ELEMENTARY/SECONDARY TECHNOLOGY

CURRICULUM STANDARDS

Catholic Schools Office
Diocese of Phoenix
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TECHNOLOGY CURRICULUM STANDARDS
K - 12

Diocese of Phoenix

June, 2010

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The Catholic Schools Office of the Diocese of Phoenix expresses gratitude to the Technology Curriculum Committee for its work in developing Curriculum Standards for Technology.

The vision and philosophy endorsed by the committee speaks of the rapidly changing world of technology for which our children must be prepared.

These standards have been developed to provide specific information regarding course content and process skills to be taught at each grade level. Topics listed may be emphasized at another grade level in school, but it is imperative that articulation between grade levels take place to avoid duplication and to insure that the necessary skills and content are emphasized.

Whenever possible, we encourage the integration of technology skills throughout the curriculum.

It is the hope of the committee that with these standards, our students will be prepared for the changing world of the 21st century and beyond.

Gratefully,

Ms. MaryBeth Mueller
Executive Director of the Division of Education and Evangelization
and Superintendent of Catholic Schools

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TABLE OF CONTENTS

Technology Standard Articulated by Grade Level

Philosophy and Vision:

Recognizing that parents/guardians are the primary educators of their children, we must ensure technology, as a tool, becomes a transparent and integral part of rich and flexible learning environment that prepares students for college, career, and citizenship in the 21st century. Mastery of these technology standards will enable our students to fulfill their Catholic and civic responsibilities.

Educational Technology Standard

INTRODUCTION

In order to ensure that all students have the skills and capacity to solve the complex problems facing society today and in the future, this Educational Technology Standard guides efforts to enhance student learning through the integration of technology and academics. It also provides a framework that supports the learning process.

Organizations such as the Partnership for 21st Century Skills, the American Library Association, and International Society for Technology in Education have identified the skills and habits of the mind that students need to thrive in the new economy and solve the complex problems facing our society. Research in cognitive science is finding that the ability of a learner to demonstrate these skills is enhanced by the use of existing and emerging technologies.

The Technology Standard committee, has recognized this shift from technology being a supplemental topic, taught only in the computer lab, to technology supporting all learning. Keeping this shift in mind, the standard and the accompanying performance objectives have been written with the intention that they be taught within the content standards and they should not be considered as isolated standards to be taught in a vacuum.

"Teachers must become comfortable as co-learners with their students and with colleagues around the world. Today it is less about staying ahead and more about moving ahead as members of dynamic learning communities. The digital-age teaching professional must demonstrate a vision of technology infusion and develop the technology skills of others. These are the hallmarks of the new education leader." *Don Knezek, ISTE CEO, 2008*

The need for students to understand and use a variety of digital strategies in multiple contextual situations has never been greater. The use of multiple technologies continues to increase in all aspects of everyday life, in the workplace, in scientific and technical communities. Today's changing world will offer enhanced opportunities and options for those who thoroughly understand and are able to use technology effectively. The Technology Standard Articulated by Grade Level is intended to facilitate this vision.

RATIONALE

The use of technology is altering the way that teachers are teaching and students are learning. Students must have regular opportunities to use these tools to develop skills that encourage creativity and innovation, communication and collaboration, research and information fluency, critical thinking, problem solving and decision making, digital citizenship, and personal productivity in the classroom and in daily life. Once these skills are obtained, students will be on the road to becoming lifelong learners and contributing members of a global technological society.

Technology Standards

Strand 1: Creativity and Innovation
This strand requires that students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

Concept 1: Knowledge and Ideas
Use technology to generate knowledge and new ideas.

Concept 2: Models and Simulations
Use digital models and simulations to examine real-world connections, explore complex systems and issues, and enhance understanding.

Concept 3: Trends and Possibilities
Use technology to forecast trends and possibilities.

Concept 4: Original Works
Use technology to create original works in innovative ways.

Strand 2: Communication and Collaboration
This strand requires students to use digital media and environments to communicate and collaborate with others.

Concept 1: Effective Communications and Digital Interactions
Communicate and collaborate with others employing a variety of digital environments and media.

Concept 2: Digital Solutions
Contribute to project teams to produce original works or solve problems.

Concept 3: Global Connections
Create cultural understanding and global awareness by interacting with learners of other cultures.

Strand 3: Research and Information Literacy
This strand requires that students apply digital tools to gather, evaluate, and use information.

Concept 1: Planning
Plan strategies to guide inquiry.

Concept 2: Processing
Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.

Strand 4: Critical Thinking, Problem Solving, and Decision Making
This strand requires students to use critical thinking, problem solving, and decision making to manage projects using digital tools and resources.

Concept 1: Investigation
Identify and define authentic problems and significant questions for investigations.

Concept 2: Exploring Solutions
Plan and manage activities to develop solutions to answer a question or complete a project.

Strand 5: Digital Citizenship
This strand requires students to understand human, cultural, and societal issues related to technology practice and ethical behavior.

Concept 1: Safety and Ethics
Advocate and practice safe, legal, and responsible use of information and technology.

Concept 2: Leadership for Digital Citizenship
Demonstrate leadership for digital citizenship.

Concept 3: Impact of Technology
Develop an understanding of cultural, historical, economic and political impact of technology on individuals and society.

Strand 6: Technology Operations and Concepts
This strand requires students to demonstrate a sound understanding of technology concepts, systems, and operations.

Concept 1: Understanding
Recognize, define and use technology processes, systems, and applications.

Concept 2: Applications
Select and use applications effectively and productively.

Concept 3: Problem Solving
Define problems and investigate solutions in systems and processes.

Concept 4: Transfer of Knowledge
Transfer current knowledge to learning of new technologies.

Educational Technology Standard Articulated by Grade Level

Strand 1: Creativity and Innovation

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills.

Concept 1: Knowledge and Ideas	Use technology to generate knowledge and new ideas.
Concept 2: Models and Simulations	Use digital models and simulations to examine real-world connections, explore complex systems and issues, and enhance understanding.
Concept 3: Trends and Possibilities	Use technology to forecast trends and possibilities.
Concept 4: Create original works	Create original works in innovative ways.

Strand 2: Communication and Collaboration

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills.

Concept 1: Effective Communication Digital Interactions	Communicate and collaborate with others employing a variety of digital environments and media.
Concept 2: Digital Solutions	Contribute to project teams to produce original works or solve problems.
Concept 3: Global Connections	Create cultural understanding and global awareness by interacting with learners of other cultures.

Strand 3: Research and Information Literacy

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills.

Concept 1: Planning	Plan strategies to guide inquiry.
Concept 2: Processing	Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.

Strand 4: Critical Thinking, Problem Solving and Decision Making

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills.

Concept 1: Investigation	Identify and define authentic problems and significant questions for investigations.
Concept 2: Exploring Solutions	Plan and manage activities to develop solutions to answer a question or complete a project.
Concept 3:	Collect and analyze data to identify solutions and/or make informed decisions.
Concept 4:	Use multiple processes and diverse perspectives to explore alternative solutions.

Strand 5: Digital Citizenship

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills.

Concept 1: Safety and Ethics	Advocate and practice safe, legal, and responsible use of information and technology.
Concept 2: Leadership for Digital Citizenship	Demonstrate leadership for digital citizenship.
Concept 3: Impact of Technology	Develop an understanding of cultural, historical, economic and political impact of technology on individuals and society.

Strand 6: Technology Operations and Concepts

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills.

Concept 1: Understanding	Recognize, define, and use technology processes, systems, and applications.
Concept 2: Applications	Select and use applications effectively and productively.
Concept 3: Problem Solving	Define problems and investigate solutions in systems and processes.
Concept 4: Transfer of Knowledge	Transfer current knowledge to learning new technologies.

Technology Standard Articulated by Grade Level

Kindergarten to Grade 6

Strand 1: Creativity and Innovation

Technology Standard Articulated by Grade Level
Strand 1: Creativity and Innovation

Concept 1: Knowledge and Ideas Use technology to generate knowledge and new ideas.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
	DPO 1. Use information to generate ideas.	DPO 1. Use information to generate ideas.	PO 1. Evaluate information to generate ideas and processes.	PO 1. Evaluate information to generate ideas and processes.	PO 1. Analyze information to generate ideas and processes.	PO 1. Analyze information to generate new ideas and products.

Concept 2: Models and Simulations Use digital models and simulations to examine real-world connections, explore complex systems and issues, and enhance understanding.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
	PO 1. Identify elements of a digital model or simulation.	PO 1. Identify elements of a digital model or simulation.	PO 1. Recognize and explain relevant interdependent elements of a digital model or simulation.	PO 1. Recognize and explain relevant interdependent elements of a digital model or simulation.	PO 1. Recognize and explain relevant interdependent elements of a digital model or simulation.	PO 1. Recognize and explain relevant interdependent elements of a digital model or simulation.
PO 2. Explore and identify models and simulations.	PO 2. Explore and identify models and simulations.	PO 2. Identify and describe how aspects of a situation change using models or simulations.	PO 2. Identify and describe how aspects of a situation change using models or simulations.	PO 2. Explore and experiment with system variables using models or simulations.	PO 2. Explore and experiment with system variables using models or simulations.	PO 2. Explore and experiment with system variables using models or simulations.
	PO 3. Identify a system.	PO 3. Describe how one system operates by comparing it to another system.	PO 3. Transfer understanding of how one system operates by comparing it to another system.	PO 3. Transfer understanding of how one system operates by comparing it to another system.	PO 3. Compare and contrast two systems using a digital model or simulation.	PO 3. Compare and contrast two systems using a digital model or simulation.

Technology Standard Articulated by Grade Level
Strand 1: Creativity and Innovation

Concept 3: Trends and Possibilities Use technology to forecast trends and possibilities.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Observe and extend patterns.	PO 1. Recognize and create patterns.	PO 1.Examine patterns to identify trends.	PO 1. Examine patterns and identify trends to generate questions.	PO 1. Identify patterns and trends to generate questions and draw conclusions.	PO 1. Identify patterns and trends to draw conclusions and forecast possibilities.	PO 1. Identify patterns and trends to draw conclusions and forecast possibilities.

Concept 4: Original Works Use technology to create original works in innovative ways.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Use digital creativity tools to develop ideas and create a project.	PO 1. Use digital creativity tools to develop ideas and create a project.	PO 1. Use digital creativity tools to create original works.	PO 1. Use digital creativity tools to create original works.	PO 1. Analyze information using digital creativity tools to create original works and express ideas.	PO 1. Analyze information using digital creativity tools to create original works and express ideas.	PO 1. Analyze information using digital creativity tools to create original works and express ideas
	PO 2. Use digital collaborative tools to develop collective ideas.	PO 2. Use digital collaborative tools to develop collective ideas.	PO 2. Use digital collaborative tools to analyze information to produce original works.	PO 2. Use digital collaborative tools to analyze information to produce original works and express ideas.	PO 2. Use digital collaborative tools to analyze information to produce original works and express ideas.	PO 2. Use digital collaborative tools to analyze information to produce original works and express ideas.

Strand 2: Communication and Collaboration

Technology Standard Articulated by Grade Level
Strand 2: Communication and Collaboration

Concept 1: Effective Communications and Digital Interactions Communicate and collaborate with others employing a variety of digital environments and media.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Communicate with others as a whole class using digital tools.	PO 1. Communicate with others as a whole class using digital tools.	PO 1. Communicate with others as a whole class or small group using digital tools.	PO 1. Communicate digitally with others by selecting and using a variety of appropriate communication tools.	PO 1. Communicate digitally with others by selecting and using a variety of appropriate communication tools.	PO 1. Communicate digitally with others by selecting and using a variety of appropriate communication tools.	PO 1. Communicate digitally with others by selecting and using a variety of appropriate communication tools.
	PO 2. Identify and demonstrate safe and appropriate behavior when using digital environments.	PO 2. Identify and demonstrate safe and appropriate behavior when using digital environments to communicate with others.	PO 2. Identify and demonstrate safe and appropriate behavior when using digital environments to communicate with others.	PO 2. Explain safety and etiquette guidelines of digital environments and demonstrate that knowledge while communicating with intended audiences.	PO 2. Explain and demonstrate the safety and etiquette of digital environments to communicate with intended audiences.	PO 2. Explain and demonstrate the safety and etiquette of digital environments to communicate and collaborate with intended audiences.

Concept 2: Digital Solutions Contribute to project teams to produce original works or solve problems.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Participate in a classroom learning project using digital collaborative resources.	PO 1. Participate in a classroom learning project using digital collaborative resources.	PO 1. Identify and apply cooperative group rules to effectively collaborate in a classroom digital learning project.	PO 1. Contribute to a cooperative learning project and demonstrate effective group behaviors while using digital collaborative resources.	PO 1. Contribute to a cooperative learning project and demonstrate effective group behaviors while using digital collaborative resources.	PO 1. Contribute to a cooperative learning project and demonstrate effective group behaviors while using digital collaborative resources.	PO 1. Communicate and collaborate for the purpose of producing original works or solving problems.

Educational Technology Standard Articulated by Grade Level
Strand 2: Communication and Collaboration

Concept 3: Global Connections Create cultural understanding and global awareness by interacting with learners of other cultures.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Explore other cultures through digital resources.	PO 1. Participate as a class in communication at a distance.	DPO 1. Identify challenges and digital strategies as a class when communicating with other cultures.	DPO 1. Identify challenges and digital strategies as a class when communicating with other cultures.	DPO 1. Identify challenges and digital strategies as a class when communicating with other cultures.	DPO 1. Communicate with others of different cultures or geographic areas to explore a variety of perspectives.	PO 1. Participate in communication at a distance with others of different cultures or geographic areas to gain different perspectives of topics.

Strand 3: Research and Information Literacy

Educational Technology Standard Articulated by Grade Level
Strand 3: Research and Information Literacy

Concept 1: Planning Plan Strategies to guide inquiry using technology.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Generate key words for a search from a teacher-posed question or topic.	PO 1. Generate key words and synonyms for a search.	PO 1. Generate key words and synonyms from a posed question for a search.	PO 1. Determine key words for use in information searches.	PO 1. Determine key words for use in information searches.	PO 1. Predict and use key words and phrases that narrow or broaden information searches.	PO 1. Predict and use key words and phrases that narrow or broaden information searches.
PO 2. Explore a variety of information sources.	DPO 2. Explore information and teacher approved online sources.	PO 2. Differentiate types of information and online sources.	PO 2. Differentiate types of information and online sources.	PO 2. Predict which information sources will provide the desired data.	PO 2. Predict which information sources will provide the desired data.	PO 2. Predict which information sources will provide the desired data.

Educational Technology Standard Articulated by Grade Level
Strand 3: Research and Information Literacy

Concept 2: Processing Locate, organize, analyze, evaluate, synthesize and ethically use information from a variety of sources and media.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Conduct a search using multiple keywords.	PO 1. Conduct a search using multiple keywords.	PO 1. Conduct a search using keywords to narrow or broaden a search.	PO 1. Conduct a search using keywords to narrow or broaden a search.	PO 1. Use multiple search strategies to locate information.	PO 1. Locate and synthesize information to revise search strategies.	PO 1. Locate and synthesize information to revise search strategies.
PO 2. Use preselected sources.	PO 2. Use preselected sources.	PO 2. Use primary and secondary sources.	PO 2. Select and use primary and/or secondary sources.	PO 2. Select and use primary and/or secondary sources.	PO 2. Select and use authoritative primary and/or secondary sources.	PO 2. Use authoritative primary and/or secondary sources.

Educational Technology Standard Articulated by Grade Level
Strand 3: Research and Information Literacy

Concept 2: Processing (Continued) Locate, organize, analyze, evaluate, synthesize and ethically use information from a variety of sources and media.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 3. Demonstrate knowledge of real versus make-believe.	PO 3. Differentiate between a fact, untruth, and an opinion.	PO 3. Differentiate between a fact, untruth, and an opinion.	PO 3. Differentiate between facts and opinions and inaccurate information.	PO 3. Differentiate between fact and opinion, bias, and inaccurate information.	DPO 3. Evaluate information and media through determining facts, opinion, bias, and inaccuracies by consulting multiple sources.	PO 3. Evaluate information and media through determining facts, opinion, bias, and inaccuracies by consulting multiple sources.
PO 4. Sort information into major topics.	PO 4. Sort information into major topics.	PO 4. Sort information into major topics and create a list of ideas.	PO 4. Organize information into major topics and create a list of ideas.	PO 4. Use appropriate digital tools to synthesize research information and to develop new ideas.	PO 4. Use appropriate digital tools to synthesize research information and develop new ideas.	DPO 4. Use appropriate digital tools to synthesize research information to develop new ideas and/or create new understandings.
PO 5. Identify and follow rules regarding the use of information resources.	PO 5. Identify and follow ethical behaviors when using resources.	PO 5. Identity and follow legal and ethical behaviors during research and cite resources appropriately.	PO 5. Follow copyright laws when using text and media, obtain permission to use the work of others, and cite resources appropriately.	PO 5. Follow copyright laws when using text, images, videos and/or other sources and obtain permission to use the work of others, and cite resources appropriately.	PO 5. Follow copyright laws when using text, images, videos and/or other sources and obtain permission to use the work of others and cite resources appropriately.	PO 5. Follow copyright laws when using text, images, videos and/or other sources and obtain permission to use the work of others and cite resources appropriately.

Strand 4: Critical Thinking, Problem Solving and Decision Making

Educational Technology Standard Articulated by Grade Level
Strand 4: Critical Thinking, Problem Solving, Decision Making

Concept 1: Investigation Identify and define authentic problems and significant questions for investigation.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Collaborate as a class to select an **essential question*** to research using digital resources.	PO 1. Collaborate as a class or small group to select an **essential question*** to research using digital resources.	PO 1. Identify an authentic issue and collaborate as a class to define an **essential question*** using digital tools and resources.	PO 1. Identify an authentic issue and collaborate as a class to define an **essential question*** using digital tools and resources.	PO 1. Identify an authentic issue and collaborate as a class to define an **essential question*** using digital tools and resources.	PO 1. Write essential questions to investigate a topic or issue using digital tools and resources.	PO 1. Write essential questions to investigate a topic or issue using digital tools and resources.

*Select essential questions which are rich inquiry based questions that provide higher-order challenges and creative problem-solving opportunities. This could focus on a class investigation about a community problem that is identified through various digital resources and planning tools.

Concept 2: Exploring Solutions Plan a manage activities to develop solutions to answer a question or complete a project.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Participate in a group learning project using digital tools to answer a question.	PO 1. Participate as group to manage a learning project and identify sources.	PO 1. Participate as group to manage a learning project and identify sources.	PO 1. Manage a learning project using digital planning tools to develop solutions.	PO 1. Manage a learning project using digital planning tools to develop solutions.	PO 1. Plan and manage research using credible digital resources to develop solutions to answer a question.	PO 1. Plan and manage research using credible digital resources to develop solutions to answer a question.
PO 2. Explore solutions or results as a class by discussing data collected.	PO 2. Propose solutions by discussing data collected to answer a question.	PO 2. Propose solutions by discussing data collected to answer a question.	PO 2. Generate alternative solutions using collected resources and data.	PO 2. Generate alternative solutions using collected resources and data.	PO 2. Generate solutions from different perspectives using collected resources and data.	PO 2. Generate solutions from different perspectives using collected resources and data.

Strand 5: Digital Citizenship

Educational Technology Standard Articulated by Grade Level
Strand 5: Digital Citizenship

Concept 1: Safety and Ethics Advocate and practice safe, legal, and responsible use of information and technology.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Identify use of personal devices and when it is appropriate to use them.	PO 1. Recognize and discuss when it is appropriate to use a personal digital device.	PO 1. Recognize and discuss when it is appropriate to use a personal digital device.	PO 1. Explain when and why it is appropriate to use a personal digital device.	PO 1. Explain when and why it is appropriate to use a personal digital device.	PO 1. Explain the consequences of inappropriate use of a personal digital device.	DPO 1. Assess situations in which it is appropriate and safe to use a personal digital device in the community.
DPO 2. . Recognize cyber-bullying and discuss the effects of bullying on an individual	DPO 2. Define and identify cyber-bullying and discuss the effects of bullying on an individual	DPO 2. Define and identify cyber-bullying and discuss the effects of bullying on an individual	DPO 2. Describe cyber-bullying and describe strategies to address a situation.	DPO 2. Describe cyber-bullying and describe strategies to prevent and address situation.	DPO 2. Describe strategies to prevent and address inappropriate personal disclosure and cyber-bullying.	DPO 2. Describe.strategies to prevent and address inappropriate personal disclosure and cyber-bullying
DPO 3. Identify and articulate rules for the use of digital tools as defined by diocesan school policy and procedures.	DPO 3. Identify and articulate rules for the use of digital tools as defined by diocesan school policy and procedures.	DPO 3. Identify and articulate rules for the use of digital tools as defined by diocesan school policy and procedures.	DPO 3. Identify and articulate rules for the use of digital tools as defined by diocesan school policy and procedures.	DPO 3. Identify and articulate rules for the use of digital tools as defined by diocesan school policy and procedures.	DPO 3. Identify and articulate rules for the use of digital tools as defined by school diocesan school policy and procedures.	DPO 3. Identify and articulate rules for the use of digital tools as defined by diocesan school policy and procedures.
DPO 4. Discuss why it may be dangerous to visit certain Internet sites.	PO 4. Discuss why it may be dangerous to visit certain Internet sites.	PO 4. Identify and discuss ways to stay safe on the Internet.	PO 4. Identify and discuss why it is important not to provide personal information in online communication.	DPO 4. Recognize and describe the potential risks and dangers associated with various forms of online communication.	DPO 4. Recognize and describe the potential risks and dangers associated with various forms of online communication.	PO 4. Identify and articulate strategies to protect personal information.

Strand 5: Digital Citizenship (Continued)

Concept 1: Safety and Ethics Advocate and practice safe, legal, and responsible use of information and technology.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
DPO 5. Recognize and discuss why there are rules for using technology at home and at school.	PO 5. Recognize, discuss, and demonstrate appropriate behavior for technology use and show respect for technology equipment.	PO 5. Discuss and demonstrate appropriate behavior for technology use and show respect for technology equipment.	PO 5. Explain the importance of respecting the privacy of others' information and digital workspace.	PO 5. Recognize and describe the advantages and risks of making a personal spending choice online.	PO 5. Recognize and describe the potential advantages and risks of making an online purchase.	PO 5. Evaluate various websites to choose the best option for making an Internet purchase for a particular product.
				PO 6. Articulate how to respect the privacy of others' information and digital workspace.	DPO 6. Exhibit Catholic, moral, legal and ethical behavior when using technology and discuss the consequences of misuse.	DPO 6. Exhibit Catholic, moral, legal and ethical behavior when using technology and discuss consequences of misuse.

Concept 2: Leadership for Digital Citizenship Demonstrate leadership for digital citizenship.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
DPO 1. Identify digital citizenship as a part of our Catholic identity.	DPO 1. Identify digital citizenship as a part of our Catholic identity.	DPO 1. Identify and define digital citizenship as a part of our Catholic identity.	DPO 1. Identify and define digital citizenship as a part of our Catholic identity.	DPO 1. Identify and define digital citizenship as a part of our Catholic identity.	DPO 1. Exhibit digital citizenship by consistently leading by example and advocating social and civic responsibility as part of our Catholic identity to others.	DPO 1. Exhibit digital citizenship by consistently leading by example and advocating social and civic responsibility as part of our Catholic identity to others.

Strand 5: Digital Citizenship (Continued)

Concept 3: Impact of Technology Develop an understanding of the cultural, historical, economic and political impact of technology on individuals and society.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Recognize and discuss examples of technology used in daily life.	PO 1. Recognize and discuss how students and families use technology to make their lives better.	PO 1. Recognize, discuss, and explain different types of technologies used in current and past cultures.	PO 1. Compare how past and present cultures used technology to improve their lives.	PO 1. Provide examples of technologies that might be used to solve a specific economic, environmental, health, political, scientific, or social problem.	PO 1. Explain the impact of technology on individuals and society from a historical, economic, environmental and political perspective.	DPO 1. Examine current technology and describe its potential use to solve an economic, environmental, health, political, scientific, or social problem.

Strand 6: Technology Operations and Concepts

Educational Technology Standard Articulated by Grade Level
Strand 6: Technology Operations and Concepts

Concept 1: Understanding Recognize, define and use technology terms, processes, systems and applications. Technology terms: Hardware Technology process: Software						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Identify basic technology terms.	DPO 1. Identify and define basic technology terms.	PO 1. Classify basic technology terms.	PO 1. Define and label various technical system terms.	PO 1. Describe the various technical system terms.	PO 1. Describe the various technical system terms.	DPO 1. Define and correctly use terms related to system and networks.
PO 2. Identify technology process terminology.	PO 2. Identify and define technology process terminology.	PO 2. Apply knowledge of technology process terminology.	PO 2. Define and apply knowledge of various technical process terms.	PO 2. Define and apply knowledge of various technical process terms.	PO 2. Define and apply knowledge of various technical process terms.	PO 2. Define and apply knowledge of various technical process terms.
PO 3. Identify technology application for a given activity/project.	PO 3. Identify technology applications for a given activity/project.	PO 3. Identify and choose technology applications for a given activity/project.	PO 3. Choose technology applications for a given activity/project.	PO 3. Choose technology applications for a given activity/project.	PO 3. Choose technology applications for a given activity/project.	PO 3. Choose technology applications appropriate for the audience and task.
DPO 4. Demonstrate knowledge of electrical safety when using computers and other technology, along with safe and sound use of equipment.	DPO 4. Demonstrate knowledge of ergonomics and electrical safety when using computers, along with safe and sound use of equipment.	DPO 4. Demonstrate knowledge of ergonomics and electrical safety when using computers, along with safe and sound use of equipment.	DPO 4. Demonstrate knowledge of ergonomics and electrical safety when using computers, along with safe and sound use of equipment.	DPO 4. Demonstrate knowledge of ergonomics and electrical safety when using computers,along with safe and sound use of equipment.	PO 4. Recognize and demonstrate ergonomically safe and sound use of equipment.	PO 4. Recognize and demonstrate ergonomically safe and sound use of equipment.
			PO 5. Identify physical risks of using digital technology.	PO 5. Identify physical risks of using digital technology.	PO 5. Identify physical risks of using digital technology.	PO 5. Identify physical risks of using digital technology.

Educational Technology Standard Articulated by Grade Level
Strand 6: Technology Operations and Concepts

Concept 2: Application Select and use application effectively and productively						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Use the mouse/track pad to perform computer functions such as accessing an application, indicating a choice or activating a link. Use the keyboard to type letters and numbers and know how to use special key functions.	PO 1. Understand keyboarding techniques when using the keyboard to type letters, numbers and special key functions.	PO 1. Understand keyboarding techniques when using the keyboard to type letters, numbers and special key functions.	PO 1. Demonstrate speed and accuracy in use of keyboard and data entry tools with at least 5 wpm and 80% accuracy.	PO 1. Demonstrate speed and accuracy in use of keyboard and data entry tools with at least 10 wpm and 80% accuracy.	PO 1. Demonstrate speed and accuracy in use of keyboard and data entry tools with at least 15 wpm and 80% accuracy.	PO 1. Demonstrate speed and accuracy in use of keyboard and data entry tools with at least 20 wpm and 80% accuracy.
PO 2. Use technology to identify letters and numbers and differentiate between them.	PO 2. Compose a document that applies basic formatting.	PO 2. Compose a document that applies basic formatting.	PO 2. Compose a document that applies intermediate formatting.	PO 2. Compose a document that applies intermediate formatting.	PO 2. Compose a document that applies intermediate formatting.	PO 2. Compose a document that applies intermediate formatting.
PO 3. Use an interactive presentation system as part of classroom work.	PO 3. Use multimedia presentation programs to create simple class assignments.	PO 3. Identify and explain terms and concepts related to spreadsheets while using program to complete a given task.	PO 3. Use spreadsheets to organize and sort data.	PO 3. Use a spreadsheet to record, organize, and graph information.	PO 3. Apply spreadsheet formatting skills.	PO 3. Produce simple charts and graphs from data in a spreadsheet.

Educational Technology Standard Articulated by Grade Level
Strand 6: Technology Operations and Concepts

Concept 2: Application (Continued) Select and use application effectively and productively						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 4. Identify and use common navigational elements of a web page.	PO 4. Identify and use common navigational elements of a web page.	PO 4. Explain that computers can store and organize information so that it can be searched.	PO 4. Define the term “database” and provide examples from everyday life.	DPO 4. Perform simple searches of existing databases(Such as search engines and library databases.)	DPO 4. Perform searches of existing databases. (Such as search engines and library databases.)	DPO 4. Perform simple operations in a database. (Such as search engines and library databases.)
DPO 5. Demonstrate appropriate use of log-in procedures and network printing.	DPO 5. Demonstrate appropriate use of log-in procedures and network printing..	PO 5. Create and edit multimedia presentation using painting/drawing applications.	PO 5. Plan, create, and edit multimedia presentation.	DPO 5. Create multimedia presentations with audio, and transitions for individual assignments.	DPO 5. Create multimedia presentations with audio, and transitions for individual assignments.	DPO 5. Create multimedia presentation s with audio, images, and transitions for individual assignments.
		PO 6. Identify components and modules on a web page.	PO 6. Identify components and modules on a web page.	PO 6. Download, store, and accurately cite web resources.	PO 6. Use interactive web content to access, read, send, and receive information.	PO 6. Create a simple web page incorporating text, links, and graphics.
		PO 7. Demonstrate appropriate use of log-in procedures and network printing.	PO 7. Demonstrate appropriate use of log-in procedures and network printing.	DPO 7. Demonstrate appropriate use of log-in procedures and network printing.	DPO 7. Demonstrate appropriate use of log-in procedures and network printing.Use storage devices..	DPO 7. Demonstrate appropriate use of log-in procedures and network printing. Use storage devices: local, network and cloud computing.

Educational Technology Standard Articulated by Grade Level
Strand 6: Technology Operations and Concepts

Concept 3: Troubleshoot Systems and Processes Define problems and investigates solutions in systems and processes.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
PO 1. Devise a class plan on how to solve different types of technology problems.	PO 1. Understand that there are different types of problems with technology and identify the type of problem and the steps needed to solve.	PO 1. Identify and apply successful troubleshooting strategies for minor hardware and software issues/problems.	PO 1. Identify and apply successful troubleshooting strategies for minor hardware and software issues/problems.	PO 1. Use the help function within software and hardware to troubleshoot issues and problems.	PO 1. Use the help function within software and hardware to troubleshoot issues and problems.	PO 1. Use the help function within software and hardware to troubleshoot issues and problems.

Concept 4: Transfer of Knowledge Transfer current knowledge to learning of new technologies.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
DPO 1. Transfer knowledge of technology used between home and school.	PO 1. Transfer understanding of current symbols and icons to learning new technologies.	PO 1. Transfer understanding of current symbols and icons to learning new technologies.	PO 1. Transfer understanding of current input/output devices and symbols and icons to learning new technologies.	PO 1. Transfer understanding of current input/output devices and symbols and icons to learning new technologies.	PO 1. Transfer understanding of current input/output devices, symbols and icons, and applications to learning new technologies.	PO 1. Transfer understanding of current input/output devices, symbols and icons, and applications to learning new technologies.

Technology Standard Articulated by Grade Level

Grades 7-12

Strand 1: Creativity and Innovation

Technology Standard Articulated by Grade Level
Strand 1: Creativity and Innovation

Concept 1: Knowledge and Ideas Use technology to generate knowledge and new ideas.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Analyze and evaluate information to generate new ideas, processes or products.	PO 1. Analyze and evaluate information to generate new ideas, processes or products.	PO 1. Analyze, evaluate, and synthesize information to generate new ideas, processes, or products.

Concept 2: Models and Simulations Use digital models and simulations to examine real-world connections, explore complex systems and issues, and enhance understanding.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Summarize the relationship among interdependent elements of a digital model or simulation.	PO 1. Summarize,the relationship among interdependent elements of a digital model or simulation.	PO 1. Predict and test the relationships among interdependent elements of a digital model, simulation or system.
DPO 2: Predict and test the relationships among interdependent elements of a digital model, simulation or system.	DPO 2: Predict and test the relationships among interdependent elements of a digital model, simulation or system.	PO 2. Propose or create a model, simulation, or system.
PO 3. Analyze system processes and outcomes using models or simulations.	PO 3. Analyze system processes and outcomes using models or simulations.	PO 3. Predict how one system operates by comparing it to multiple systems, digital models or simulations.
DPO 4: Propose or create a model, simulation, or system.	DPO 4: Propose or create a model, simulation, or system.	
PO 5. Analyze and apply understanding of how one system, digital models, or simulations operates by comparing it to another system of a different type that operates in a similar manner.	PO 5. Analyze and apply understanding of how one system, digital models or simulations operates by comparing it to another system of a different type that operates in a similar manner.	

Technology Standard Articulated by Grade Level
Strand 1: Creativity and Innovation

Concept 3: Trends and Possibilities Use technology to forecast trends and possibilities.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Identify patterns and trends to forecast possibilities from different perspectives.	PO 1. Identify patterns and trends to forecast possibilities from different perspectives.	PO 1. Analyze patterns and trends and their logical links to form inferences, and forecast possibilities providing novel insights.
PO 2. Ask questions and investigate a problem from different perspectives and formulate inferences from known facts.	PO 2. Ask questions and investigate a problem from different perspectives and formulate inferences from known facts.	
	PO 3. Draw conclusions that reflect clear and logical links between the trends and patterns and the interpretations made from them.	

Concept 4: Original Works Use technology to create original works in innovative ways.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Create innovative products or projects using digital tools to express original ideas.	PO 1. Create innovative products or projects using digital tools to express original ideas.	PO 1. Create innovative products or projects using digital tools to express original ideas.
DPO 2. Use digital tools to collaborate with a group to communicate original ideas, products, or projects effectively in a creative or innovative style.	PO 2. Use digital tools to collaborate with a group to communicate original ideas, products, or projects effectively in a creative or innovative style.	DPO 2. Use digital tools to collaborate with a group to communicate original ideas, products, or projects effectively in a creative or innovative style.

Strand 2: Communication and Collaboration

Technology Standard Articulated by Grade Level
Strand 2: Communication and Collaboration

Concept 1: Effective Communications and Digital Interactions Communicate and collaborate with others employing a variety of digital environments and media.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Collaborate and communicate with peers, experts, or others employing a variety of digital tools to share findings and/or publish.	PO 1. Collaborate and communicate with peers, experts, or others employing a variety of digital tools to share findings and/or publish.	DPO 1. Collaborate and communicate with peers, experts, or others in the global community employing a variety of digital tools to share findings and/or publish in a variety of ways.
PO 2. Explain and demonstrate features, conventions, voice, and etiquette of interactive digital environments to communicate with an appropriate audience.	PO 2. Explain and demonstrate features, conventions, voice, and etiquette of interactive digital environments to communicate with an appropriate audience.	PO 2. Communicate information and ideas respectfully and effectively to multiple audiences using a variety of digital environments.

Concept 2: Digital Solutions Contribute to project teams to produce original works or solve problems.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Communicate and collaborate for the purpose of producing original works or solving problems.	PO 1. Communicate and collaborate for the purpose of producing original works or solving problems.	PO 1. Communicate and collaborate for the purpose of producing original works or solving problems.

Concept 3: Global Connections Create cultural understanding and global awareness by interacting with learners of other cultures.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
DPO 1. Independently locate and communicate with teacher approved global communities.	DPO 1. Independently locate and communicate with teacher approved global communities.	PO 1. Engage in a global community to contribute to a specific global issue.

Strand 3: Research and Information Literacy

Technology Standard Articulated by Grade Level
Strand 3: Research and Information Literacy

Concept 1: Planning Plan strategies to guide inquiry.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Predict the most effective keywords and phrases for use in information searches.	PO 1. Predict the most effective keywords and phrases for use in information searches.	PO 1. Identify and defend effective key words, phrases, and strategies for conducting information searches.
PO 2. Determine which information source will provide the desired data.	PO 2. Determine which information source will provide the desired data.	PO 2. Evaluate diverse information sources.

Concept 2: Processing Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Locate and synthesize information utilizing advanced search strategies.	DPO 1. Locate and synthesize information utilizing advanced search strategies. including a variety of search engines, metadata search engines, deep web searches and databases.	PO 1. Locate and synthesize information utilizing advanced search strategies including a variety of search engines, metadata search engines, deep web searches and databases.
PO 2. Use authoritative primary and/or secondary sources.	DPO 2. Evaluate and use authoritative primary and/or secondary sources including a variety of search engines, metadata search engines, deep web searches and databases.	PO 2. Defend the authority of primary and/or secondary sources used in research.
DPO 3. Differentiate between fact and opinion, bias, inaccurate and misleading information by consulting multiple sources.	PO 3. Evaluate between fact and opinion, bias, inaccurate and misleading information by consulting multiple sources.	PO 3. Evaluate information identifying facts, opinions, bias, inaccurate and misleading information by analyzing multiple sources.
PO 4. Synthesize research information to create new understanding or develop new ideas.	DPO 4. Synthesize research information to create new understanding or develop new ideas..	PO 4. Synthesize research information to create new understanding and innovative solutions.
PO 5. Apply ethical use of information and media by respecting copyrights, intellectual property rights, using information and media technology responsibly, and citing resources appropriately.	PO 5. Apply ethical use of information and media by respecting copyrights, intellectual property rights, using information and media responsibly, and citing resources appropriately.	PO 5. Apply ethical use of information and media by respecting the principles of copyrights, intellectual freedom and property rights, using information and media technology responsibly, and citing resources appropriately.

Strand 4: Critical Thinking, Problem Solving and Decision Making

Technology Standard Articulated by Grade Level
Strand 4: Critical Thinking, Problem Solving, Decision Making

Concept 1: Investigation Identify and define authentic problems and significant questions for investigations.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Write essential questions to investigate a topic or issue using digital tools and resources.	PO 1. Write essential questions to investigate a topic or issue using digital tools and resources.	PO 1. Write essential questions to investigate a complex (multi-step) issue using digital tools and resources.

Concept 2: Exploring Solutions Plan and manage activities to develop solutions to answer a question or complete a project.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Plan, conduct and manage research using appropriate digital resources to develop solutions for a question.	PO 1. Plan, conduct and manage research using appropriate digital resources to develop solutions for a question.	PO 1. Plan and manage an individual learning project that collects multiple data sets from diverse sources, creating planning adjustments and course corrections from the knowledge gained.
PO 2. Present defendable solutions and make decisions from multiple perspectives using collected resources and data.	PO 2. Present defendable solutions and make decisions from multiple perspectives using collected resources and data.	PO 2. Present defendable solutions and make decisions from multiple perspectives using collected resources and data.

Strand 5: Digital Citizenship

Technology Standard Articulated by Grade Level
Strand 5: Digital Citizenship

Concept 1: Safety and Ethics Advocate and practice safe, legal, and responsible use of information and technology.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
DPO 1. Assess situations in which it is appropriate and safe to use a personal digital device in the community.	DPO 1. Evaluate situations in which it is appropriate and safe to use a personal digital device in the community.	DPO 1 Evaluate and practice appropriate and safe use of various personal digital devices.
DPO 2. Assess strategies to prevent and address inappropriate personal disclosure and cyber-bullying	DPO 2. Analyze and compare strategies to prevent and address inappropriate personal disclosure and cyber-bullying	DPO 2. Advocate and implement strategies to prevent and address inappropriate personal disclosure and cyber-bullying
DPO 3. Articulate and practice the rules governing the use of digital tools as defined by diocesan school policy and procedures.	DPO 3. Articulate and practice the rules governing the use of digital tools as defined by diocesan school policy and procedures.	DPO 3. Advocate and practice safe, legal, and responsible use of digital tools as defined by diocesan school policy and procedures.
PO 4. Demonstrate safe online communication practices regarding personal information.	PO 4. Demonstrate safe online communication practices regarding personal information.	DPO 4. Advocate and implement safe online communication practices regarding personal information.
PO 5. Analyze and compare various aspects of e-commerce.	PO 5. Analyze and compare various aspects of e-commerce.	DPO 5. Analyze and compare how digital advertising influences consumer choices.
DPO 6. Exhibit moral, legal and ethical behaviors when using information and technology in respect to Catholic values and discuss consequences of misuse.	DPO 6. Exhibit moral, legal and ethical behaviors when using information and technology in respect to Catholic values and discuss consequences of misuse.	DPO 6. Demonstrate and advocate for moral, legal and ethical behaviors among peers, family and community regarding the use of technology and information with respect to Catholic teaching.

Concept 2: Leadership for Digital Citizenship Demonstrates leadership for digital citizenship.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
DPO 1. Promote digital citizenship by consistently leading by example and advocating social and civic responsibility as a part of our Catholic identity.	DPO 1. Promote digital citizenship by consistently leading by example and advocating social and civic responsibility as a part of our Catholic identity .	DPO 1. Advocate and assume a leadership role as a digital citizen through social and civic responsibility as a part of our Catholic identity

Technology Standard Articulated by Grade Level
Strand 5: Digital Citizenship

Concept 3: Impact of Technology Develop an understanding of cultural, historical, economic and political impact of technology on individuals and society.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Analyze the potential benefits and hazards of a new technology and the possible short- and long-term consequences of implementing this technology.	PO 1. Analyze current economic, environmental, health, political, scientific, or social problems that have technological solutions and propose potential solutions for the problems.	PO 1. Develop a possible technological solution for a contemporary issue.

Strand 6: Technology Operations and Concepts

Technology Standard Articulated by Grade Level
Strand 6: Technology Operations and Concepts

Concept 1: Understanding Recognize, define and use technology processes, systems, and applications.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
DPO 1. Explain and correctly use terms related to systems, networks and connectivity.	DPO 1. Explain and use the components of an integrated system using appropriate terminology.	DPO 1. Use the components of an integrated system using appropriate terminology.
PO 2. Define and apply knowledge of various technical process terms.	PO 2. Define and apply knowledge of various technical process terms.	PO 2. Define and apply knowledge of various technical process terms.
PO 3. Choose technology applications appropriate for the audience and task.	PO 3. Choose technology applications appropriate for the audience and task.	PO 3. Choose technology applications appropriate for the audience and task.
PO 4. Recognize and demonstrate ergonomically safe and sound use of equipment.	PO 4. Recognize and demonstrate ergonomically safe and sound use of equipment.	PO 4. Recognize and demonstrate ergonomically safe and sound use of equipment.
PO 5. Identify physical risks of using digital technology.	PO 5. Analyze and evaluate physical risks of using digital technology.	PO 5. Investigate and evaluate physical risks of using digital technology.

Concept 2: Applications Select and use applications effectively and productively.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
DPO 1. Demonstrate speed and accuracy with appropriate data entry tools with at least 30 wpm and 80% accuracy.	DPO 1. Demonstrate speed and accuracy with appropriate data entry tools with at least 35 wpm and 90% accuracy.	PO 1. Demonstrate speed and accuracy using appropriate data entry tools.
PO 2. Compose a document that applies advanced formatting.	PO 2. Compose a multiple section document using advanced formatting.	PO 2. Compose a multiple section document that applies the most appropriate media and advanced formatting.
PO 3. Enter/edit data using simple formulas while using spreadsheet(s) to perform calculations.	PO 3. Apply formatting features while using spreadsheet programs to customize tables, charts, and graphs.	PO 3. Use spreadsheets to calculate, graph, organize, and present data in a variety of real-world settings.

Technology Standard Articulated by Grade Level
Strand 6: Technology Operations and Concepts

Concept 2: Applications – (Continued) Select and use applications effectively and productively.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
DPO 4. Define terms used in database creation and perform simple operations. (Using a database program.)	DPO 4. Create a simple database for a content area. (Using a database program.)	PO 4. Use database features to export, organize, compile, and output data.
PO 5. Create and edit visual and audio material to generate a multimedia product.	PO 5. Create and edit visual and audio material to generate a stand-alone multimedia product.	PO 5. Compose media for the web with interactive capabilities.
PO 6. Identify criteria for evaluating technical and design qualities of a web site and then create web-based content from the identified criteria.	PO 6. Identify criteria for evaluating technical and design qualities of a web site and then create web-based content from the identified criteria.	PO 6. Create, evaluate and critique web structure and content.
DPO 7. Identify and use : local, network and cloud computing.protocols for moving files and secure web access.	DPO 7. Identify and use : local, network and cloud computing.protocols for moving files and secure web access.	DPO 7. Identify and use : local, network and cloud computing.protocols for moving files and secure web access.

Concept 3: Problem Solving Define problems and investigate solutions in systems and processes.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Generate and apply solutions to troubleshoot hardware and software issues and problems.	PO 1. Generate and apply solutions to troubleshoot hardware and software issues and problems.	PO 1. Identify and use online help and other support to learn about features of hardware, software, and connectivity as well as to assess and resolve problems.

Concept 4: Transfer of Knowledge Transfer current knowledge to learning of new technologies.		
Grade 7	**Grade 8**	**High School (Grades 9-12)**
PO 1. Transfer understanding of current technologies, input/output devices, symbols and icons, and applications to learning new technologies.	PO 1. Transfer understanding of current technologies to new and novel learning situations.	PO 1. Transfer understanding of current technologies to new and novel learning situations.

APPENDICES

Appendix A

Suggested Computer Competencies K-8

Computer Applications and Outcomes	**K**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
I=Introduce D=Develop M=Master A=Apply									
Computers in Society – History & Ethics									
Computer use in various situations	I	D	→	→	→	→	→	M	A
Computer related careers	I	D	→	→	→	→	M	A	
Computer ethics, morals, Catholic philosophy	I	D	→	→	→	→	M	A	
Copyright laws				I	D	→	→	M	A
History of computers				I	D	→	→	M	
Future of computers			I	D	→	→	→	M	A
Understand bugs, viruses, worms			I	D	M				
Antivirus software, filters, proxy							I	D	M
Computer Usage									
Identify/define hardware components	I	D	→	→	→	→	M	A	
Use diskettes and CD-ROM disks correctly	I	D	M	A					
Peripheral use (printers, scanners, digital cameras)				I	D	→	M	A	
Proper handling and care of computers	I	D	M	A					
Use various types of software	I	D	→	→	→	→	→	M	A
Network use and understanding					I	D	→	→	M
Create, change, move folders and files						I	D	M	A
Work on two or more applications simultaneously						I	D	M	A
Save work to a specific location				I	→	D	M	A	
Keyboarding Skills									
Recognize & locate characters on the keyboard	I	D	→	→	M				
Recognize & use of special function keys	I	D	→	→	M				
Appropriate posture and typing technique	I	D	→	→	M				
Identify and use home row keys		I	D	→	M				
Type words, sentences and paragraphs		I	D	→	M				
Type an entire page					I	D	M	A	
Typing for speed			I	D	D	D	D	D	D
5 WPM			M						
10 WPM				M					
15 WPM					M				
20 WPM						M			
25 WPM							M		
30 WPM								M	
35 WPM									M
Spreadsheet									
Identify and access a spreadsheet program				I	D	→	M	A	
Menu items				I	D	→	→	M	A
Spreadsheet terminology				I	D	→	→	M	A
Create, save, edit, and print a spreadsheet				I	D	→	→	M	A
Create a chart				I	D	→	→	M	A
Copy, cut, paste, insert				I	D	→	→	M	A
Format a spreadsheet				I	D	→	→	M	A
Work in cells with values, labels, formulas					I	D	→	M	A
Integrate spreadsheet into other curricular areas					I	D	→	M	A

Computer Applications and Outcomes	**K**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
I=Introduce D=Develop M=Master A=Apply									
Word Processing									
Identify and access a word processing program	I	D	→	→	M	A			
Menu items		I	D	→	→	→	M	A	
Word Processing terminology		I	D	→	→	→	M	A	
Create, save, edit and print a document		I	D	M	A				
Justification, margins, tab				I	D	→	M	A	
Fonts – size, style, bold, italics, underline			I	D	→	→	M	A	
Type essays, reports. Letters, special documents				I	D	→	→	M	A
Copy, cut, paste, insert				I	D	→	M	A	
Tables					I	D	→	M	A
Clipart		I	D	→	M	A			
Formatting a document				I	D	→	M	A	
Work in two or more documents simultaneously					I	D	→	M	A
Database									
Identify and access a database program					I	D	→	→	M
Create, save, edit, and print a database					I	D	→	→	M
Database terminology					I	D	→	→	M
Create a report from a database file						I	D	→	M
Work with fields, records, filters, and sorting						I	D	→	M
Multimedia									
Identify and access a multimedia presentation program				I	D	→	M	A	
Create, save, edit, & present a multimedia presentation				I	D	→	M	A	
Multimedia and presentation terminology				I	D	→	M	A	
Use of peripherals in a multimedia presentation						I	D	M	A
-Video camera						I	D	M	A
-Digital camera						I	D	M	A
-Scanner						I	D	M	A
Present research findings						I	D	M	A
Graphics Programs									
Identify and access a graphics program	I	D	→	→	M	A			
Create, save, edit, and use a graphics file		I	D	→	M	A			
Use a graphics file in another document or program				I	D	→	M	A	
Graphics terminology		I	D	→	→	→	M	A	
Internet									
Acceptable use policy			I	D	M	A			
Internet terminology			I	D	→	→	→	M	A
Search techniques			I	D	→	→	M	A	
Create, save, edit, and post web page						I	D	M	A
Link multiple web pages/sites						I	D	M	A

Appendix B

Teaching Suggestions

STANDARD 1: MORAL, ETHICAL, SOCIAL, AND HUMAN ISSUES

Early Elementary

1. Describe how technology could be used in a career or occupation. Invite guest speakers, from different occupations, to lecture on the use of technology in their career.
2. Practice ethical and legal standards related to technology in the home and at school (e.g. follow classroom rules, respect personal/property, etc).

Later Elementary

1. Display how people in different occupations and careers use technology to do their work. Describe the ways in which technology is used in the home, school, community, and workplace (e.g. automated teller machines, super market checkouts, bar code readers, food scales, credit card readers, video games, Internet.) Students can research this information through web searches. Displays can be posters or bulletin boards.
2. Explain the need for laws and regulations related to technologies (e.g. safety, proper care and use tools, etc). Introduce spyware/malware while using the Internet.
3. Explain how individuals are responsible for their technology related actions and decisions. Discuss right and wrong (i.e. The Golden Rule)
4. Explain copyright and licensing ethics (i.e. copying music, installing software, shareware, etc.) Clearly define acceptable use policies and contracts.
5. Discuss the impact on their life of choices involving Internet sites, video games, etc.

Middle School

1. Investigate the effects of the growth and discuss current and projected applications of computer systems development of technology on careers and occupations. Use a concept map to help keep track of all the different effects of technology.
2. Analyze present and future job markets in specific technology related careers and occupations.
3. Hypothesize legal and ethical factors in the design and development of a new product (e.g. patents, copyright.)
4. Exhibit appropriate standards of behavior regarding copyrights, licensing, vandalism, etc., and discuss consequences of misuse.
5. Provide examples of situations where the use of technology might be affected by legal or ethical considerations. Have students present their examples.
6. Present need for self-control and a personal behavioral standard regarding choices (e.g.chat room, bulletin boards, email, and website, etc.) Exhibit consistently courteous behavior as a prerequisite for further use of technological tools.

High School

1. The students present following ideas as a paper, multimedia presentation, or as a debate:
    a. Evaluate current uses of technology on one's personal career and occupational goals.
    b. Analyze and forecast the effects of technology on one's personal career and occupational goals. Compare and/or contrast the impact of technology in the home today, in the past, and in the future.
    c. Analyze and interpret the impacts of differing ethical and legal standards in the age of global competitiveness.
    d. Explain the associated rights and responsibilities of applying for legal documents (e.g., patents, copyrights: copying music, Fair Use, respecting other's creations.)
    e. Establish an action plan to solve a technology related problem and assess the plan applying ethical and legal principles.

STANDARD 2: BASIC OPERATIONS AND CONCEPTS (Vocabulary, keyboarding, educational software, hardware)

Early Elementary

1. Teacher models correct terminology and places labels on computer parts - bulletin boards, posters, etc.
2. Have student practice the home row, space bar, cursor, delete, escape, backspace, enter keys
3. Use developmentally appropriate draw/paint programs.

Later Elementary

1. User user-friendly desktop publishing software *(i.e. Print Shop, Kid Pix Studio, etc.*) to make a book with graphics.
2. Students use math software such as Algeblaster, Geometer's Sketch Pad, and Math Blaster to develop and practice skills.
3. Students use Reading/Phonics programs; text-based games; vocabulary builders, and spelling and word games to develop and practice skills.

Middle School

1. Students use search engine, to research and print a report with documentation. Students use the web to research information for their graphic presentation.
2. Students use maps and reference materials, geographical and history games.

High School

1. To improve skills use online math strategies, AutoCad, or similar mechanical drawing program, Internet search strategies, etc.

STANDARD 3: TECHNOLOGY PRODUCTIVITY TOOLS (drawing tools, word processor, spreadsheet, database, simulation programs, digital camera, scanner)

Early Elementary

1. Students dictate stories while the teacher types.
2. Create greeting cards or posters using graphics program.

Later Elementary

1. Working with early elementary students, have the older students word process the younger students' student-dictated stories using word processing software such as Word, WordPerfect, and Microsoft Works.
2. Teach simple file management procedures appropriate to student's building skills
3. Create stories, poems, book reports, newsletters, greeting cards and letters, etc. Students create a brochure with scanned or digital photos.
4. Compose a thank you note to a guest speaker who has just been in your classroom. Add a picture that the students have drawn or clip art that is relevant to the topic of the speaker, to make the note more interesting.

Middle School

1. Compose a letter of thanks to a guest speaker. Use the editing features of the word processor to clarify and enhance the letter. Use such edit features as the thesaurus, find/change, text alignment, font size and style to enhance the visual appearance of the work.
2. Choose a story starter. Open a word processing file. Copy and paste the story starter at the top of the page. Have the student add his/her own paragraphs to finish the story. Example: Tuesday morning, I was walking to school when a siren shattered the air. I ran toward the sound and …
3. Students create a graphic presentation to report information about their topic to the rest of the class. They use graphic capabilities to create timelines, graphs, maps and charts, clip art, and pictures.

High School

1. With peers, discuss the issues of access to information and personal privacy faced by users of online services. Following the discussion, write an essay/position paper about technological change and its effect on quality of life. Focus specifically on the issues involved in balancing the right to access information with the right to personal privacy.
2. Using scanners to scan photo, objects, and other materials students manipulate images to create a montage. The final piece includes elements and principles of design and use of technology. With the use of Photoshop LE software students are able to creatively organize the collage and still keep fine details of the images. They can use filters and other effects as well to enhance the images. The art is then printed out and mounted onto matte board then turned in as a finished project.
3. Incorporate PowerPoint presentations and basic web design into Project Reach as well as using Publisher and Internet research to enhance their projects.

STANDARD 4: TECHNOLOGY COMMUNICATION AND PRESENTATION TOOLS (e-mail, online discussion web site, video, slide show, videoconference)

Early Elementary

1. Classes take virtual field trips to other countries.

Later Elementary

1. Create basic multimedia and web documents about the student of class. Students give multi-media presentations to their classmates about their research results and speak to community leaders about the importance of restoring our wetlands and oceans to their natural state.
2. Teach advanced email skills: attachments, mailing lists, and forwarding.
3. Students create a school newspaper. Students are responsible for gathering information from staff, students and the local community. Students use a word-processing and publishing program, a digital camera, and scanner to write articles for the newspaper.
4. Students create a slide show using presentation software for science or social studies.

Middle School

1. Have students ask some questions to about the author of a book they read during the year. Compose a letter to the author with questions. Send the letter electronically. When the author responds, reply with a thank you note.
2. Students research a contemporary issue, then develop, write, and produce their own commercial. Using video and graphic design techniques with Flash 4.0 students can integrate art and technology to create a finished product suitable for television (keeping in mind it's designed by young people).
3. Throughout the school year, students utilize Internet to research and contact other students from around the world to learn about climates and geography of other parts of the world. Students create spreadsheets to track information, utilize word processors to write questions and make predictions using research information.

High School

1. Basic Web Design: Students translate Microsoft office files into HTML to create individual and/or classroom web pages. Basic image manipulation/animation will be included. Peripherals include printers, scanners and digital camera use.
2. Students produce a newspaper. Students use Word, Publisher, and peripherals such as: scanners and digital cameras to produce the school paper.
3. Student groups create a claymation video about a topic of their choice. Students first write short stories and create storyboards. Then they create mini sets and props for the characters in the stories. Using clay, student groups create characters that can be bent and manipulated for stop action animation. Lengths of stories are approximately 2- 5 minutes since it takes so much time to shoot animation. Then over a period of a few weeks shoot the footage and edit using Final cut Pro editing software.
4. In groups students create a sequence of drawings for an animated event. Some may have plots and some may just show movement. Using Flash 4.0 students can put some drawings right into the computer to then animate.
5. Design virtual museums and/or webquests to guide students through the research process.
6. Participate in email exchanges with students around the world as they join global search projects.

STANDARD 5: TECHNOLOGY RESEARCH AND DATA COLLECTION TOOLS (Internet search engines, Internet, Online Public Access Catalog (OPAC), scientific calculators, scientific probes)

Early Elementary

1. Students complete webqwest projects.
2. Students use a database to locate a library book.

Later Elementary

1. Students are given search engines to help answers questions about a subject being taught.

Middle School

1. Students use library computers to search for books, access information on the Internet, and create documents or images needed for library research projects.
2. Students research an element of the periodic table using the Internet. Students focus their search on the element, its history, its uses, and what/how researchers are currently using it.
3. Students research a scientific problem or question of their own then develop and carry out an experiment to help them answer their question. The students use the Internet to research their topics, communicate with experts in the field, and then word process their data, analyses, and conclusions for a research paper and project board.

High School

1. Work with other students using technological resources as a tool for problem solving and product generation. Create survey, graph the results, and present it to their class.
2. At all grade levels, students design and program their own robotic models, directing them to do several tasks. This is an inquiry unit using applied technology with emphasis on cooperative learning and student directed activities.

STANDARD 6: TECHNOLOGY PROBLEM-SOLVING AND DECISION-MAKING TOOLS (using all of the above to solve problems and make decisions)

Early Elementary

1. After a field trip use the word processor to make thank you notes.

Later Elementary

1. Students talk about the signs of fall, write words that tell about fall and place them around the room. They write a story, a poem or a letter telling someone what it is like in fall, or write a list about what happens in fall. They write it first on paper and then use the word processor. Use a draw or paint program to draw a picture to go along with the writing. Print the picture and use it as a cover page.
2. Make a book about small crawling and flying animals. The book includes pictures and information about the topic. Gather information and arrange it according to categories, such as appearance, food, habitat, habits and predators.

3. Students research the cultural background of their families and create a family history. Students collect family mementos, oral histories, scan photos, etc. that help document individual family histories against a cultural/historical context.

Middle School

1. Choose five favorite television shows. Predict which show will be the class favorite. Develop and administer a survey of the class members to gather data about which show from your list is their favorite. Create an appropriate graph showing the class favorites. Import your graph into a text document. Write four questions about the graph that your classmates could answer. Place your text and graph on the page, varying your font style and size to create an effective visual display. Share it with a classmate to answer the questions created. Read an electronic book to a friend. Show the friend how this book works.

High School

1. Students create and present school-wide news programs that are shown via closed circuit television. They report on school news and highlight special events or accomplishments. Video footage and dissolves can be used if the necessary equipment is available.
2. Students create their own commercial by choosing a product, creating the product's name, the target audience, the persuasive method of presentation.
3. Using a computer with animation software, students create a "wire frame" model, paint a background, light the object, add the colors for the different elements and render the image. Viewing the completed animation, they discuss how layering separate elements adds depth and richness to a 3D rendered image.

Appendix C

Hyperlinks

Hyperlinks to Technology Standards sites

Catholic Schools - Diocese of Phoenix
http://www.catholicschoolsphx.com

Curriculum Guidelines for Technology
http://www.catholicschoolsphx.com/curriculum.php

The National Educational Technology Standards (NETS)
http://www.cnets.iste.org

Arizona Department of Education Technology Standards
http://www.ade.az.gov/standards/technology/

Hyperlinks to Glossaries of Technology Terms

NETS Glossary for Teachers: http://cnets.iste.org/teachers/t_glossary.html

NETS Glossary for Students: http://cnets.iste.org/students/s_glossary.html

Arizona Dept Ed Tech Standards Glossary:
http://www.ade.az.gov/standards/technology/glossary.pdf

Tech Web Technology Encyclopedia: http://www.techweb.com/encyclopedia/

Computer and Internet Terms: http://www.webopedia.com/

Dictionary of Internet Terms: http://www.netlingo.com/inframes.cfm

Online Dictionary: http://dictionary.reference.com/

(To be updated periodically)
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