ELEMENTARY/SECONDARY TECHNOLOGY

CURRICULUM STANDARDS

Catholic Schools Office
Diocese of Phoenix
2015

TECHNOLOGY CURRICULUM STANDARDS
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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,

MaryBeth Mueller

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

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***Special thanks for additional assistance and input from Roy Regalado (St. John Bosco), Russell Brandon (St. Francis Xavier), and Mabel Vigil (St. Vincent DePaul).*

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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.

Children must learn to navigate a complex, sophisticated world that is rich in technological devices, immediately accessible information, and ever-changing social media. Through training and experience, our students will learn to use technology in ways that will provide a solid foundation for their future and not cause harm to themselves or others. Through its users God can become present on the Internet. Children can be taught that Catholic values must be present in their real as well as their virtual lives.

Explanation of Coding

Explanation of Codes for Standards:
All standards under each strand and concept have performance objectives. If a standard is marked with a PO, it is designated as a performance objective as articulated by the Arizona state technology standards. If a standard is marked as a DPO, it is a Diocesan Performance Objective which has been articulated by the technology curriculum committee of the Diocese of Phoenix (listed on page 4). DPOs are either expanded or additional objectives that do not appear in the state curriculum guide.

Educational Technology Standards

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 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.

Educational Technology Standard Articulated by Grade Level

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

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

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: This strand requires that students apply digital tools to gather, evaluate, and use information.

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: This strand requires students to use critical thinking, problem solving, and decision making to manage projects using digital tools and resources.

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.

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

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: This strand requires students to demonstrate a sound understanding of technology concepts, systems, and operations.

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.
DPO 1. Introduce the concept of digital collaboration.	DPO 1. Introduce the concept of digital collaboration.	DPO 1. With teacher guidance, complete a product that has been digitally developed by multiple students.	DPO 1. With teacher guidance, complete a product that has been digitally developed by multiple students.	DPO 1. With teacher guidance, complete a product that has been digitally developed by multiple students.	DPO 1. Using time management skills, individuals will perform independent tasks in order to achieve the same assignment goal to produce one synthesized project.	DPO 1. Using time management skills, individuals will perform independent tasks in order to achieve the same assignment goal to produce one synthesized project.

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.

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.

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**
DPO 1. Select an essential question* to research using digital resources with teacher guidance.	DPO 1. Select an essential question* to research using digital resources with teacher guidance.	DPO 1. Select an authentic issue to research using digital resources with teacher guidance.	DPO 1. Select an authentic issue to research using digital resources with teacher guidance.	DPO 1. Select an authentic issue to research using digital resources with teacher guidance.	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: Collaboration Identify and define authentic problems and significant questions for investigation.						
Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 5**	**Grade 6**
DPO 1. Introduce the concept of digital collaboration.	DPO 1. Introduce the concept of digital collaboration.	DPO 1. With teacher guidance, complete a product that has been digitally developed by multiple students.	DPO 1. With teacher guidance, complete a product that has been digitally developed by multiple students.	DPO 1. With teacher guidance, complete a product that has been digitally developed by multiple students.	DPO 1. Using time management skills, individuals will perform independent tasks in order to achieve the same assignment goal to produce one synthesized project.	DPO 1. Using time management skills, individuals will perform independent tasks in order to achieve the same assignment goal to produce one synthesized project.

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 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**
DPO 1. Use the input device 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.	DPO 1. Understand keyboarding techniques when using the keyboard to type letters, numbers and special key functions.	DPO 1. Demonstrate speed and accuracy in use of data entry tools.	DPO 1. Demonstrate speed and accuracy in use of data entry tools.	DPO 1. Demonstrate speed and accuracy in use of data entry tools.	DPO 1. Demonstrate speed and accuracy in use of data entry tools.
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 printing.	DPO 5. Demonstrate appropriate use of log-in procedures and printing.	PO 5. Create and edit multimedia using painting/drawing applications.	PO 5. Plan, create, and edit multimedia presentations.	DPO 5. Create multimedia presentations.	DPO 5. Create multimedia presentations.	DPO 5. Create multimedia presentation.
		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 printing.	PO 7. Demonstrate appropriate use of log-in procedures and printing.	DPO 7. Demonstrate appropriate use of log-in procedures and printing.	DPO 7. Demonstrate appropriate use of log-in procedures and printing.	DPO 7. Demonstrate appropriate use of log-in procedures and printing.

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.
PO 2. Use digital collaborative tools to synthesize information, produce original works, and express ideas.	PO 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 collaborative tools to synthesize information, produce original works, and express 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.	DPO 3. Use digital collaborative tools to synthesize information, produce original works, and express ideas.	DPO 3. 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 using digital media and environments.		
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.	DPO 1. Locate and synthesize information utilizing advanced search strategies including a variety of search engines, query based searches, metadata search engines, deep web searches and databases.
PO 2. Use authoritative primary and/or secondary sources.	PO 2. Evaluate and use authoritative primary and/or secondary sources.	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 the components of an integrated system using appropriate terminology.	DPO 1. Explain the components of an integrated system using appropriate terminology.	PO 1. Define 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 using appropriate data entry tools.	DPO 1. Demonstrate speed and accuracy using appropriate data entry tools.	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.	DPO 5. Compose visual and audio material to produce interactive multimedia products.
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.	DPO 1. Transfer understanding of current technologies to new learning situations.	DPO 1. Transfer understanding of current technologies to new learning situations.

APPENDICES

Appendix A

Minimum Technology Competencies K-12

Technology Applications and Outcomes	K	1	2	3	4	5	6	7	8	HS
I=Introduce D=Develop M=Master A=Apply										
Technology in Society – History & Ethics										
Computer use in various situations	I	D	→	→	→	→		M	A	A
Technology related careers	I	D	→	→	→	→	M	A	A	A
History of computers				I	D	→	→	M	→	→
Future of computers			I	D	→	→	→	M	A	A
Understand bugs, viruses, worms, adware, malware, ransom ware			I	D	→	→	→	→	→	→
Antivirus software, filters, proxy							I	D	M	M
Cyber safety, appropriate v. inappropriate use, cyber-etiquette	I	A	A	→	→	→	→	→	→	
Computer Usage										
Identify/define hardware components	I	D	→	→	→	→	M	A	→	→
External storage devices	I	D	M	A	→	→	→	→		
Peripheral use (printers, scanners, digital cameras)				I	D	→	M	A	→	→
Proper handling and care of devices	I	D	M	A	→	→	→	→	→	→
Use various types of software and apps	I	D	→	→	→	→	→	M	A	A
Understand access to network/cloud					I	D	→	→	M	A
Create, change, move folders, files, and search						I	D	M	A	A
Work on two or more applications simultaneously						I	D	M	A	A
Save work to a specific location				I	I	D	M	A	→	→
Keyboarding Skills										
Recognize & locate characters on the keyboard	I	D	→	→	M	A	→	→	→	→
Recognize & use of special function keys	I	D	→	→	M	A	→	→	→	→
Appropriate posture and typing technique	I	D	→	→	M	A	→	→	→	→
Identify and use home row keys		I	D	→	M	A	→	→	→	→
Type words, sentences and paragraphs		I	D	→	M	A	→	→	→	→
Type an entire page					I	D	M	A	→	→
Typing for speed			I	D	D	D	D	D	D	M
Spreadsheet and Databases										
Identify and access a spreadsheet program				I	D	→	M	A	→	→
Menu items				I	D	→	→	M	A	A
Spreadsheet terminology				I	D	→	→	M	A	A
Create, save, edit, share, and print a spreadsheet				I	D	→	→	M	A	A
Create a chart				I	D	→	→	M	A	A
Copy, cut, paste, insert				I	D	→	→	M	A	A
Format a spreadsheet				I	D	→	→	M	A	A
Work in cells with values, labels, formulas					I	D	→	M	A	A
Integrate spreadsheet into other curricular areas					I	D	→	M	A	A
Work with fields, records, filters, and sorting						I	D	D	D	M
Identify and access a database program					I	D	→	→	M	M
Database terminology					I	D	→	→	M	M

Technology Applications and Outcomes	**K**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**HS**
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	A
Copy, cut, paste, insert				I	D	D	M	A	→	→
Tables					I	D	D	M	A	A
Images		I	D	D	M	A	→	→	→	→
Formatting a document				I	D	D	M	A	→	→
Work in two or more documents simultaneously					I	D	D	M	A	A
Multimedia										
Create, save, edit, & present a multimedia presentation				I	D	D	M	A	→	→
Multimedia and presentation terminology				I	D	D	M	A	→	→
Use of peripherals in a multimedia presentation						I	D	M	A	A
Graphics Programs										
Identify and access a graphics program	I	D	→	→	M	A	→	→	→	→
Create, save, edit, and use a graphics file		I	D	D	M	A	→	→	→	→
Use a graphics file in another document or program				I	D	D	M	A	→	→
Graphics terminology		I	D	→	→	→	M	A	→	→
Internet										
Understand the acceptable use policy	I	I	D	D	M	A	→	→	→	→
Internet terminology			I	D	→	→	→	M	A	A
Search techniques/Evaluating Information			I	D	→	→	M	A	→	→
Create, save, edit, and post web page						I	D	M	A	A
Link multiple web pages/sites						I	D	M	A	A
Use of web 2.0 tools	I	I	D	D	→	→	→	→	→	
Digital Ethics and Citizenship										
Establish parameters for safe, responsible use	I	→	→	→	D	→	→	M	M	A
Relate Catholic Identity to cyber-communication and self representation	I	→	→	→	D	→	→	M	M	A
Establish parameters for understanding when to involve an adult in inappropriate online discourse	I	→	→	→	D	→	→	M	M	A
Computer ethics, morals, Catholic philosophy	I	D	→	→	→	→	M	A	→	→
Understand/obey copyright laws and creative commons				I	D	→	→	M	A	A

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Appendix B

Recommended Technology Competencies for Teachers

Engage in professional growth and leadership	Teachers continuously improve their professional practice, model lifelong learning, and exhibit leadership in their school and professional community by promoting and demonstrating the effective use of digital tools and resources. a. Participate in local and global learning communities to explore creative applications of technology to improve student learning b. Exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others c. Evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning d. Contribute to the effectiveness, vitality, and self renewal of the teaching profession and of their school and community
Promote and model digital citizenship and responsibility	a. Teachers understand local and global societal issues and responsibilities in an evolving digital culture and exhibit legal and ethical behavior in their professional practices. b. Advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources c. Address the diverse needs of all learners by using learner-centered strategies providing equitable access to appropriate digital tools and resources d. Promote and model digital etiquette and responsible social interactions related to the use of technology and information Develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital age communication and collaboration tools

Model digital age work and learning	Teachers exhibit knowledge, skills, and work processes representative of an innovative professional in a global and digital society. a. Demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations b. Collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation. c. Communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital age media and formats. d. Model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information resources to support research and learning
Design and develop digital age learning experiences and assessments	Teachers design, develop, and evaluate authentic learning experiences and assessments incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the Standards. a. Design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity b. Develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress c. Customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources d. Provide students with multiple and varied formative and summative assessments aligned with content and technology standards, and use resulting data to inform learning and teaching
Facilitate and inspire student learning and creativity	Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments. a. Promote, support, and model creative and innovative thinking and inventiveness b. Engage students in exploring real-world issues and solving authentic problems using digital tools and resources c. Promote student reflection using collaborative tools to reveal and clarify students' conceptual understanding and thinking, planning, and creative processes d. Model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments

Appendix C

STEM/STEAM/STREAM Resources

STEM: Science Technology Engineering Mathematics
STEAM: Science Technology Engineering ARTS Mathematics
STREAM: Science Technology RELIGION Engineering ARTS Mathematics

STEM to STREAM

STREAM INITIATIVE:

According to the National Catholic Education Association:

> While many public schools have STEM (Science, Technology, Engineering and Mathematics) programs, STEM alone is not enough for Catholic schools. Catholic school leaders believe in educating the whole child. We believe that exposure to the arts is essential and we are committed to an educational experience that provides multiple encounters with Christ in every aspect of curriculum and instruction. STREAM will help us to achieve these goals...It requires teachers to be intentional in providing students with educational experiences that integrate many curricular areas. It can be project-based learning. It also can be a mathematics class where students integrate the study of religion by learning about statistics related to poverty and the church's response. STREAM also can be a science class that integrates art and the beauty of God's creation as children draw pictures or create sculptures that represent the environment provided by our creator.

The STREAM classroom is a standards based learning environment that incorporates Project Based Learning (PBL), our Catholic Teaching and a School Enrichment Model (SEM) to facilitate student's 21st century skills such as collaboration, communication, creativity, critical thinking skills and problem solving.

- STREAM schools seek to integrate Catholic identity into every aspect of the curriculum.
- STREAM schools provide a challenging learning environment focused on science, technology, math, arts and the integration of education in the faith.
- STREAM schools promote a culture of innovation as well as a commitment to ethical behavior.
- STREAM schools seek to increase the participation of groups that are under-represented in the sciences.
- STREAM schools increase content literacy for all students including those who do not pursue technology-related careers or additional studies in the STREAM disciplines.
- STREAM schools are inclusive.
- STREAM schools foster an environment that encourages problem solving, group collaboration and independent research.
- STREAM schools demonstrate that success is defined in many ways and can occur in many different types of schools and learning environments.
- STREAM schools use strategic planning as a blueprint to guide the school's development and implementation of the STREAM curriculum.
- STREAM schools are "think forward" institutions and place high priority on educator training, learning, leadership and 21st century skill applications.

**Heather Gossart, 10 characteristics of a STREAM school*

*This is a limited list of resources on STEM. For an up-to-date list of STEM resources, visit the Technology Livebinder.

Curriculum Resources/Ideas for the Classroom	
www.snapcircuits.net	A must-have for K-3 classrooms. Beginning stages of STEM and engineering. Great for centers.
http://www.delta-education.com/fossgallery.aspx?menuID=2	Science kits for all subjects. All-inclusive kits; hand-on.
http://studio.code.org/	To teach students to write code.
https://www.pinterest.com/mtreagan/stem-projects/	Pinterest is a place to find hundreds of ideas that can be used or modified to meet the standards of the lesson you're teaching and the age/ability level in your class
http://blog.discoveryeducation.com/psharjuegr/2014/06/30/marshmallow-toothpick-towers-stem/	Idea resource that shows how simple STEM activities can be and how inexpensive the materials can be. Activities can be modified to meet the standards of the lesson and to meet the age/ability levels of your class.
http://www.gk12.org/resources/stem-activities-and-resources-for-k-12-teachers-and-students/	Graduate STEM fellows in K-12 education website provides numerous project ideas, research, and resources for teachers and students.
http://www.exploratorium.edu/	Provides interactives, web features, activities, programs, and events for **K-12**. Saturday and Summer professional development workshops are available through the Teacher Institute.
http://www.nasa.gov/audience/foreducators/index.html	Lesson plans, teacher guides, classroom activities, video clips, games, posters, and more for teachers and students in **grades K-4, 5-8, 9-12**, and higher education.
http://www.egfi-k12.org/	Promotes engineering education with **K-5, 6-8, 9-12** lesson plans, activities, outreach programs, and links to web resources. Teachers and students can download the first three issues of eGFI magazine.
http://www.kineticcity.com/	Science games for students in **grades 3-5**. One activity asks students to replace the body systems of a character who sounds like Arnold Schwarzenegger. The website requires free registration.
http://www.stemchallenge.org/stem/#/home	**Middle school** (5-8), **high school students** (9-12), **and educators** are invited to design games that incorporate STEM content or STEM themes in innovative and engaging ways.
http://www.shodor.org/master/	Eight interactive math and science tools and simulations for students in **grades 6-12**. All simulations and curriculum materials meet the new National Science Education Standards and National Math Education Standards.
www.engineeryourlife.org	This guide introduces girls in **grades 9-12** to young women engineers and highlights careers. A section for parent and counselors furnishes background in engineering to better advise students. The site has a link to a companion site for girls in **grades 5-8**.

	(Continued)
www.pltw.org	Project Lead the Way. This is a subscription based service that has STEM k-12 curriculum resources. These include projects, research activities and lesson presentations. (Much of the material is available outside of the PLTW website, but you need to search the website to find it.)
www.epicsk12.org	Resource for projects based learning in STREAM based out of Purdue University. EPICS stands for Engineering Projects in Community Service. This program provides a basis where students are encouraged to use their creative gifts as a basis in engineering for the betterment of humanity.
www.ecybermission.com	eCYBERMISSION is a web-based Science, Technology, Engineering and Mathematics competition for 6th, 7th, 8th and 9th grade teams. Your team will propose a solution to a real problem in your community and compete for State, Regional and National Awards.

**Many of the resources here provide lessons that can be integrated with art and religion to fit into a STREAM learning environment.*

Camps/Live Events/Workshops	
http://www.bricks4kidz.com/	After school programs, camps, private events involving Legos and Lego robotics
http://www.azfll.com/	Arizona First Lego League: Robotics
http://www.vexrobotics.com/	Vex Robotics information, competitions, curriculum, etc.

Professional Development	
www.stemcon.net	Yearly conference devoted to the latest in STEM
http://www.wnycatholicschools.org/stream	Information on the STREAM initiative in the Diocese of Buffalo (NY)
http://www.iste.org/	International Society for Technology Education: Resources and yearly technology conference
http://www.pbs.org/teachers/stem/#content	Provides nearly 4,000 science, technology, engineering and math resources for **PreK-5, 6-12** as well as free, self-paced modules for **teachers** teaching global climate change to middle school and high school students.
https://pe.gatech.edu/	NASA offers free online professional development certificate programs for **K-12 teachers** in robotics, statistics, project-based inquiry learning, and technology integration and self-directed courses in astrobiology, microgravity, and outer space environment.
http://eie.org/sites/default/files/bayer_compendium.pdf	All 38 **K-12** STEM programs included in this report provide challenging content/curriculum, an inquiry-learning environment, defined outcomes/assessment, and sustained commitment/community support. Each program entry gives an overview, defines target population and learning environment, and presents highlights of results. Contact information is provided.

http://www.azk12.org/search/node/stem	AZK-12 Center provides professional development and resources for teachers in all areas, including science and technology.
https://www.teachervision.com	TeacherVision is dedicated to helping teachers save time. Find 22,000 pages of classroom-ready lesson plans, printables, and resources.
http://www.sfaz.org/stem/	We harness the power of community by providing educators, donors, and business leaders with the resources needed to measure performance and make a real difference for students across the state.
http://edtechteacher.org/	We provide professional development to teachers who are dedicated to creating innovative learning opportunities for their students. Learn how to teach with technology and enhance student learning.
http://www.azed.gov/century-learning-centers/stem/	STEM resources and information provided by the Arizona Department of Education.
www.educatorstechnology.com	A resource of educational web tools and mobile apps for teachers and educators.

Many of these resources were supplied by:
http://www.nea.org/tools/lessons/stem-resources.html

Appendix D

Glossaries of Terms

The following links provide access to lists of technology related terms. These sites have varied levels of ease and complexity, some providing just basic terms and others advanced technological terminology. Use them as you see fit in your school/classroom.

Website	Description	Usability
http://www.schoolatoz.nsw.edu.au/hu/technology/technology-az	Fairly limited, common list of terms that all teachers and parents should know. Good to share with parents.	Basic—any level user
http://techterms.com/	Alphabetical, comprehensive listing of tech terms. Terms are rated for "Tech" factor (high tech or low tech).	All users
http://whatis.techtarget.com/	Thousands of tech terms, easily searchable site.	All users.
https://sites.google.com/a/isg.edu.sa/isg-digital-toolkit/home/glossary-of-tech-terms	Limited list of tech terms. Site also includes additional resources.	All users, but terms list is not fully comprehensive. Good for list of common terms.
http://www.webopedia.com/TERM	Searchable site for tech terms. Explanations assume moderate level of tech understanding.	Moderate level users.
http://www.poynter.org/news/media-innovation/104015/digital-journalist-survival-guide-a-glossary-of-tech-terms-you-should-know/	List of digital terms for various levels of users. Explanations are fairly in-depth.	Moderate to high level users/Tech directors.
http://www.iteaconnect.org/TAA/Resources/TAA_Glossary.html#B	Limited but specific list of terms.	Appropriate for tech directors, administrators, those seeking to understand various components of educational technology management.
http://nces.ed.gov/pubs2003/tech_schools/glossary.asp	Limited but specific list of terms.	Appropriate for tech directors, administrators, those seeking to understand various components of technology as it relates to educational management.

Appendix E

Online Safety Resources

The following links provide programs and resources to help teach Internet safety to students and adults.

Faith Based Safety Resources

https://www.faithandsafety.org/

http://www.usccb.org/issues-and-action/child-and-youth-protection/child-abuse-prevention/children-safety-links.cfm

http://www.usccb.org/about/communications/social-media-guidelines.cfm

General Safety Resources

https://sos.fbi.gov/

www.i-safe.org

www.netsmartz.org

http://www.goffstown.k12.nh.us/common/documents/K-5Curr.pdf

https://www.commonsensemedia.org/educators/curriculum/6-8

https://www.staysafeonline.org

http://www.thinkbeforeyoulinkinschool.com/educators

http://protectmyrep.org

http://www.ikeepsafe.org/educators/

http://www.thatsnotcool.com

http://www.onguardonline.gov/articles/pdf-0001-netcetera.pdf

http://www.mcgruff.org

http://www.pbs.org/wgbh/pages/frontline/kidsonline/safe/parent.html

http://notmykid.org/internet-safety/

For the most current additional information, check Livebinder:
http://www.livebinders.com/play/play?present=true&id=1712151
Access Key: tech