Grades 9-12 Technology  
Technology Applications and Innovation

Technology in Our World

Stage 1: Desired Results

Catholic Standards

DOC All Grades DOC: Catholic Standards

Life in Christ

Students will be able to

7. Assume personal responsibility (CCC 1914).

14. Demonstrate appropriate care of social communication and technology (CCC 2496).

Targeted Standards

ISTE All Grades ISTE: Educational Technology (2007) - OBSOLETE

ISTE Standards for Students

Digital Citizenship Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:

a. advocate and practice safe, legal, and responsible use of information and technology.

b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.

c. demonstrate personal responsibility for lifelong learning.

d. exhibit leadership for digital citizenship.

Technology Operations and Concepts Students demonstrate a sound understanding of technology concepts, systems and operations. Students:

a. understand and use technology systems.

d. transfer current knowledge to learning of new technologies.

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OH Grades 9-10 OH: Literacy in History/Social Studies, Science, & Technical Subjects 6-12

Writing

Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

WHST.9-10.2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

WHST.9-10.2b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.

Production and Distribution of Writing 4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

WHST.9-10.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Capacities of the Literate Individual

Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language

They demonstrate independence.

Catholic Identity

DOC All Grades Catholic Identity

Catholic Social Justice Teachings

Rights and Responsibilities

The Rights of Children

2. THE RIGHT TO A SAFE ENVIRONMENT that promotes care, protection, and security.

3. THE RIGHT TO BE RESPECTED AS INDIVIDUALS with human dignity.

7. THE RIGHT TO LEARN THE SKILL OF SELF PROTECTION by identifying safe and unsafe situations.

8. THE RIGHT TO LEARN RESPONSIBILITY for themselves and their actions.

9. THE RIGHT TO MAKE RESPONSIBLE DECISIONS founded on religious conviction.

Summary

This unit focuses on the students becoming aware of the technology they use on a daily basis, including the evolution of technology and where it is taking them. Schools and businesses each have unique processes for printing and saving, and students need to become familiar with correctly using a variety of those processes.

Unit Goals

1. Students will understand how technology influences their lives.
2. Students will understand school-specific technology protocol.
3. Students will understand the evolution of technology.
4. Students will understand the importance of exhibiting leadership in digital citizenship.

Big Ideas

1. technology's impact
2. technology evolution
3. variety of technology

Enduring Understandings

1. Technology impacts and influences society.
2. Technology users need to be aware of the correct procedures to use in whatever platform they are working.
3. Knowing computer and technological terminology eases a user’s experience.
4. Technology has dramatically evolved throughout time and altered society.

Content

1. hardware
2. software
3. input
4. output
5. peripheral devices
6. computer
7. technology
8. history of computers
9. file maintenance

Skills

1. Organize and locate their files electronically and/or on the cloud.
2. Access printers and follow other school-related protocols.
3. Define and use technological jargon appropriately.
4. Draw conclusions about the future based on the evolution of technology.
5. Compare and contrast various peripheral devices.
6. Categorize the various types of devices available.
7. Apply the concepts of digital citizenship.
8. Define and classify basic technological jargon.

Essential Questions

1. How does technology impact and influence the lives of people in our world?
2. What protocols best direct the use of computers and technology at our school?
3. How does the use and knowledge of specific terminology help us succeed in a digital age?
4. How did technology evolve?

Stage 2: Assessment Evidence

What Do You Know about Technology?

Diagnostic: Diagnostic

The teacher will give an assessment to determine what students know about computers, technology, and the digital world.

Day in the Life with Technology

Summative: Technology Project

Students will write a story of a day in their lives through the lens of technology, enabling them to become aware of the impact technology has on their lives.

Stage 3: Learning Plan

Learning Experiences

1. **Independent Work**: Students will work independently to create folders in order to organize their digital files.
2. **Listening Activities**: Students will take notes as teachers present introductory computer and technology terms using presentation software.
3. **Structured Overview:** Students will take notes as teachers lecture on the evolution of computers and technology.
4. **Demonstration:** Students will demonstrate mastery of file saving and printing after teachers model these skills.
5. **Concept mapping**: Evolution of Computer. Students will make a timeline charting the evolution of the computers.
6. **Discussion**: What is technology? As a group, students will discuss and debate this question.
7. **Think, Pair, Share:** How does technology benefit your lives? Students will pair up and answer this question and then share results with the class.

Technology Integration

1. Internet browsers
2. cloud-based applications
3. printers

Resources

* Instructional Strategies Online (<http://schools.spsd.sk.ca/curriculum/instructionalstrategies/>)

Grades 9-12 Technology  
Technology Applications and Innovation

ePortfolio

Stage 1: Desired Results

Catholic Standards

DOC All Grades DOC: Catholic Standards

Life in Christ

Students will be able to

1. Understand that we shape our own life as a result of free will (CCC 1731).

2. Know that we must assume responsibility for the acts we perform (CCC 1781).

8. Practice solidarity and social charity (CCC 1939).

10. Follow God's commandments (CCC 2068).

Targeted Standards

ISTE All Grades ISTE: Educational Technology (2007) - OBSOLETE

ISTE Standards for Students

Creativity and Innovation Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

b. create original works as a means of personal or group expression.

Communication and Collaboration Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:

a. interact, collaborate, and publish with peers, experts or others employing a variety of digital environments and media.

b. communicate information and ideas effectively to multiple audiences using a variety of media and formats

Digital Citizenship Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:

d. exhibit leadership for digital citizenship.

Technology Operations and Concepts Students demonstrate a sound understanding of technology concepts, systems and operations. Students:

a. understand and use technology systems.

b. select and use applications effectively and productively.

c. troubleshoot systems and applications.

d. transfer current knowledge to learning of new technologies.

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ISTE ISTE-S: Grades 912 ISTE-S: Student Profiles - OBSOLETE

for Technology (ICT) Literate Students

The following experiences with technology and digital resources are examples of learning activities in which students might engage during Grades 912 (ages 1418):

7. Design a Web site that meets accessibility requirements. (1, 5)

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OH Grades 9-10 OH: Literacy in History/Social Studies, Science, & Technical Subjects 6-12

Writing

Range of Writing 10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

WHST.9-10.10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Capacities of the Literate Individual

Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language

They demonstrate independence.

Catholic Identity

DOC All Grades Catholic Identity

Catholic Social Justice Teachings

Rights and Responsibilities

The Rights of Children

1. THE RIGHT TO A CATHOLIC COMMUNITY that witnesses to Christ and the Gospel by protecting them from child abuse, including sexual abuse and neglect.

2. THE RIGHT TO A SAFE ENVIRONMENT that promotes care, protection, and security.

3. THE RIGHT TO BE RESPECTED AS INDIVIDUALS with human dignity.

4. THE RIGHT TO WORK ACTIVELY TOWARD THEIR OWN EMPOWERMENT through the development of their gifts and talents.

5. THE RIGHT TO A LEARNING ENVIRONMENT THAT VALUES COOPERATION and challenges its members to critical and reflective thinking in their search for truth.

6. THE RIGHT TO DEVELOP POSITIVE, RESPONSIBLE AND CARING ATTITUDES AND BEHAVIORS TOWARD OTHERS and to recognize the rights of others to be safe and free from harassment and abuse.

7. THE RIGHT TO LEARN THE SKILL OF SELF PROTECTION by identifying safe and unsafe situations.

8. THE RIGHT TO LEARN RESPONSIBILITY for themselves and their actions.

Summary

This unit will provide students with the opportunity to showcase their skills, projects, growth and goals. As freshmen, students will begin collecting material to include in a website they create and design.They will continue to update their ePortfolio throughout their high school careers. Students will be encouraged to choose material that demonstrates their progress, challenges, and successes.

Unit Goals

1. Students will understand the importance of an ePortfolio.
2. Students will understand the concepts and principles of web design and maintenance.

Big Ideas

1. portfolio creation
2. webpage design and maintenance
3. presentation of student’s work throughout high school
4. professionalism
5. student progression and motivation
6. self-evaluation
7. transfer of skills across platforms

Enduring Understandings

1. Creating an electronic portfolio prepares students to showcase their skills and abilities throughout high school and beyond.
2. In web creation, recognizing commonalities across platforms increases ease of use.

Content

1. construction of ePortfolio
2. long-term benefits of ePortfolio
3. future employment and higher education due to ePortfolio
4. cloud-based storage
5. webpage design
6. webpage creation
7. hyperlinking
8. self-evaluation
9. formatting
10. editing and proofreading skills

Skills

1. Outline a strategic plan to complete an ePortfolio.
2. Create a website showcasing their collective work throughout their high school career.
3. Revise existing works to demonstrate mastery.
4. Design a website that meets accessibility requirements.
5. Apply the concepts and principles of web design and maintenance in ePortfolio.
6. Discern which work to include in ePortfolio.
7. Evaluate the ePortfolio of another student.

Essential Questions

1. Why is it important to organize and showcase my productivity and performance over a period of time?
2. How does showcasing of work produce long-term benefits?
3. What are the advantages and disadvantages of displaying and storing my work electronically?
4. How can I compare my strengths and weaknesses over my high school career to showcase my growth?

Stage 2: Assessment Evidence

ePortfolio

Summative: Student Portfolio

Students can be assessed on their webpage featuring collective works throughout the particular course. This webpage will allow for showcasing of student work throughout the high school career and demonstrate student growth and self-assessment.

ePortfolio Outline

Formative: Student Portfolio

Students can be formatively assessed on their outline of a working student ePortfolio.

Webpage Peer Review

Formative: Peer Assessment

Students can be assessed on peer-to-peer review and editing of working ePortfolio.

Stage 3: Learning Plan

Learning Experiences

1. **Collaborative Learning:** In a small group, students will explore the website that will serve as their ePortfolio. They will login to their own website but will talk through the design of the website in order to rename and address specific needs of the ePortfolio project. The project rubric will be presented at this time in order to prepare them for the website development.
2. **Independent Learning:** Students will spend the majority of this unit selecting their work samples, setting their goals, and writing their reflections as they prepare their ePortfolios.
3. **Revision:** This activity calls for students to grade themselves using the ePortfolio rubric in order to assess their own project and make corrections prior to the peer assessment.
4. **Role Play Peer Editing:** Students perform real world-like scenarios in order to critique their peer's ePortfolio. \*See GRASPS sheet for Project details.
5. **Reflection/ Goal Setting:** Each student should reflect on the timeframe that has passed while taking this course. They should reflect on these questions:

How have I grown since 8th grade?

What struggles have I faced? Based on those struggles, what future struggles might be headed my way?

What goals can I set to avoid those struggles?

What positive changes have I made? What future positive changes would I like to make during my high school career?

Where do I see my life headed at the end of my high school career?

Where do I see myself after college?

In what ways have I allowed God to lead my life thus far?

Where can I improve my life that furthers my relationship with God and my community?

Technology Integration

1. website design software
2. Internet browsers
3. peripheral devices
4. online image database

Resources

* University of Wisconsin Stout's ePortfolio Rubric (<https://www2.uwstout.edu/content/profdev/rubrics/eportfoliorubric.html>)

Grades 9-12 Technology  
Technology Applications and Innovation

Word Processing

Stage 1: Desired Results

Catholic Standards

DOC All Grades DOC: Catholic Standards

The Profession of Faith

Students will be able to

1. Recognize God in the world's order, beauty, and goodness (CCC 32).

4. Understand that God invites us to intimate communion with himself (CCC 54).

7. Understand that faith is a gift from God (CCC 552).

14. Believe in and profess the Holy Trinity: the Father, Son, and Holy Spirit (CCC 685).

Life in Christ

Students will be able to

2. Know that we must assume responsibility for the acts we perform (CCC 1781).

10. Follow God's commandments (CCC 2068).

14. Demonstrate appropriate care of social communication and technology (CCC 2496).

Christian Prayer

Students will be able to

1. Practice Christian prayer, which is a covenant relationship between God and man in Christ (CCC 2564).

2. Know and practice the four forms of prayer: blessing and adoration, petition, intercession, and thanksgiving (CCC 2625).

4. Identify the types of prayer: vocal prayer, meditation, and contemplative prayer (CCC 2722-2724).

Targeted Standards

ISTE All Grades ISTE: Educational Technology (2007) - OBSOLETE

ISTE Standards for Students

Creativity and Innovation Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

b. create original works as a means of personal or group expression.

Communication and Collaboration Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:

a. interact, collaborate, and publish with peers, experts or others employing a variety of digital environments and media.

b. communicate information and ideas effectively to multiple audiences using a variety of media and formats

Technology Operations and Concepts Students demonstrate a sound understanding of technology concepts, systems and operations. Students:

a. understand and use technology systems.

c. troubleshoot systems and applications.

d. transfer current knowledge to learning of new technologies.

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OH Grades 9-10 OH: Literacy in History/Social Studies, Science, & Technical Subjects 6-12

Writing

Text Types and Purposes 1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

WHST.9-10.1c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.

Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

WHST.9-10.2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

Capacities of the Literate Individual

Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language

They demonstrate independence.

Catholic Identity

DOC All Grades Catholic Identity

Catholic Social Justice Teachings

Rights and Responsibilities

Care for God's Creation

The Rights of Children

1. THE RIGHT TO A CATHOLIC COMMUNITY that witnesses to Christ and the Gospel by protecting them from child abuse, including sexual abuse and neglect.

3. THE RIGHT TO BE RESPECTED AS INDIVIDUALS with human dignity.

4. THE RIGHT TO WORK ACTIVELY TOWARD THEIR OWN EMPOWERMENT through the development of their gifts and talents.

Summary

In this unit, students will learn advanced features of word processing software. Students will become familiar with and transfer skills used in creating high-quality word processing documents across several platforms.

Unit Goals

1. Students will draft, edit, and critique word processing files according to the given standards of a specific project.
2. Students will evaluate and identify various word processing applications.
3. Students will select and adapt word processing skills to one application that best fits the needs of the user.

Big Ideas

1. word processing software platforms
2. transferable skills

Enduring Understandings

1. Mastery in the use of word processing is essential for success in life.

Content

1. Microsoft Word
2. Pages
3. Google Docs
4. Notepad
5. fonts
6. page margins
7. columns
8. email
9. photo editing
10. document editing
11. styles
12. formatting
13. design principles
14. tables
15. indents
16. tabs
17. commands
18. pdf files

Skills

1. Distinguish a variety of formatting options in word processing.
2. Construct word processing documents according to standards.
3. Revise existing user-created documents.
4. Compare and contrast the variety of word processing software available.
5. Create original works as a means of personal or group expression.

Essential Questions

1. Why are word processing skills essential?
2. What is the future of word processing?
3. How does the transfer of word processing skills across platforms prepare users for the modern world?

Stage 2: Assessment Evidence

Table Assignment

Formative: Technology Project

Students will use word processing skills to create a multi-columned table.

Prayer Assignment

Formative: Technology Project

Students will use word processing skills to create an original prayer.

Flyer Assignment

Summative: Technology Project

Students will use advanced word processing skills to create an informational flyer.

Stage 3: Learning Plan

Learning Experiences

1. **Demonstrating:** The students follow along while the teacher demonstrates advanced word processing formatting techniques.
2. **Drill and Practice:** Students create several projects, such as a flyer introducing a classmate and an advanced table.
3. **Peer Partner Learning:** Using their own devices, students will take pictures of classmates to be used in a flyer.
4. **Interviewing:** Students will interview each other for information to include in the flyer.
5. **Writing to Inform:** Students will write a prayer using indentation and tabulating methods.

Technology Integration

1. word processing software
2. Internet browsers

Resources

1. Microsoft Word
2. Wordpad
3. NotePad

Resources

* Google Docs (<https://www.google.com/docs/about/>)

Grades 9-12 Technology  
Technology Applications and Innovation

Desktop Publishing

Stage 1: Desired Results

Catholic Standards

DOC All Grades DOC: Catholic Standards

The Profession of Faith

Students will be able to

9. Know that we are created in God's image to serve Him and to rule over all creatures (CCC 380).

Life in Christ

Students will be able to

7. Assume personal responsibility (CCC 1914).

14. Demonstrate appropriate care of social communication and technology (CCC 2496).

Targeted Standards

ISTE All Grades ISTE: Educational Technology (2007) - OBSOLETE

ISTE Standards for Students

Communication and Collaboration Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:

a. interact, collaborate, and publish with peers, experts or others employing a variety of digital environments and media.

b. communicate information and ideas effectively to multiple audiences using a variety of media and formats

Research and Information Fluency Students apply digital tools to gather, evaluate, and use information. Students:

b. locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.

Critical Thinking, Problem-Solving & Decision-Making Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources. Students:

b. plan and manage activities to develop a solution or complete a project.

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OH Grades 9-10 OH: Literacy in History/Social Studies, Science, & Technical Subjects 6-12

Writing

Production and Distribution of Writing 4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

WHST.9-10.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

WHST.9-10.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

Capacities of the Literate Individual

Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language

They demonstrate independence.

Catholic Identity

DOC All Grades Catholic Identity

Catholic Social Justice Teachings

Rights and Responsibilities

Care for God's Creation

The Rights of Children

4. THE RIGHT TO WORK ACTIVELY TOWARD THEIR OWN EMPOWERMENT through the development of their gifts and talents.

Summary

In this unit students will become proficient in skills and techniques needed for successful creation and design of desktop publications. Students will gain exposure to design principles as well as desktop publishing tools and software applications used in the desktop publishing industry.

Unit Goals

1. Students will draft, design, edit, and critique a variety of desktop publishing files according to the given standards of a specific project.
2. Students will evaluate and identify various desktop publishing applications.
3. Students will select and adapt desktop publishing skills to each application that best fits the needs of the user.
4. Students will compare the similarities and differences between word processing and desktop publishing applications.

Big Ideas

1. creative applications
2. transferable skill
3. desktop publishing
4. design principles

Enduring Understandings

1. Desktop publishing and design principles are important concepts to learn and apply.
2. Desktop publishing skills and concepts can be transferred to a variety of creative outlets both in schools and the workplace.

Content

1. variety of software
2. design principles
3. image formatting
4. templates
5. placeholders
6. headlines
7. captions
8. bylines
9. interviews
10. article construction
11. alignment

Skills

1. Organize documents based on predetermined goals.
2. Construct desktop publisher documents using design parameters.
3. Modify designs based on design principles.
4. Create published documents from scratch.
5. Connect word processing knowledge to desktop publishing content.
6. Communicate information and ideas effectively to multiple audiences using a variety of media and formats

Essential Questions

1. Why are desktop publishing skills essential?
2. How does the transfer of desktop publishing skills across platforms prepare users for the modern world today and in the future?
3. What are the differences and similarities between desktop publishing and word processing?

Stage 2: Assessment Evidence

Newsletter

Summative: Cooperative Group Work

Students will create a multi-paged newsletter featuring articles, media, headlines, etc.

Calendar

Formative: Technology Project

Students will create a 12-month family calendar using personal images featuring important dates.

Stage 3: Learning Plan

Learning Experiences

1. **Demonstrating:** Students can observe a teacher demonstration on a variety of desktop publishing concepts which include designing and formatting various projects such as a calendar and a newsletter.
2. **Drill and Practice:** Students create several projects such as a calendar and a newsletter.
3. **Peer Partner Learning:** Students work collaboratively on summative assessment projects.
4. **Interviewing:** Students will interview school personnel, family members, or other classmates in order to write a personality profile article for a newsletter project.
5. **Writing to Inform:** Students will write articles for a newsletter project.
6. **Brainstorming:** Students will collaborate in groups of two to design and develop a newsletter using a desktop publishing software template.
7. **Compare and Contrast:** Students will discuss and share the commonalities and differences between word processing and desktop publishing software.

Technology Integration

1. desktop publishing software
2. Internet browsers

Resources

1. Google Drawings
2. Adobe Photoshop
3. Adobe InDesign
4. Microsoft Publisher
5. Glogster--Interactive posters
6. Infographics

Resources

* Piktochart (<http://piktochart.com/>)

Grades 9-12 Technology  
Technology Applications and Innovation

Electronic Spreadsheets

Stage 1: Desired Results

Catholic Standards

DOC All Grades DOC: Catholic Standards

Life in Christ

Students will be able to

7. Assume personal responsibility (CCC 1914).

14. Demonstrate appropriate care of social communication and technology (CCC 2496).

Targeted Standards

ISTE All Grades ISTE: Educational Technology (2007) - OBSOLETE

ISTE Standards for Students

Creativity and Innovation Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

a. apply existing knowledge to generate new ideas, products, or processes.

c. use models and simulations to explore complex systems and issues.

d. identify trends and forecast possibilities.

Research and Information Fluency Students apply digital tools to gather, evaluate, and use information. Students:

b. locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.

c. evaluate and select information sources and digital tools based on the appropriateness to specific tasks.

d. process data and report results.

Technology Operations and Concepts Students demonstrate a sound understanding of technology concepts, systems and operations. Students:

a. understand and use technology systems.

b. select and use applications effectively and productively.

c. troubleshoot systems and applications.

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Catholic Identity

DOC All Grades Catholic Identity

Catholic Social Justice Teachings

Rights and Responsibilities

The Rights of Children

8. THE RIGHT TO LEARN RESPONSIBILITY for themselves and their actions.

9. THE RIGHT TO MAKE RESPONSIBLE DECISIONS founded on religious conviction.

Summary

In this unit students will learn uses, skills and software tools needed in the design and creation of electronic spreadsheets. Students will become proficient in the application of spreadsheet concepts and techniques used in the development of electronic spreadsheets. Formulas, functions, absolute and relative cell references are important concepts for students to apply when using electronic spreadsheets. Students will also learn to use charts and graphs to visually represent the data contained in a spreadsheet.

Unit Goals

1. Students will understand data collection and analyze data using spreadsheets.
2. Students will draft, edit, and critique electronic spreadsheet files according to the given standards of a specific project.
3. Students will evaluate and identify various electronic spreadsheet applications.
4. Students will select and adapt electronic spreadsheet skills to each application that best fits the needs of the user.
5. Students will create charts and graphs representing the data contained in the spreadsheet.

Big Ideas

1. spreadsheet application
2. available platforms
3. modern day skill
4. visual representation

Enduring Understandings

1. The use of an electronic spreadsheet is important for the collection, interpretation, and analysis of large quantities of data across disciplines.
2. Charts and graphs represent data visually.

Content

1. functions
2. spreadsheets
3. data collection
4. electronic spreadsheet file options
5. formulas
6. charts, graphs
7. absolute and relative cell references
8. arithmetic operators
9. order of operations
10. formatting
11. conditional formatting
12. sorting data

Skills

1. Create charts and graphs using existing data in appropriate spreadsheet software.
2. Interpret and classify data.
3. Analyze data and graphs to answer essential questions.
4. Distinguish between functions in spreadsheet software and identify appropriate uses for each.
5. Differentiate between absolute and relative cell references and when to use each.
6. Troubleshoot systems and applications.
7. Students will create charts and graphs representing the data contained in the spreadsheet.

Essential Questions

1. Why are electronic spreadsheet skills essential?
2. What is the future of data collection?
3. How does the transfer of data collection skills across platforms prepare users for the modern world?

Stage 2: Assessment Evidence

Creating Graphs and Graphing

Formative: Technology Project

Students will create graphs using data.

Survey Spreadsheet

Formative: Technology Project

Students create a variety of questions. They survey the class and place the corresponding data in a spreadsheet.

Triple Horn Stables

Formative: Class Work

Assignment will drill/practice entering data, functions, formulas, format, and aesthetics based on an existing data set.

Stage 3: Learning Plan

Learning Experiences

1. **Demonstrating:** Teacher will show students a variety of electronic spreadsheet concepts which include designing and formatting spreadsheets and calculating using formulas and functions and creating charts.
2. **Drill and Practice:** Students create several projects such as a student survey and various workbooks with charts.
3. **Interviewing:** Students will interview other classmates in order to survey them on a chosen subject for a survey project that features sorting and various formatting techniques.
4. **Brainstorming:** Students will design and develop their own original spreadsheets using project directions without the aid of a visual example.
5. **Research Projects:** Students will research a given subject to compile data and exhibit it in an original spreadsheet that they design.
6. **Problem Solving:** When given a certain situation, students will decide how to best express the data in a spreadsheet.
7. **Compare and Contrast:** Students will learn the commonalities and differences between formulas and functions and absolute and relative references. They will then apply these concepts to all spreadsheets that they create.

Technology Integration

1. spreadsheet software
2. online data resources
3. online graphing tools
4. Internet browsers

Resources

1. Microsoft Excel
2. Numbers

Resources

* Google Sheets (<https://www.google.com/sheets/about/>)

Grades 9-12 Technology  
Technology Applications and Innovation

Digital Research

Stage 1: Desired Results

Catholic Standards

DOC All Grades DOC: Catholic Standards

Life in Christ

Students will be able to

1. Understand that we shape our own life as a result of free will (CCC 1731).

2. Know that we must assume responsibility for the acts we perform (CCC 1781).

7. Assume personal responsibility (CCC 1914).

10. Follow God's commandments (CCC 2068).

14. Demonstrate appropriate care of social communication and technology (CCC 2496).

Targeted Standards

ISTE All Grades ISTE: Educational Technology (2007) - OBSOLETE

ISTE Standards for Students

Communication and Collaboration Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:

b. communicate information and ideas effectively to multiple audiences using a variety of media and formats

c. develop cultural understanding and global awareness by engaging with learners of other cultures.

Research and Information Fluency Students apply digital tools to gather, evaluate, and use information. Students:

b. locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.

c. evaluate and select information sources and digital tools based on the appropriateness to specific tasks.

d. process data and report results.

Critical Thinking, Problem-Solving & Decision-Making Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources. Students:

b. plan and manage activities to develop a solution or complete a project.

Digital Citizenship Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:

a. advocate and practice safe, legal, and responsible use of information and technology.

d. exhibit leadership for digital citizenship.

Technology Operations and Concepts Students demonstrate a sound understanding of technology concepts, systems and operations. Students:

a. understand and use technology systems.

b. select and use applications effectively and productively.

d. transfer current knowledge to learning of new technologies.

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for Technology (ICT) Literate Students

The following experiences with technology and digital resources are examples of learning activities in which students might engage during Grades 912 (ages 1418):

8. Model legal and ethical behaviors when using information and technology by properly selecting, acquiring, and citing resources. (3, 5)

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OH Grades 9-10 OH: Literacy in History/Social Studies, Science, & Technical Subjects 6-12

Writing

Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

WHST.9-10.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.

WHST.9-10.8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.

Range of Writing 10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

WHST.9-10.10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Capacities of the Literate Individual

Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language

They demonstrate independence.

Catholic Identity

DOC All Grades Catholic Identity

Catholic Social Justice Teachings

Rights and Responsibilities

The Rights of Children

4. THE RIGHT TO WORK ACTIVELY TOWARD THEIR OWN EMPOWERMENT through the development of their gifts and talents.

5. THE RIGHT TO A LEARNING ENVIRONMENT THAT VALUES COOPERATION and challenges its members to critical and reflective thinking in their search for truth.

7. THE RIGHT TO LEARN THE SKILL OF SELF PROTECTION by identifying safe and unsafe situations.

8. THE RIGHT TO LEARN RESPONSIBILITY for themselves and their actions.

9. THE RIGHT TO MAKE RESPONSIBLE DECISIONS founded on religious conviction.

Summary

Technology is the most prevalent source of information in the modern world. Due to the massive accessibility of information, it is even more important for students to be aware and possess the skills that allow them to be effective researchers. This unit uncovers the research cycle addressing digital citizenship and digital literacy focused on preparing our students to be researchers. Ideally, this unit may be connected with another content area's research project as a cross-curricular unit plan. In effect, the students will be prepared for the digital approach to the project while the content will be covered in the other course.

Unit Goals

1. Students will understand the importance of a research plan.
2. Students will understand the importance of evaluating sources.
3. Students will understand the importance of interpreting data.
4. Students will understand the importance of academic integrity.

Big Ideas

1. research cycle
2. evaluation of sources
3. interpretation of information
4. academic integrity

Enduring Understandings

Since there is unlimited access to information using the Internet, it is important to evaluate, organize, and build upon the collected information to maximize research goals.

Content

1. research skills
2. keyword search guidelines
3. electronic sources
4. Internet tools
5. browsers
6. search engines

Skills

1. Choose appropriate keywords to increase search effectiveness.
2. Evaluate information sources based on quality and accuracy of information.
3. Apply research to corresponding tasks.
4. Compare and contrast sources of information online.
5. Understand the differences in citation methods.
6. Show the steps in the research process.
7. Use technology, including the Internet, to produce, publish, and update individual or shared writing products.
8. Develop a research plan, select a research tool, and evaluate those tools in order to acquire appropriate information.
9. Consider a source’s point of view, intended audience and authority.
10. Evaluate and organize relevant information from a variety of sources, verifying the accuracy and usefulness of gathered information.
11. List and analyze key terms specific to the research processes.
12. Narrow and deduce the focus of a search as the user evaluates the search results during the research process.
13. Construct digital notes that help organize and classify research findings.

Essential Questions

1. How does availability of research options influence what resources are chosen?
2. How will accessibility to a vast amount of resources change the way we apply information?
3. What makes a source of data valid?

Stage 2: Assessment Evidence

Research Review

Formative: Self Assessment

Students will address an existing assignment and analyze the research cycle as it related to that assignment. They can then amend and examine the research obtained for the assignment and come up with an improved plan.

Research Cycle Examination

Summative: Test

Students will be assessed on the stages of the research cycle and evaluating sources.

Stage 3: Learning Plan

Learning Experiences

1. **Cross-Curricular Integration:** Students can connect the objectives and skills learned and apply them directly to a research assignment given in another content area. In this unit content directly related to the other subject area is not addressed; rather the content related to effective research skills is addressed and modified to meet the needs of the students' projects.
2. **K-W-L:** The students can perform a K-W-L regarding their knowledge of the research cycle. The students can refer to this chart toward the culmination of the unit as a study tool in order to prepare for the summative animation.
3. **Interactive Game:** Kahoot! is an online game-based learning tool. In this activity, students can use any digital tool to find appropriate data using an online database. The interactive game like Kahoot! gives the student a different approach to "review" or guided practice for research skills.
4. **Graphic Organizers:** Graphically Speaking is an activity where students learn how to graphically organize their notes taken during the research process. This graphic organizer will map out the research process. Teachers can go about this with a physical graphic organizer or a digital organizer. Easybib (the school subscription) offers a great note taking tool that allows students to make notes using a data source once, then locate that source's information using a drop down menu if the student finds additional information from that source.
5. **Mini Lessons/ Research Step-by-Step:**  The student is guided through the research process while the teacher provides many small learning opportunities. There are unlimited resources that provide videos and guided practice activities that address the various points of the research process. While many of these sources are free to the public, some, such as Imagine Easy's "Scholar," require a subscription fee.

Resources

* Kahoot! Credible Sources (<https://play.kahoot.it/#/k/26011a0e-aaf7-4fd9-bb8f-d703b66f6667>)

Technology Integration

1. digital research
2. online databases
3. outlining
4. web-based notecards
5. interactive games

Resources

* Google Scholar (<https://scholar.google.com/>)

Grades 9-12 Technology  
Technology Applications and Innovation

Introduction to Coding

Stage 1: Desired Results

Catholic Standards

DOC All Grades DOC: Catholic Standards

Life in Christ

Students will be able to

2. Know that we must assume responsibility for the acts we perform (CCC 1781).

14. Demonstrate appropriate care of social communication and technology (CCC 2496).

Targeted Standards

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ISTE Standards for Students

Creativity and Innovation Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

c. use models and simulations to explore complex systems and issues.

Research and Information Fluency Students apply digital tools to gather, evaluate, and use information. Students:

a. plan strategies to guide inquiry.

Critical Thinking, Problem-Solving & Decision-Making Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources. Students:

a. identify and define authentic problems and significant questions for investigation.

Technology Operations and Concepts Students demonstrate a sound understanding of technology concepts, systems and operations. Students:

a. understand and use technology systems.

b. select and use applications effectively and productively.

c. troubleshoot systems and applications.

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for Technology (ICT) Literate Students

The following experiences with technology and digital resources are examples of learning activities in which students might engage during Grades 912 (ages 1418):

3. Select digital tools or resources to use for a real-world task and justify the selection based on their efficiency and effectiveness. (3, 6)

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OH Grades 9-10 OH: Literacy in History/Social Studies, Science, & Technical Subjects 6-12

Writing

Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

WHST.9-10.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

Draw evidence from literary or informational texts to support analysis, reflection, and research.

WHST.9-10.9. Draw evidence from informational texts to support analysis, reflection, and research.

Capacities of the Literate Individual

Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language

They demonstrate independence.

Catholic Identity

DOC All Grades Catholic Identity

Catholic Social Justice Teachings

Rights and Responsibilities

The Rights of Children

8. THE RIGHT TO LEARN RESPONSIBILITY for themselves and their actions.

9. THE RIGHT TO MAKE RESPONSIBLE DECISIONS founded on religious conviction.

Summary

This unit provides an introductory approach to basic programming or coding. Coding is a term used to describe programming without a specific purpose in mind. Students will explore the world of coding, comparing it to learning a language, and will have an opportunity to play with the coding language. This unit serves as an opportunity to expose students to the world of Computer Science, especially noting that careers in programming are in high demand today and are expected to continue to grow in the future.

Unit Goals

1. Students will understand the purpose of coding.
2. Students will understand how coding relates to specific job opportunities.

Big Ideas

1. introduction to coding
2. motivation
3. exposure to basic programming

Enduring Understandings

1. Technology is everywhere, and users need to be aware of how code makes it work.
2. Problem solving and thinking logically are important skills to develop.

Content

1. coding
2. programming languages
3. Html
4. commands
5. debugging

Skills

1. Compare and contrast the types of code.
2. Show applications of various types of programming languages.
3. Modify basic code to change parts of a website.
4. Demonstrate a proficiency in a chosen language.
5. Interpret errors in a given set of code.
6. Calculate the outcome of events.
7. Interpret coding as a language.
8. Define coding terminology.
9. Manipulate objects and websites using coding.

Essential Questions

1. Why has coding become essential knowledge?
2. How will knowledge of code impact my future?

Stage 2: Assessment Evidence

Complete a Coding Tutorial

Formative: Class Work

Students can complete an online coding tutorial from an approved provider to serve as an introduction/practice in coding.

Fix the Code

Summative: Technology Project

Students can identify the errors in a set of provided code to indicate why the particular site is not functioning properly.

Stage 3: Learning Plan

Learning Experiences

1. **Anticipatory Set:** Trial by Fire is an activity where students are presented with Hour of Code or a similar website where they are given the opportunity to code without any instruction. The teacher takes careful note of the student's reactions using video or audio recording, notation, or student interviews.
2. **Guided Practice:** Students work in small groups to get through various coding practice sets such as Scratch, Snap, or another version of a coding tutorial practice unit. Students can help one another or brainstorm how to be successful at the outcome of the activity.
3. **Manipulation:** Students begin to explore coding using a hands-on approach by building a small object using Legos and mapping the movements they want to perform in the Graphic Organizer activity or the Independent Work activities.
4. **Graphic Organizers/ Hands-on Activity:** Visual representation of the process of coding allows the students to plan out their movements in the manipulation activity.
5. **Vocabulary:** Using the Frayer Model, students learn coding specific terminology which further enhances their understanding of the terms by explaining what the term is and is not. Additionally, the students will compare the action of programming versus coding using a Venn Diagram.
6. **Independent Work:** Students work at their own pace exploring, researching coding terms, and utilizing other coding sources.
7. **Reflection:** Students revisit their notes from the activity "Trial by Fire" reflecting on their initial reaction to coding.
8. **Modification (Advanced):** Students take the knowledge they acquired during the unit and use code in their own ePortfolios (final unit of the course). A teacher may or may not want to offer this as an option prior to the ePortfolio unit.

Technology Integration

1. Internet browsers
2. online coding software
3. text editing software

Resources

* UC Berkely's Beauty and Joy of Commuting Lesson 1: Introduction to Snap (<http://bjc.eecs.berkeley.edu/bjc-r/topic/topic.html?topic=berkeley_bjc/intro_new/1-introduction.topic>)