

C3 for Middle School/Junior High

Introduction & Background

This year I've taught technology classes to several hundred students in grades 5-8 at Holy Trinity Episcopal School. I've been interested to observe the knowledge gaps and misconceptions that many students bring to the computer lab.

I have been fortunate enough to have supportive administrators who have given me free reign in developing the technology curriculum. It's been fun and rewarding to watch these youngsters wield skills that I didn't acquire until rather recently!

The Need

Like everything from moral values to good grammar, the concepts of Cyber Safety, Cyber Ethics, and Cyber Security (C3) should be taught intentionally. It's not safe to assume that they will be absorbed by osmosis. The Internet is an increasingly omnipresent tool, and educators have a responsibility to train kids to use it safely and responsibly.

During the course of this semester, I have been impressed by the amount of resource material available. However, I personally would find a set of cogent lessons most useful—directed at the specific age group I teach, addressing the needs of the various learning styles, and following a sound instructional model. As far as I am aware, such a thing is not presently available to the middle school teacher.

About the Unit

In the context of my contract to teach Microsoft Office applications this year, I have developed a unit that presents the concepts of C3. The examples included are, for the most part, actual student work.

I have listed the technical skills as well as the C3 objectives involved in each lesson. These lessons are designed to be taught in a 45-50-minute class period. Some students usually require a little more time to finish, and should be allowed to complete their work outside of class.

	Objectives: The student will...	Application(s) & Technical Skills	Materials Needed
Lesson 1	<ul style="list-style-type: none"> • Understand the meaning of the prefix “cyber-” • Identify the general concepts associated with C3 • Create a word web/graphic organizer illustrating C3 	Microsoft Word OR Kidspiration, NovaMind, etc. <ul style="list-style-type: none"> • Text boxes • Shapes 	<ul style="list-style-type: none"> • Index cards
Lesson 2	<ul style="list-style-type: none"> • Review two CyberSecurity sites • Create a CyberSecurity poster 	Microsoft Word or Publisher <ul style="list-style-type: none"> • Graphics, clipart, word art • Format page 	<ul style="list-style-type: none"> • Marble, butter knife, garden fork, masking tape • Car or house keys
Lesson 3	<ul style="list-style-type: none"> • Understand what viruses are and how to protect against them • Create a PowerPoint presentation about viruses 	Microsoft PowerPoint <ul style="list-style-type: none"> • Create presentation • Add slides • Modify slide master 	<ul style="list-style-type: none"> • Paper or Styrofoam cups, M&Ms, small inedible item
Lesson 3b (for 8 th grade)	<ul style="list-style-type: none"> • Research popular antivirus software • Compare pricing & features • Make and justify a recommendation for purchase 	Microsoft Word or Excel <ul style="list-style-type: none"> • Manipulate and format table cells 	<ul style="list-style-type: none"> • 4” cardboard circles • Markers or crayons
Lesson 4	<ul style="list-style-type: none"> • Understand what is meant by CyberEthics & Netiquette • Create a tri-fold brochure listing do’s & don’ts of Netiquette 	Microsoft Word <ul style="list-style-type: none"> • Columns and column breaks • Clips online 	<ul style="list-style-type: none"> • LCD/screen or white board • Dice
Lesson 5	<ul style="list-style-type: none"> • Explore ways to be safe online • Create a skit illustrating principles of CyberSafety 	N/A	<ul style="list-style-type: none"> • White board or flip chart
Lesson 6	<ul style="list-style-type: none"> • Review the concepts of C3 • Participate in creating a class story • Create individualized edition of story 	Microsoft Word OR KidPix, Storybook Weaver	<ul style="list-style-type: none"> • LCD/screen or white board

Lesson 1

Objectives: The student will. . .

- Understand the meaning of the prefix “cyber-”
- Identify the general concepts associated with C3: CyberSecurity, CyberSafety, and CyberEthics
- Create a word web/graphic organizer illustrating the concepts of C3

Secondary Objectives (if teaching MS Office applications):

- Use text boxes to place text
- Modify text box characteristics
- Use drawing shapes and modify their characteristics

Materials Needed:

- Index cards
- Wordprocessor or graphic organizer software such as Kidspiration
<http://www.inspiration.com/index.cfm> or NovaMind <http://www.nova-mind.com/>

Introduction/Readiness: Prefix game—Ahead of time, write each prefix on an index card, and its definition/association on another. (Examples are provided for convenience.)

Prefix	Has to do with. . .	Examples
Geo-	The earth	Geothermal Geological Geodesic
Cryo-	Freezing	Cryogen (freezing agent) Cryonics
Anti-	Being against something	Anti-war Antioxidant Antihistamine
Post-	Being after something	Post-partum (after pregnancy) Post-operative Postpone (put off until afterward)
Ante-	Being before something	Ante-meridian (am) Antebellum (pre-Civil War)
Metro-	Cities	Metropolitan Metropolis
Mega-	Extreme size (or million)	Megalopolis (huge city) Megalomaniac Megabyte

Mix the cards up and distribute them to class members. Call on a student who doesn't have a card, if your group is large. Ask that student to choose a person with a prefix card, and lead them around the room until they find the matching definition. Repeat the process, calling on different students, until all prefixes are matched up.

SAY: Today we're going to spend time on some concepts that are connected by another prefix, cyber-. Does anyone know what "cyber-" refers to? "Cyber-" is used to refer to things that have to do with the internet.

Content:

<h1>C3</h1>		
CyberSafety	CyberSecurity	CyberEthics
<ul style="list-style-type: none"> • Know what information NOT to share when chatting • Protect your personal information • Use safe websites 	<ul style="list-style-type: none"> • Protect your computer from attacks by using a firewall • Protect your computer from viruses with anti-virus software • Use strong passwords 	<ul style="list-style-type: none"> • Know the rules of courtesy online • Don't abuse e-mail • Respect copyright laws • Remember the human

Exploration: Direct students to place "C3" in the middle of their web, surrounded by CyberSafety, CyberSecurity, and CyberEthics. They may make more branches with the characteristics of each, or simply list them nearby. (Samples attached.)

Sharing: Print out student work and display it on a wall or bulletin board.

Closing: Using a computer is a lot like using a car.

When I get into the car, I fasten my seat belt right away. Which C3 term do you think is most like a seat belt? Why? (*CyberSafety—because it protects me from people who would hurt or exploit me.*)

When I want to turn left, I yield to oncoming traffic. I let them pass, and then I turn when no one is coming. This is part of being courteous and obeying the rules of the road. What's the C3 term that is similar to this situation? Why? (*CyberEthics—it refers to being courteous and considerate of other people; to behaving appropriately online.*)

When I park the car at the mall, I lock the doors. I may even set a car alarm, or use a Club. Of the C3 terms we learned today, which is most like locking the car doors? Why? (*CyberSecurity—because it keeps malicious people and programs from getting into my computer or destroying the things I've placed there.*)

Lesson 2

Objectives: The student will. . .

- Review two websites focused on CyberSecurity
- Create a poster spotlighting one of the concepts presented

Secondary Objectives (if teaching MS Office applications):

- Format large paper size, landscape or portrait style
- Use graphics, clipart, word art

Materials Needed:

- A marble, table, butter knife, garden fork (hand-held type with large tines), book, masking tape
- Individual workstations (with Internet access)
- A set of car or house keys

Introduction/Readiness: Have you ever played the game “Red Rover,” or played with a paper football? We’re going to play a game that’s kind of like that. *(Ask for two volunteers; Student A will mark a goal with tape on one side of the table—if using a large table, play crosswise. Student B tries to roll or bounce the marble through the goal marks, while Student A defends—first with the butter knife, then with the garden fork, then with the book. Keep arms/hands off the table and just use the tool to defend.)*

Which tool worked best for blocking the marble? Why? *(The book worked best, because it’s solid. The garden fork has big holes in it, and the butter knife is rather small; even if you put it sideways, the marble can bounce over it.)*

Content: Today we’re going to explore different ways to block bad people and programs from getting into your computer. Scan the two sites below—you don’t have to read every word, just get a general idea.

<http://www.cert.org/homeusers/HomeComputerSecurity/>

<http://www.staysafeonline.info/home-tips.html>

Exploration: Using a wordprocessor or layout program, create a poster spotlighting **one** of the concepts presented, such as using strong passwords (samples attached).

Sharing: Post student work on a wall, bulletin board, or website. Ask an administrator to award prizes to several of the best posters—or have students display and explain their posters to a class of younger children.

Closing: Ask for ten volunteers. Have them stand in a line. Hand the keys to the first person and explain that you will read a series of statements. If the statement is true, then the person can keep the keys and hand them to the next in line. If the statement is false, they toss the keys to someone else in the class, who replaces them in line while they go sit down.

1. If my computer is ever connected to the internet, even just to get e-mail, I need a virus protection program. (TRUE)
2. A password like "aardvark" is good because it is hard to guess. (FALSE)
3. Many programs need updates or patches periodically to keep them secure. (TRUE)
4. It's good to keep backup copies of important files in a physically separate place, not just a separate folder on my computer. (TRUE)
5. I can't get a virus by clicking on a link in an e-mail. (FALSE)
6. If I have a good antivirus program, I don't need a firewall. (FALSE)
7. When I'm not using my computer, I should turn it off or disconnect it from the internet. (TRUE)
8. If I get an e-mail attachment I wasn't expecting, I should open it to make sure it's okay. (FALSE)
9. Sharing files over the internet is completely safe. (FALSE)
10. It's important for everyone in my family to know what to do if my computer gets attacked infected with a virus. (TRUE)

Lesson 3

Objectives: The student will. . .

- Understand what computer viruses are, and how to protect a computer from them
- Create a PowerPoint presentation sharing what they've learned

Secondary Objectives (if teaching MS Office applications):

- Create a PowerPoint presentation
- Modify the slide master (background, fonts, colors)
- Insert new slides
- Save and view slide show

Materials Needed:

- Four paper or Styrofoam cups; several M&Ms or other colored candy; a piece of dry dog food (or other unappetizing item)
- Individual workstations

Introduction/Readiness: Play a “shell” game. Place an M&M under one cup. Place the dog food under a second cup. The other two cups will be empty. Shuffle them on a table and invite a student to choose one. If they choose a cup with the candy, the whole class claps and cheers (and they may eat it). If they choose an empty cup, they can try again. If they choose a cup with the dog food, everyone boos and hisses. Let several students try it.

SAY: This game is like what happens when data comes into your computer. The data might be bad or good—your computer doesn't always know the difference. Today we're going to talk about some of the bad kinds of data and how to avoid them or protect yourself.

Content: Make the following information available to students (preferably in a shared document that they can access).

Viruses, Worms, and Trojans

1. What are they?
 - a. Malicious programs that invade your computer
2. What do they do?
 - a. They may destroy your data, mess up your operating system, or use your computer to carry out attacks on other computers.
3. How can I protect myself against them?
 - a. Use antivirus software such as Norton, McAfee, or Vexira; keep it updated
 - b. Never open attachments on e-mail you weren't expecting, or from people you don't know
 - c. Don't click on hyperlinks in e-mail from people you don't know
 - d. Protect your computer with a firewall

Exploration: Create a PowerPoint presentation and slide master. Copy/paste or type in the text from the above outline to make a short slide presentation. (Samples attached.)

Sharing/Closing: Invite several students to share their presentations with the class.

Lesson 3b (8th grade)

Objectives: The student will. . .

- Research popular antivirus software
- Compare pricing and features
- Make (and justify) a recommendation to a friend for personal purchase

Secondary Objectives (if teaching MS Office applications):

- Insert a table (or use Excel spreadsheet)
- Manipulate and format text in table cells

Materials Needed:

- Individual workstations
- Cardboard circles (4-6")
- Markers or crayons

Introduction/Readiness: What are some of the decisions you've made already today?
(*Whether to hit SNOOZE on the alarm clock, which clothes or shoes to wear, what to eat for breakfast, etc.*)

On what basis did you make those decisions? (*What I feel like, decide what's best, etc.*)

Sometimes people make decisions by flipping a coin, or playing paper-rock-scissors.

(See <http://www.2street.com/rock-paper-scissors/> for a virtual version, or <http://rinkworks.com/games/rps.shtml> for a general description of the game)

What are some decisions that you would definitely not want to make by flipping a coin?
(*Where to go to school, what car to buy, whom to marry, etc.*)

Many people make decisions using something called a decision matrix, or by listing the pros (positive things) and cons (negative things) about each possibility. That way they can see everything on paper and decide what's most important.

Content: Today we're going to imagine that your best friend has just purchased a computer, and needs to get virus protection. Since you're a good friend, your job is to compare three of the major antivirus products on the market, and tell your friend which one you think is best—and why.

Exploration: Visit the following sites and review each antivirus product, then create a table or spreadsheet that compares them. If you would recommend a product that's not on this list, include it as well. (May be completed in by working in groups; each person researches a different product.)

For each one, answer the following questions:

1. What is the cost of one year's subscription (for a single user license)?
2. How often are updates available?
3. What are the system requirements?
4. What are the product's special features?

5. Is the product available for download? Does the download price differ from the box price?
6. How long has this company been in the security business?

McAfee Virus Scan:

<http://us.mcafee.com/root/package.asp?pkgid=100&cid=9901>

Norton Antivirus:

http://www.symantec.com/nav/nav_9xnt/

http://www.symantec.com/nav/nav_9xnt/features.html

Vexira Antivirus:

http://www.centralcommand.com/home_user.html

http://www.centralcommand.com/buy_workstation.html

Sharing: If time allows, ask groups to present their work to the class, or plan a future time when this will be possible.

Closing: Have each student make a “Good Decisions” coin from a cardboard disk and decorate it with crayons or markers. Write on one side, “Heads—I win! Tails, you lose!” On the other side, write, “Don’t flip out—take time to make good decisions.”

Lesson 4

Objectives: The student will. . .

- Understand what is meant by CyberEthics and Netiquette
- Create a tri-fold brochure listing do's and don'ts for appropriate behavior online

Secondary Objectives (if teaching MS Office applications):

- Use columns and column breaks
- Set up a tri-fold layout (with margins/gutters appropriately sized)
- Use clips online

Materials Needed:

- Individual workstations
- LCD/screen or flip chart, white board, etc.
- Dice

Introduction/Readiness: Play a game with dice. Ask a student volunteer to roll the dice, and you'll tell them whether they win or lose. (Make up a rule—such as only doubles win—but don't tell the class.) After several rolls, ask the class if they've figured out the rule of the game. If they haven't, tell them, then make up a different rule (such as everyone who rolls the dice with their left hand wins) and try it again.

SAY: Our game is all about figuring out the rules. "Etiquette" refers to the rules governing the proper way to act in a given situation. What's good etiquette at home may not be appropriate in church or school. Someone has coined the term "Netiquette" to refer to Internet etiquette. This is an important concept for CyberEthics, which includes being courteous online, as well as following the rules and laws that apply.

Go to the following URL and complete the "Netiquette Quiz."
<http://www.albion.com/netiquette/netiquiz.html> After you finish, we'll discuss the ideas you read about and compile a list of ways to be polite and appropriate online. It's okay to guess at the answers if you're not sure.

Content: As a class, make a list of the do's and don'ts of Netiquette. If possible, type them into a document that will be made available for students on your network so that they don't have to waste time retyping.

Exploration: Using the list compiled by the class, create a tri-fold brochure introducing the concept of "Netiquette" (samples attached).

Sharing: Post student work on a wall or bulletin board. If possible, have them share their work with younger students—or even the faculty.

Closing: Ask the class to give you thumbs up for good etiquette, and thumbs down for poor etiquette in each of the following situations. Discuss the reasons.

- Tina sends an e-mail to her friend telling about a boy in her class that she likes. Her friend forwards the message to the boy.

- Mikhail always types his messages in lower case, because he doesn't like having to use the shift key. (Bad writing, but okay Netiquette!)
- Jamie copies three paragraphs from a website for his report. He doesn't think that the teacher will figure out where they came from.
- Maria writes an angry e-mail message to her sister, but decides not to send it, since it might make her feel bad.

Lesson 5

Objectives: The student will. . .

- Explore ways to be safe online
- Create and share a skit illustrating principles of Cyber Safety

Materials Needed:

- Web-connected workstations

Introduction/Readiness: Play “Two Truths and a Lie.” Tell the students that you’ll give them three statements about your personal life/experience; two will be true, and one false. (Examples: 1) I was born in Arizona. 2) One of my front teeth is fake. 3) I have two brothers.) Ask the class to guess which is the lie. If time permits, allow several students to repeat the process in the same manner.

SAY: How can you tell if someone is telling you a lie? (*Their voice tone may change, they act nervous, etc.*) Would those things help you to tell if someone is lying to you on the phone? What about in chat or e-mail?

Today we’re focusing on Cyber Safety. One of its important principles is recognizing that it’s hard to tell what’s true online.

Content: Explore one or more of the following web experiences. (15-20 min)

- <http://www.smithtown.k12.ny.us/safety/>
- <http://www.chatdanger.com/>
- http://www.media-awareness.ca/english/special_initiatives/games/joecool_joefool/jo_cool_kids.cfm

Exploration: Divide the class into groups of three or four people. Brainstorm a list of Cyber Safety categories, such as the following, and assign a topic/category to each group.

- E-mail
- Chat
- Personal information/profiles
- Instant Messaging

Ask each group to create and practice a short skit or dialog illustrating the principles of Cyber Safety that they’ve learned.

Sharing: Make sure to allow time for all groups to present their productions to the class. Consider presenting your skits to another class, or for a school assembly.

Closing: On a chalk board or white board, write the word Cyber Safety (vertically). Make up an acrostic—write a related word or phrase that starts with each consecutive letter. For example:

Careful who you chat with
You can't believe everyone
Be selective about sharing information
E-mail attachments can be dangerous
Remember nothing's really private online
Some people want to hurt or exploit kids
Always play it safe
Friends are people that you know face-to-face
Everybody wants your information, but you don't have to give it
Tell an adult if someone or something makes you uncomfortable
You can be safe online!

Lesson 6

Objectives: The student will. . .

- Review the concepts of C3
- Participate in the creation of a class story/drama illustrating those concepts
- Create an individualized presentation of the story using a wordprocessor, presentation or story-writing software (such as Kidpix <http://www.sundaysoftware.com/kidpix.htm> or Storybook Weaver <http://www.swexpress.com/>)

Secondary Objectives (if teaching MS Office applications):

- Creatively use graphics and formatting in Word
- Create graphics in Paint and insert them in a Word document

Materials Needed:

- LCD/screen or flipchart, white board, chalk board
- Individual workstations

Introduction/Readiness: How many of you know the story of “A Christmas Carol”? *(Ask a student to summarize briefly, or tell them: In the story, the main character has a problem. Ebenezer Scrooge is a rich old miser who doesn’t care about anybody else. The night before Christmas, he is visited by three ghosts—Christmas Past, Christmas Present, and Christmas Future. Each one shows him things that help him understand why it’s important for him to change his ways. The next morning, he is happy to find out that he’s still alive and can change the things in the future.)*

Content: We’re going to make up a story like that for C3. Our main character will be visited not by Christmas Past and Christmas Present and Christmas Future, but by *CyberSafety, CyberSecurity, and CyberEthics*. As we make up our story, I will type/write it. While we’re brainstorming and creating our story, you may search for related clipart, or start creating your own (using Paint, etc.). When we’ve finished making up the story, your assignment is to create your own custom version. You’ll use the text that we wrote, but create a version with a look that you design.

Exploration: Brainstorm QUICKLY with the class the following details:

- Who is our main character? (for best application, make it a kid their age, someone they can relate to)
- What is their problem? (they’ve just got a new computer, and don’t know how to take care of it)
- How do they meet the C3 characters? Are they ghosts, friends, animals, superheroes? Do they show up in person, in a dream, on the screen or in a game?
- What does each character emphasize?

If possible, type the story into a wordprocessor as it is composed. If the students are unable to see the text as you type it, read it back to them every few minutes. When finished, give them a copy of the file to cut/paste, or make it available on your network.

If using a white board or flipchart instead, keep in mind that your students will have to retype the text, and don't make the story too long!

Spend no more than 15-20 minutes on this process, to allow them time to get creative with their original versions.

Sharing: Post student work on a bulletin board or website. Allow them to print a copy to take home.

Closing: Remind the class what you've learned. Thank students for their participation and encourage them to share their work with their parents.