATA STORAGE AND	Students use limited procedures	Students use basic procedures	Students demonstrate	Students demonstrate strategies
Id	RETRIEVAL (FILE	for storing computer files on a	for storing computer files on a	and maintenance of computer	and procedures for effective
0	MANAGEMENT/	hard drive and hoppy disk.	hard drive and hoppy disk.	files on a hard drive and floppy	of computer files in a variety of
IC	MAINTAINANCE)			disk.	media and formats (e.g. floppy
AS					disc, CD) on a hard drive and
B					network.

BLOOMFIELD SCHOOL DISTRICT STUDENT ACHIEVEMENT RUBRIC*- Grades 5-8

		Emergent	Developing	Proficient	Advanced Proficient
		Concept/skill is started and used with teacher guidance	Concept/skill is continued and practiced with or without teacher guidance	Concept/skill has been mastered and is used within the class without teacher	Students excel working independently, incorporating style and creativity to create
				assistance	original work. Content is more important than skills.
	WORD PROCESSING ✓ Words ✓ Inspiration	Students identify and use limited basic software features to create word processing documents.	Students identify and use basic software features to create word processing documents.	Students identify and use basic software features to plan, create and edit word processing documents.	Students identify and apply common software features (e.g. menus, toolbars); and identify procedures for importing and manipulating objects (e.g. pictures, tables and charts) to plan, create and edit word processing documents.
SN	GRAPHIC ORGANIZERS ✓ Inspiration	Given a teacher prepared template, students record information that addresses topics in the curriculum by using technology resources (i.e. conceptual mapping software)	Students record information that addresses appropriate topics in the curriculum by using technology resources (i.e. conceptual mapping software)	Students identify and record information that addresses appropriate topics in the curriculum by using technology resources (i.e. conceptual mapping software)	Students identify, record and organize information that addresses assigned topics in the curriculum by using appropriate technology resources (i.e. conceptual mapping software, timeline software)
LICATIO	DATABASE ✓ Tabletop ✓ Works	Students enter data in a given database.	Students enter data and perform basic queries to process data.	Students enter data, perform basic queries to process data and report results that address given topics in the curriculum	Students demonstrate method for entering data, performing basic queries to process data and method for reporting results that address assigned topics in the curriculum
ARE APPI	$\begin{array}{l} \text{SPREADSHEET} \\ \checkmark Excel \\ \checkmark Works \end{array}$	Students apply basic software features of a spreadsheet to create tables that address given learning objectives.	Students apply basic software features of a spreadsheet (e.g. table, graph creation) to create products that address appropriate learning objectives.	Students apply software features of a spreadsheet (e.g. table, graph/ chart creation) to create products that address appropriate learning objectives.	Students identify and apply unique software features and components of a spreadsheet (e.g. table, graph/ chart creation, formulas) to plan, create and edit products that address appropriate learning objectives.
SOFTW	MERGING DATA FROM MULTIPLE MEDIA ✓ Word ✓ Excel ✓ Access	Students, through guided instruction, apply software features such as merging data from spreadsheet resources to improve the efficacy of documents	Students, through guided instruction, apply software features such as merging data from spreadsheet and database resources to improve the efficacy of documents	Students apply software features such as merging data from spreadsheet and database resources to improve the efficacy of documents	Students understand and apply software features such as merging data from spreadsheet and database resources to improve the efficacy of documents.
	MULTIMEDIA PRESENTATION/ PROJECT ✓ PowerPoint	Students utilize limited procedures to create simple multimedia presentations.	Students utilize basic procedures to create simple multimedia presentations.	Students identify and utilize basic procedures for importing and manipulating objects (e.g. pictures, images and charts) to plan, create and edit multimedia presentations.	Students classify and employ unique software features (e.g. animation, sound, video); identify and utilize procedures for importing and manipulating objects (e.g. pictures, images and charts) to plan, create and edit multimedia presentations.
	DESKTOP PUBLISHING AND GRAPHICS SOFTWARE ✓ Publisher ✓ Photoshop Elements	With guided instruction, students use limited media to create basic products (e.g. pamphlets) that communicate information and ideas from the curriculum.	Students use limited media to create basic products (e.g. pamphlets) that communicate information and ideas from the curriculum.	Students use limited media and formats to create and edit products (e.g. newsletters, pamphlets) that communicate information and ideas from the curriculum.	Students recognize a variety of media and formats to create and edit products (e.g. newsletters, pamphlets) that communicate information and ideas from the curriculum.
	WEBSITE/WEBPAGE INCLUSION ✓ Publisher	Students utilize limited formats to create products (e.g. webpage development) that demonstrate simple ideas from the curriculum.	Students utilize basic formats to create products (e.g. webpage development) that demonstrate simple ideas from the curriculum.	Students utilize basic formats to create products (e.g. webpage development) that communicate information and ideas from the curriculum.	Students identify a variety of media and formats to create and edit products (e.g. webpage development) that communicate information and ideas from the curriculum.

BLOOMFIELD SCHOOL DISTRICT

CCCS 8.1 Computer and Information Literacy

STUDENT ACHIEVEMENT RUBRIC*- Grades 5-8

		Emergent	Developing	Proficient	Advanced Proficient
		Concept/skill is started and	Concept/skill is continued	Concept/skill has been	Students excel working
		used with teacher guidance	and practiced with or	mastered and is used within	independently,
		C C	without teacher guidance	the class without teacher	incorporating style and
			C	assistance	creativity to create original
					work. Content is more
					important than skills.
	ACCEPTABLE USE	Students partially verbalize the	Students verbalize the basic	Students verbalize the contents	Students articulate the purpose
\mathbf{v}	POLICY	basic contents of the district's	contents of the district's	of the district's acceptable use	of the district's acceptable use
ÛE		acceptable use policy and	acceptable use policy and	policy and understand the	policy and understand the
IS		understand some consequences	understand the consequences of	consequences of non-	consequences/costs of non-
IS	INTEDNET AND EMAIL	of non-compliance.	Students practice basic	Students practice appropriate	Students presties acceptable
N	INTERNET AND EMAIL	computer etiquette and work			
МA	ENQUEITE	cooperatively with others when			
j.		using technology.	using technology.	using technology.	using technology.
Η	CURRENT AND FUTURE	Students demonstrate limited	Students demonstrate basic	Students demonstrate some	Students demonstrate broad
Ð	TECHNOLOGY IMPACT	uses for information/	uses for information/	uses for information/	uses for information/
AN	ON SOCIETY.	communication technology in	communication technology in	communication technology in	communication technology in
L.		everyday life.	everyday life.	everyday life and understand	everyday life and understand
CA				use of technology in society	use of technology in society
II				use of technology in society	and its possible long-range
TF					impact.
E	SOCIAL, LEGAL AND	Students communicate a	Students communicate a	Students communicate issues	Students communicate issues
L,	ETHICAL BEHAVIORS	narrow range of issues related	narrow range of issues related	related to acceptable and	related to acceptable and
IA	WHEN USING	to acceptable and responsible	to acceptable and responsible	responsible use of information/	responsible use of information/
C	INFORMATION AND	use of information/	use of information/	communication technology	communication technology
SC	TECHNOLOGY	communication technology.	communication technology	(e.g. copyright, plagiarism,	(e.g. copyright, plagiarism,
•1			(e.g. plagiarism) and	spamming) and understand the	spamming) and analyze the
			of unethical use of technology	of technology	use of technology
	INFORMED CHOICES	Students select information/	Students select information/	Students know how to select	Students know how to select
	AMONG TECHNOLOGY	communication technology	communication technology	information/ communication	and use appropriate
	RESOURCES.	and resources, with guidance to	and resources, with limited	technology and resources to	information/ communication
		collect information.	guidance to collect information.	collect information and report	technology and resources to
				results.	collect and analyze information
					and report results.

BLOOMFIELD SCHOOL DISTRICT

STUDENT ACHIEVEMENT RUBRIC*- Grades 5-8

	Concept/skill is started and	Concent/skill is continued	Concept/skill has been mastered	ria ancea i romerene
	used with teacher guidance	and practiced with or without teacher guidance	and is used within the class without teacher assistance	Students excel working independently, incorporating style and creativity to create original work. Content is more important than skills.
CTRONIC AND HNOLOGY ORMATION OURCES FOR EARCH SUPPORT O REAL WORLD BLEM SOLUTIONS.	Students use given technology resources (e.g. internet) to research pre-selected curriculum topics.	Students use given technology resources (e.g. internet) to research pre-selected curriculum topics and solve real world problems.	Students select and use some technology resources (e.g. internet, real-world simulations, real-time data) to enhance their research of curriculum topics and solve real world problems.	Students locate, select and use technology resources (e.g. internet, real-world simulations, real-time data) to enhance their research of curriculum topics and solve real world problems.
IL MESSAGE ANIZATION	Students use limited assigned telecommunication tools (e.g. online collaborative projects) to exchange data collected by communicating with peers, educators, and experts.	Students use basic assigned telecommunication tools (e.g. email, online collaborative projects) to exchange data collected and learn curricular concepts by communicating with peers, educators, and experts.	Students employ assigned telecommunication tools (e.g. email, chat rooms, forums, online collaborative projects) to exchange data collected and learn curricular concepts by communicating with peers, educators, and experts.	Students employ various telecommunication tools (e.g. email, chat rooms, forums, online collaborative projects) to exchange data collected and learn curricular concepts by communicating with peers, educators, and experts.
URATE AND EVANT DATABASE RCH	Students identify and use limited search techniques via databases (e.g. internet).	Students identify and use basic search techniques via databases (e.g. internet) and are able to evaluate the data for relevance.	Students identify and use various search techniques via databases (e.g. internet) and are able to evaluate the data for relevance, bias and appropriateness.	Students identify and use various search techniques via databases (e.g. internet) and are able to evaluate the data for accuracy, relevance, comprehensiveness, bias and appropriateness.
	Image: Constraint of the state of the s	Image: Rest of the system is a system in the system is a syste	TRONIC AND Students use given technology YNITOUT CACHT Students use given technology YNATION resources (e.g. internet) to YNATION research pre-selected JRCES FOR curriculum topics. XRCH SUPPORT EAL WORLD LEM SOLUTIONS. Students use limited assigned telecommunication tools (e.g. online collaborative projects) to exchange data collected by communicating with peers, concepts by communicating Students identify and use Imited search techniques via Students identify and use ARATE AND Students identify and use VANT DATABASE Students identify and use	RONIC AND NOLOGY NOLOGY NATIONStudents use given technology resources (e.g. internet) to research pre-selected curriculum topics.Students use given technology resources (e.g. internet) to research pre-selected curriculum topics and solve real world problems.Students select and use some technology resources (e.g. internet, real-world simulations, real-time data) to enhance their research of curriculum topics and solve real world problems.J. MESSAGE NIZATIONStudents use limited assigned telecommunication tools (e.g. online collaborative projects) to exchange data collected by communicating with peers, educators, and experts.Students use basic cassigned telecommunication concepts by communicating with peers, educators, and experts.Students identify and use tabases (e.g. internet).Students identify and use various search techniques via databases (e.g. internet) and are able to evaluate the data for relevance.Students identify and are able to evaluate the data for relevance.

BLOOMFIELD SCHOOL DISTRICT STUDENT ACHIEVEMENT RUBRIC*- Grades 5-8

		Emergent	Developing	Proficient	Advanced Proficient
Š		Concept/skill is started and used with teacher guidance	Concept/skill is continued and practiced with or without teacher guidance	Concept/skill has been mastered and is used within the class without teacher assistance	Students excel working independently, incorporating style and creativity to create original work. Content is more important than skills.
KING TOOI	PROBLEM IDENTIFICATION AND STRATEGY FORMULATION FOR PROBLEM SOLVING	Students apply pre-selected technology tools and resources to collect and organize information relevant to real world problems.	Students apply pre-selected technology tools and resources to collect, organize and evaluate information relevant to real world problems.	Students apply appropriate technology tools and resources to collect, organize and evaluate information relevant to real world problems.	Students select and apply appropriate technology tools and resources to collect, organize and evaluate information relevant to real world problems.
SION MA	HARDWARE PROBLEMS AND SOLUTIONS	Students solve limited basic common hardware problems that occur during everyday use.	Students solve limited basic common hardware and software problems that occur during everyday use.	Students demonstrate how to solve common hardware, software, and network problems that occur during everyday use.	Students demonstrate, analyze and describe how to solve common hardware, software, and network problems that occur during everyday use.
PROBLEM SOLVING AND DECH	KNOWLEDGE BASE INTEGRATION AND RESULTS COMMUNICATION	Students use limited media and formats to publish and present simple products (e.g. presentations) from the curriculum.	Students use basic media and formats to publish and present simple products (e.g. presentations) from the curriculum.	Students use some media and formats to design, develop, publish and present products (e.g. presentations, websites, newsletters) and incorporate information from the curriculum and articulate ideas to limited audiences.	Students demonstrate how to use a variety of media and formats to design, develop, publish and present products (e.g. presentations, websites, newsletters) and incorporate information from the curriculum and articulate original ideas to multiple audiences.

BLOOMFIELD SCHOOL DISTRICT STUDENT ACHIEVEMENT RUBRIC*- Grades 9-12

		Emergent	Developing	Proficient	Advanced Proficient
		Concept/skill is started and	Concept/skill is continued	Concept/skill has been	Students excel working
		used with teacher guidance	and practiced with or	mastered and is used within	independently,
			without teacher guidance	the class without teacher	incorporating style and
				assistance	creativity to create original
					work. Content is more
					important than skills.
	TECHNOLOGY	Students use partial	Students recognize and use	Students recognize and use	Students independently
S	VOCABULARY	hardware software multimedia	hardware software multimedia	describe hardware, software	terminology to describe
Γſ		services and storage media.	services and storage media.	multimedia services and	technologies that include but
CE		e e e e e e e e e e e e e e e e e e e		storage media.	are not limited to hardware,
Ž					software, multimedia services
2					and storage media in daily
0	FEATURES OF AN	Students use input (e.g.	Students use input (e.g.	Students use appropriate input	language.
Z	OPERATING SYSTEM	keyboard, mouse) and output	keyboard, mouse) and output	(e.g. keyboard, mouse) and	appropriate input/output device.
SA		devices (e.g. monitor).	devices (e.g. monitor), access	output devices (e.g. monitor),	access network resources and
Ž			limited network resources, and	access network resources, and	incorporate peripherals to
ΠC			use peripherals (e.g. scanners,	use common peripherals (e.g.	enhance his/her final product.
LA.			digital cameras) via guidance.	scamers, digital cameras).	
ER	DATA STORAGE AND	Students use basic procedures	Students demonstrate	Students demonstrate strategies	Students integrate strategies
JP	RETRIEVAL (FILE	for storing computer files on a	procedures for management	and procedures for effective	and procedures for effective
$\mathbf{\tilde{\mathbf{O}}}$	MANAGEMENT/	hard drive and hoppy disk.	files on a hard drive and floppy	of computer files in a variety of	of computer files in a variety of
SIC	MAINTAINANCE)		disk.	media and formats (e.g. floppy	media and formats on a hard
Y				disc, CD) on a hard drive and	drive and network.
B				network.	

BLOOMFIELD SCHOOL DISTRICT

		Emergent	Developing	Proficient	Advanced Proficient
		Concept/skill is started and	Concept/skill is continued and	Concept/skill has been	Students excel working
		used with teacher guidance	practiced with or without	mastered and is used within	independently, incorporating
		-	teacher guidance	the class without teacher	style and creativity to create
			C	assistance	original work. Content is more
					important than skills.
	WORD PROCESSING	Students identify and use limited	Students identify and use basic	Students identify and apply common	Students independently use software
	✓ Word	basic software features to create word	software features to plan, create and	software features (e.g. menus,	features and implement procedures
	✓ irtual Basics	processing documents.	edit word processing documents.	toolbars); and identify procedures for	for importing and manipulation object
				importing and manipulating objects	to plan, create and edit original word
				(e.g. pictures, tables and charts) to	processing documents.
				documents	
	GRAPHIC ORGANIZERS	Students record information that	Students identify and record	Students identify, record and organize	Students appropriate technology
	\checkmark Inspiration	addresses appropriate topics in the	information that addresses appropriate	information that addresses assigned	resources (i.e. conceptual mapping,
	mopriancen	curriculum by using technology	topics in the curriculum by using	topics in the curriculum by using	timeline software) to addresses
		resources (i.e. conceptual mapping	technology resources (i.e. conceptual	appropriate technology resources (i.e.	assigned topics in the curriculum.
Ş		software)	mapping software)	conceptual mapping software,	
5	DATADAGE		State to set a late or set and a set	timeline software)	Oter lands in lands of lands of the
E	DATABASE	students enter data and perform basic	students enter data, perform basic	students demonstrate method for	Students independently enter and
- T	 Access 	queries to process data.	results that address given tonics in the	queries to process data and method	queries for processing data and
J J			curriculum	for reporting results that address	methods for reporting results that
Ξ				assigned topics in the curriculum	address assigned curriculum topics.
Ē	SPREADSHEET	Students apply basic software features	Students apply software features of a	Students identify and apply unique	Students autonomously produce
	✓ Excel	of a spreadsheet (e.g. table, graph	spreadsheet (e.g. table, graph/ chart	software features and components of	products that reflect given learning
		creation) to create products that	creation) to create products that	a spreadsheet (e.g. table, graph/ chart	objectives by using advanced
E		address appropriate learning	address appropriate learning	creation, formulas) to plan, create and adit products that address appropriate	software features and components of
AI		objectives.	objectives.	learning objectives.	a spreadsheet.
M	MERGING DATA FROM	Students, through guided instruction,	Students apply software features such	Students understand and apply	Students implement features such as
Ļ	MULTIPLE MEDIA	apply software features such as	as merging data from spreadsheet	software features such as merging	merging data from spreadsheets and
E	✓ Word	merging data from spreadsheet	resources to improve the efficacy of	data from spreadsheet and database	database resources to create efficient
ŏ	✓ Excel	resources to improve the efficacy of	documents	resources to improve the efficacy of	independently produced products.
•1	\checkmark	documents		documents.	
	MULTIMEDIA PRESENTATION/	Students utilize basic procedures to	Students identify and utilize basic	Students classify and employ unique	Students compose compelling
	PROJECT	create simple multimedia	procedures for importing and	software features (e.g. animation,	multimedia presentations that reflect
	✓ PowerPoint	presentations.	images and charts) to plan create and	sound, video); identify and utilize	curricular focus and integrate
			edit multimedia presentations	manipulating objects (e.g. pictures	advanced software features.
			cuit multimedia presentations.	images and charts) to plan, create and	
				edit multimedia presentations.	
	DESKTOP PUBLISHING AND	Students use limited media to create	Students use limited media and	Students recognize a variety of media	Students evaluate a plethora of media
	GRAPHICS SOFTWARE	basic products (e.g. pamphlets) that	formats to create and edit products	and formats to create and edit	and formats to design desktop
	✓ Publisher	communicate information and ideas	(e.g. newsletters, pamphlets) that	products (e.g. newsletters, pamphlets)	publishing products that communicate
	 Photoshop Elements 	from the curriculum.	from the curriculum	that communicate information and	original information and authentic
	WEBSITE/WEBPACE	Students utilize limited formats to	Students utilize limited formats to	Students identify a variety of media	Iucas Students evaluate a plethora of media
	INCLUSION	create products (e.g. webpage	create products (e.g. webpage	and formats to create and edit	and formats to design web-based
	✓ FrontPage	development) that demonstrate simple	development) that communicate	products (e.g. webpage development)	products that support original
	✓ Publisher	ideas from the curriculum.	information and ideas from the	that communicate information and	information and authentic ideas
	✓ Dreamweaver		curriculum.	ideas from the curriculum.	

BLOOMFIELD PUBLIC SCHOOLS

STUDENT ACHIEVEMENT RUBRIC*- Grades 9-12

NJ CCCS 8.1 Computer and Information Literacy

*Adapted from the NETS for Students Achievement Summary Rubric –DRAFT TECHNOLOGY DEPARTMENT BLOOMFIELD I C BLIC SCHOOLS

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*Adapted from the NETS for Students Achievement Summary Rubric –DRAFT TECHNOLOGY DEPARTMENT

BLOOMFIELD PUBLIC SCHOOLS

CLASSROOM IMPLEMENTATION RUBRIC

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BLOOMFIELD PUBLIC SCHOOLS **APPENDIX A**

New Jersey Core Curriculum Content Standards

At the threshold of the twenty-first century, New Jersey found itself struggling along with the rest of the nation to educate citizens who will be competitive in the international marketplace of the future. New Jersey also faced a particular constitutional challenge of implementing a state system of "Thorough and Efficient" public schools.

One of the goals of public education is to prepare students for the world of work. Mathematics skills are tools for problem solving in science and can be reinforced in vocational-technical areas. Technology education teachers can show the application of problem-solving techniques, which bring physics principles to life. The visual and performing arts provide an avenue for the understanding of science, social studies, language arts, world language, and design technology.

In one sense, the core curriculum standards mark with precision the results expected of all students. In another sense, they serve as a banner behind which all segments of the education community and the state at large can mobilize and reshape our approach to education. Collectively, they embody a vision of the skills and understandings of all New Jersey's children need to step forward into the twenty-first century and to be successful in their careers and daily lives.

To compete in a global, information-based economy, the students we prepare must be able to solve real problems, reason effectively, and make logical connections. The world of work they enter will feature products and factories that are designed by mathematical models and computer simulations, computers that control production processes and plants, and robots. Our state and country need people with the skills to develop and manage these new technologies.

All students should be challenged to reach their maximum potential. For many students, the achievement of these standards will indeed be challenging. However, if we do not provide such a challenge, a blueprint for excellence, we will do our students a great disservice by leaving them unprepared for the future.

New Jersey Core Curriculum Content Standards

for

Technological Literacy

INTRODUCTION

The Vision

Technology, any modification of the natural world designed by human beings to solve human problems, enhance human life, or extend human capability, was identified by the United States Department of Labor as an essential workplace competency in a 1992 report called the Secretary' s Commission on Achieving Necessary Skills (SCANS). SCANS stated that students should be able to select equipment and tools, apply technology to specific tasks, and maintain and troubleshoot equipment. The Department of Education recognized its importance by including technology in the original cross-content workplace readiness standards. In keeping with today' s technological society, technological literacy has been further emphasized by its inclusion as a separate standards area which focuses on both computer and information literacy and technology education.

Technology is evolving at an amazing rate, with both frequent advancements of existing technology and the creation of new technologies. All students must understand and be comfortable with the concepts and application of technology, not only in order to function in today' s complex society, but also to become informed and productive adults of tomorrow.

Computer and Information Literacy

Computer and information literacy, which supports skills in information-gathering, information-organizing, and problem solving, has become critical for every student whether college- or workplace-bound. Colleges and employers are now demanding that students and Resource: www.nj.gov/njded/cccs/s8_tech.htm TECHNOLOGY DEPARTMENT 31

employees possess a broad range of computer and information literacy proficiencies. More and more retail purchasing is being done on-line every year, and all but the most menial of positions now require a significant understanding of computer and information literacy. To ensure that students are computer literate, a separate standard that defines rigorous, in-depth learning has been included. The computer and information literacy standard is designed to be integrated and applied in all of the content areas of the Core Curriculum Content Standards.

Technology Education

The technology education standard was developed to ensure the literacy needed by all students to succeed in a highly technological world. Business and industry has clearly stated the need for technological skills in the workplace of the 21st Century.

This standard is based on the *Standards for Technological Literacy (STL): Content for the Study of Technology (ITEA, 2000),* developed as part of the National Science Foundation (NSF)/National Aeronautics and Space Administration (NASA) funded by the *Technology for All Americans* (TfAA) project.

A study by DeKlerk has found that students form negative attitudes about the technological world if there are no formal technological experiences during the early school years. This finding is a great concern to New Jersey business and industry. Other cognitive research suggests that "design-based learning" is important. Early studies with design and technology curriculum indicate that students who learn important technological concepts develop positive attitudes about technology, math, science and learning in general. For these reasons, an introduction to technology education, including engineering and technological design, is an essential component of a thorough and efficient K-12 education.

Standards and Strands

There are two technological literacy standards, each of which has a number of lettered strands. The standards and strands include:

8.1 Computer and Information Literacy

- A. Basic Computer Tools and Skills
- Keyboarding
- Word processing
- Internet usage
- Spreadsheets
- Database concepts and usage
- Publications and presentations
- B. Application of Productivity Tools
- Social Aspects
- Information Access and Research
- Problem Solving

References

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National Business Education Association. (2001). National standards for business education. Online:

http://www.nbea.org/curriculum/bes.html.

STANDARD 8.1 (COMPUTER AND INFORMATION LITERACY) ALL STUDENTS WILL USE COMPUTER APPLICATIONS TO GATHER AND ORGANIZE INFORMATION AND TO SOLVE PROBLEMS.

Descriptive Statement: Using computer applications and technology tools students will conduct research, solve problems, improve

learning, achieve goals, and produce products and presentations in conjunction with standards in all content areas, including career

education and consumer family, and life skills. They will also develop, locate, summarize, organize, synthesize, and evaluate

information for lifelong learning.

Strands and Cumulative Progress Indicators

By the end of Grade 4, students will:

A. Basic Computer Skills and Tools

1. Use basic technology vocabulary.

2. Use basic features of an operating system (e.g., accessing programs, identifying and selecting a printer, finding help).

- 3. Input and access text and data, using appropriate keyboarding techniques or other input devices.
- 4. Produce a simple finished document using word processing software.

5. Produce and interpret a simple graph or chart by entering and editing data on a prepared spreadsheet Resource: www.nj.gov/njded/cccs/s8_tech.htm TECHNOLOGY DEPARTMENT 35

template.

- 6. Create and present a multimedia presentation using appropriate software.
- 7. Create and maintain files and folders.
- 8. Use a graphic organizer.
- 9. Use basic computer icons.

B. Application of Productivity Tools

Social Aspects

- 1. Discuss the common uses of computer applications and identify their advantages and disadvantages.
- 2. Recognize and practice responsible social and ethical behaviors when using technology, and understand the consequences of inappropriate use including:
- Internet access
- Copyrighted materials
- On-line library resources
- Personal security and safety issues
- 3. Practice appropriate Internet etiquette.

4. Recognize the ethical and legal implications of plagiarism of copyrighted materials.

Information Access and Research

5. Recognize the need for accessing and using information.

6. Identify and use web browsers, search engines, and directories to obtain information to solve real world problems.

7. Locate specific information by searching a database.

8. Recognize accuracy and/or bias of information.

Problem Solving and Decision Making

- 9. Solve problems individually and/or collaboratively using computer applications.
- 10. Identify basic hardware problems and solve simple problems.

Building upon knowledge and skills gained in preceding grades, by the end of Grade 8, students will:

A. Basic Computer Skills and Tools

- 1. Use appropriate technology vocabulary.
- 2. Use common features of an operating system (e.g., creating and organizing files and folders).

3. Demonstrate effective input of text and data, using touch keyboarding with proper technique.

4. Input and access data and text efficiently and accurately through proficient use of other input devices, such as the mouse.

5. Create documents with advanced text-formatting and graphics using word processing.

6. Create a file containing customized information by merging documents.

7. Construct a simple spreadsheet, enter data, and interpret the information.

8. Design and produce a basic multimedia project.

9. Plan and create a simple database, define fields, input data, and produce a report using sort and query.

10. Use network resources for storing and retrieving data.

11. Choose appropriate electronic graphic organizers to create, construct, or design a document.

12. Create, organize and manipulate shortcuts.

B. Application of Productivity Tools

Social Aspects

1. Demonstrate an understanding of how changes in technology impact the workplace and society.

2. Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse.

3. Explain the purpose of an Acceptable Use Policy and the consequences of inappropriate use of technology.

- 4. Describe and practice safe Internet usage.
- 5. Describe and practice "etiquette" when using the Internet and electronic mail.

Information Access and Research

6. Choose appropriate tools and information resources to support research and solve real world problems, including but not limited to:

- On-line resources and databases
- -Search engines and subject directories

7. Evaluate the accuracy, relevance, and appropriateness of print and non-print electronic information sources.

Problem Solving and Decision Making

- 8. Use computer applications to modify information independently and/or collaboratively to solve problems.
- 9. Identify basic hardware problems and demonstrate the ability to solve common problems.
- 10. Determine when technology tools are appropriate to solve a problem and make a decision.

Building upon knowledge and skills gained in preceding grades, by the end of Grade 12, students will:

A. Basic Computer Skills and Tools

1. Create a multi-page document with citations using word processing software in conjunction with other tools that demonstrates the ability to format, edit, and print.

2. Create documents including a resume and a business letter using professional format.

3. Construct a spreadsheet, enter data, use mathematical or logical functions to manipulate and process data, generate charts and graphs, and interpret the results.

4. Given a database, define fields, input data from multiple records, produce a report using sort and query, and interpret the data.

5. Produce a multimedia project using text, graphics, moving images, and sound.

6. Produce and edit page layouts in different formats using desktop publishing and graphics software.

7. Develop a document or file for inclusion into a website or web page.

8. Discuss and/or demonstrate the capability of emerging technologies and software in the creation of documents or files.

9. Merge information from one document to another.

B. Application of Productivity Tools

Social Aspects

1. Describe the potential and implications of contemporary and emerging computer applications for personal, social, lifelong learning, and workplace needs.

2. Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse.

3. Make informed choices among technology systems, resources, and services in a variety of contexts.

4. Use appropriate language when communicating with diverse audiences using computer and information literacy.

Information Access and Research

5. Select and use specialized databases for advanced research to solve real world problems.

6. Identify new technologies and other organizational tools to use in personal, home, and/or work environments for information retrieval, entry, and presentation.

- 7. Evaluate information sources for accuracy, relevance, and appropriateness.
- 8. Compose, send, and organize e-mail messages with and without attachments.

Problem-Solving and Decision Making

Resource: www.nj.gov/njded/cccs/s8_tech.htm TECHNOLOGY DEPARTMENT

9. Create and manipulate information, independently and/or collaboratively, to solve problems and design and develop products.

10. Identify, diagnose, and suggest solutions for non-functioning technology systems.

11. Identify a problem in a content area and formulate a strategy to solve the problem using brainstorming, flowcharting, and appropriate resources.

12. Integrate new information into an existing knowledge base and communicate the results in a project or presentation.

BLOOM'S TAXONOMY OF THE COGNITIVE DOMAIN

In 1956, Benjamin Bloom outlined six (6) levels of cognitive function:

- 1. Knowledge
- 2. Comprehension
- 3. Application
- 4. Analysis
- 5. Synthesis
- 6. Evaluation

Bloom's Taxonomy has been a valuable tool to educators when developing curriculum and determining instruction. We look at the six levels and

think of them in terms of action verb. Educators use this taxonomy as a guide when developing tests, projects, and other assessment measures.

ASSESSMENT VOCABULARY BASED ON BLOOM'S TAXONOM

COGNITIVE DOMAIN	DESCRIPTIVE VERB	ASSORTMENT WORDS / PHRASE
Knowledge	List, describe, catalog, itemize, define, classify,	Who, what, where, when, why, how, how much, which one,
	organize, identify, name, show, explain, read	describe, select
Comprehension	Change, infer, outline, propose, replace,	Which are the facts and/or opinions?
	modify, summarize, alter, vary, condense,	What does this mean? Outline the information in Re-state in
	explain	your own words
		Summarize
Application	Solve, predict, explain, diagnose, estimate,	What would happen if Explain the effects of What and how
	plan, protect, judge	much would change?
Analysis	Examine, compare, contrast, identify, equate,	What conclusions can be drawn from?
	rank, deduce	What is the theme or main idea?
		What is the relationship? What are the most important ideas?
		What is the motive of?
Synthesis	Create, brainstorm, predict, plan, design, set	Make up, choose, create, design, plan
	up, imagine	
Evaluation	Judge, rank, determine, critique, defend,	What is more important/ moral/logical/ appropriate/
	conclude	valid?
		Compare and contrast Critique

DEFINITIONS

- **CONCEPTUAL KNOWLEDGE** is knowledge that must be learned by thoughtful, reflective style techniques. It utilizes relationship and understanding, a network in which linking relationships are as prominent as the discrete bits of information previously learned.
- **ISTE** is the acronym for International Society for Technology Education.
- **NETS** is the acronym for *National Educational Technology Standards* for Students; Connecting Curriculum and Technology.
- NJCCCS is the acronym for New Jersey Core Curriculum Content Standards.
- **PROCEDURAL KNOWLEDGE** is the knowledge of how to perform some task. It emphasizes the knowing 'how' as opposed to knowing 'that' which is called declarative knowledge.
- **PROBLEM-BASED LEARNING** is a curriculum development and instructional system which simultaneously develops both problem solving strategies and disciplinary knowledge bases and skills by placing students in the active role of problem-solvers confronted with a structured problem that mirrors real-world problems.