COMMUNICATION TECHNOLOGY

COURSE CURRICULUM

OTED 785
DR. Ritz
Written by: Maurice Frazier
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4027

Curriculum Foundations

Definition of Program area:

Communication is known as the sharing of information, thoughts and ideas. Communication Technology is the use of knowledge, tools and skills to facilitate communication. The goal is to make communication easier, more economical, and more efficient.

Communication Technology covers the five major communications systems used to facilitate the sharing of information, thoughts and ideas. These systems include graphic production, video systems, optic systems, technical design, and data communications. This curriculum is designed so that each of these systems is covered from their early beginnings, scientific significance, equipment operation, and examples of various applications.

Rationale:

With the constant changes in the various technologies today, communication is becoming more and more technologically advanced. People are communicating with each other in ways that would not have been possible 10 to 15 years ago. The Internet is one of the largest and most widely used tools to connect the world and revolutionize communication. People are able to correspond with individuals, machines and even animals in a matter of seconds via the Internet.

It is hard to imagine what is still possible and what devices are yet to be invented in the area of communication. We as a global society can definitely expect to see many improvements in existing devices as well as many new and exciting innovations. Devices such as Internet compatible cellular phones, high definition television, and virtual classrooms will be at the forefront of ort new technological society. As all kinds of information become easier to attain by more people, our world will grow smaller and more complex. The constant advances in communication technology will improve our lives and change our world forever.

It is important to study each of these new technologies because they are examples of the devices that the learners will be using when encountering real world applications. These new technologies are constantly taking the place of older innovations. It is necessary to find out about these

new advancements and the manner in which they are being implemented. This will help the learner in the job setting as well as in every day life.

Content Source:

The common body of knowledge is communication technology. The subject of communication technology is made up of generally five branches. These branches of include: optics, technical design, data communication, graphic production, and audio/video production. The common body of knowledge covers the technical aspects of these five branches.

Content Structure: The following is an illustration outlining the content for Communication Technology

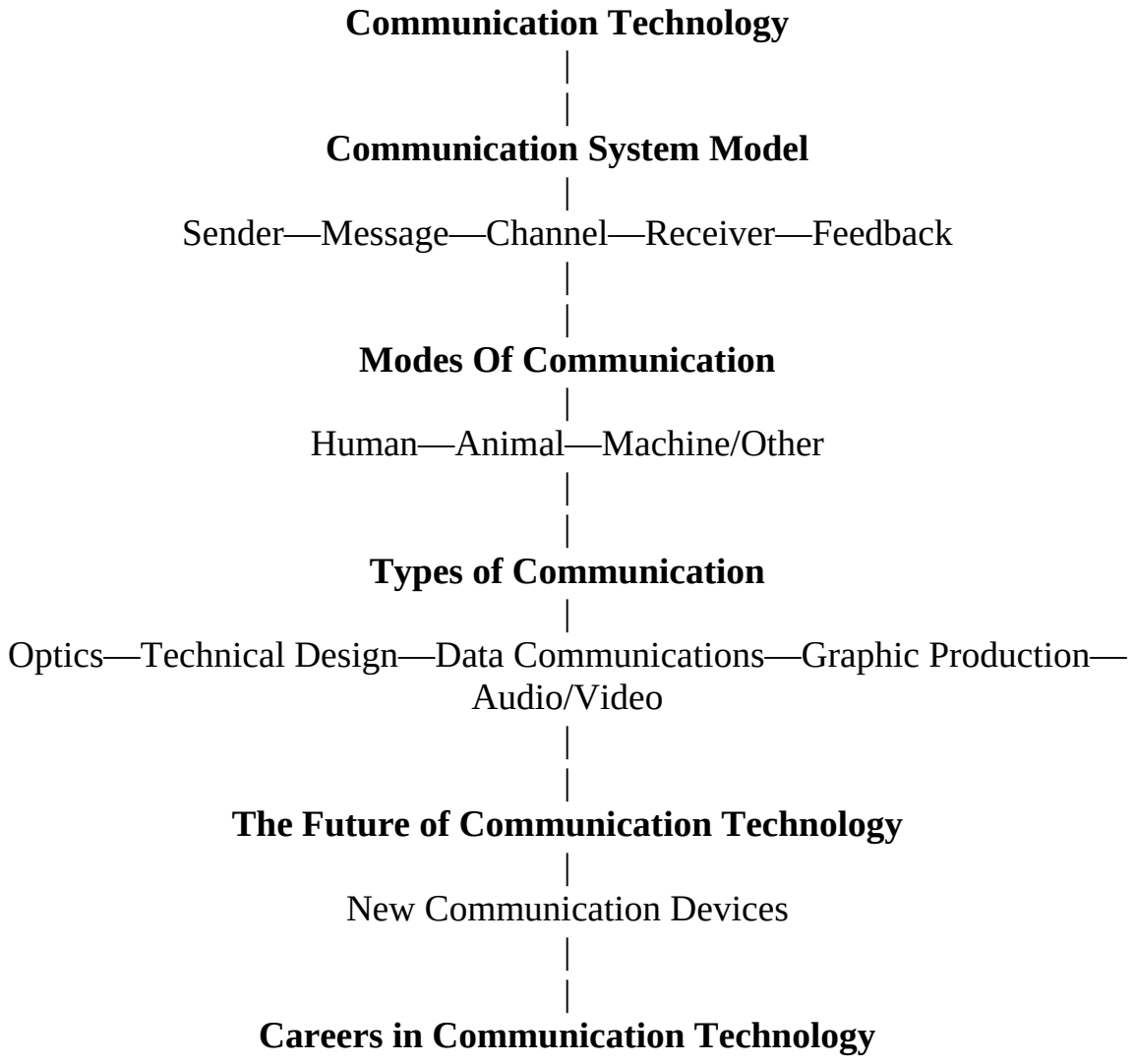

Figure 1.

Program Aim:

The aim of this course is to introduce students to the major areas that cover the many communications systems. Students will learn about the many different kinds of communication technology equipment and their applications. Students will gain an awareness of the career fields that deal with communication technology. This course will also give the students a sense of the many ways that the new kinds of communication technology impacts society. Students will have a newly acquired technical literacy in the areas covered by communication technology because of skills that will be mastered through instruction.

Program Goals:

1. Differentiate between the basic systems of Communication Technology.
2. Identify the many data communication systems.
3. Display mastery of technical design systems to include equipment, drawing principles, and CAD Systems.
4. Explain the components of basic optic systems that deal with light, lenses, photography, and film processing.
5. Explain the processes of graphic production that includes graphic message design and message transfer.
6. Explain audio and video systems that include electronic systems, and audio and video applications.
7. Critique the -many careers and applications in communication technology.
8. Explain the impacts of various communication technologies on our society and our every day lives.

Scope and Sequence:

Unit 1: Introduction to Communication Technology (2 weeks)

1. Understanding Communication Systems
2. The Changing Nature of Communication Technology
3. The Impact of Communication Technology

Unit 2: Data Communication Systems (3 weeks)

1. Introduction to Computers
2. Computer Hardware
3. Computer Applications

Unit 3: Technical Design Systems (3 weeks)

1. Principles of Technical Design
2. Technical Design Processes
3. Computer-Aided Design

Unit 4: Optic Systems (4 weeks)

1. Principles of Optic Systems
2. Photography equipment and Methods
3. Applications of Photography

Unit 5: Graphic Production Systems (3 weeks)

1. Message Design, Composition, and Assembly
2. Film Conversion and Assembly
3. Message Transfer and Product Conversion

Unit 6: Audio and Video Systems (3 weeks)

1. Principles of Audio and Video Communication
2. Audio and Video Equipment
3. Applications of Audio and Video Systems

Communication Technology Today
Secondary Education

Introduction to Communication Technology

(2 Weeks)

GOALS:

1. Explain the various communication systems and models.
2. Describe the changing nature of Communication Technology.
3. Explore the various impacts of Communication Technology on our current society.

RATIONALE FOR UNIT:

In our current society communication is rapidly becoming faster and more complex. Communication can be defined as the sharing of information, thoughts, and ideas. With the many new technologies in the communication field, people are finding it significantly easier to communication faster and more efficiently. People are finding ways to implement new communication technologies in various portions of their lives. In the work place people are using devices such as the Internet, e-mail and fax machines to become more productive. At school students are using devices such as scanners, web cameras, and various networks to expand their own interest and abilities. At home people are using communication technology devices such as satellite television, and cell phones to be entertained and keep in touch with family and friends. With all of these advantages there also come questions of personal security. Are the many advancements in communication technology allowing too many other people to have access to our personal lives?

OBJECTIVES:

1. Define the major parts of the universal systems model.
2. Explain the five basic parts of the communication systems model.
3. Define the three major modes of communication (human, animal, machine).

4. Identify the time period that has seen the most changes in communication technology.
5. Explain the impact that the computer has had on communication in general.
6. Identify the manner in which the new communication technologies have impacted our society.

POSSIBLE UNIT ACTIVITIES:

1. Choose a high-tech piece of communication equipment and label each part as it relates to the universal systems model, and the communication system model.
2. Interview classmates, family, and friends to find out how many have computers in their homes. Make a list of the various applications that are used most often and the ways in which these applications are making their lives easier.
3. Select a new communication technology that is currently being widely used in our society. Prepare a future wheel on the product and present your ideas to the class. Students would like this more than a paper.

REFERENCES:

Mark Sanders (1991) "Communication Technology Today and Tomorrow" Glencoe/McGraw-Hill: Mission Hills CA

Richard J. Broekhuizen (1995) "Graphic Communications" Macmillan/McGraw-Hill, Peoria IL

Communication Technology Today
Secondary Education

Data Communication Systems

(3 Weeks)

GOALS:

1.Compare the various types of computers and basic operating systems.
2. Discuss the input, output, and storage devices of the computer.
3. Analyze the many possible applications of the computer.

RATIONALE FOR UNIT:

The implementation of computers in our society has grown at an exponential rate. Computers are becoming such a part of our everyday world that it is becoming more and more necessary to understand their operations and uses. With the advent of the Internet and applications such as e-mail, computers are fast becoming a necessity. Because of this huge growth in the use of computers, it is necessary for everyone to acquire basic computer skills and knowledge. It is imperative for students today to possess the knowledge of how computers operate, new computer technologies, and the various applications of computers in our technologically advanced society.

OBJECTIVES:

1. Gain an understanding of the history of computers, including inventors and early models.
2. Explain how computers generally work, including binary and operating systems.
3. Describe the various means by which information is transferred into the computer.
4. Outline the roles and operations of various computer output devices.

5. Describe the ways in which people are using computers in school and business.
6. Differentiate a computer network, including its advantages and disadvantages.
7. Explain how computers aid in the manufacturing industry.

POSSIBLE UNIT ACTIVITIES:

1. Research the history of the computer. Be sure to include information about he abacus in the research. When finished build a model of the abacus and perform some basic calculations.
2. Perform basic computer skills such as formatting a new disk, creating a new folder, copying files, and downloading information from the internet.
3. Make several print samples from various styles of printers and compare the quality. Decide what the pros and cons are of each kind of printer and where each would be most useful.
4. Visit local merchants and businesses in the area. Find out how many are using computer systems to keep up with inventory and how each one works.

REFERENCES:

Mark Sanders (1991) "Communication Technology Today and Tomorrow" Glencoe/McGraw-Hill Mission Hills CA

Chronicle of distance education and communication, Maintained by: Greg Kearsly Available at: http://www.fcae.nova.edu/disted/spring98/contents.html

Communication Technology Today
Secondary Education

Technical Design Systems

(3 Weeks)

GOALS:

1. Explain the principles of a technical design.
2. Explain the details involved with completing the technical design process.
3. Discuss the applications of computer-aided design.

RATIONALE FOR UNIT:

Throughout history, technical design has been an integral part of communicating thoughts and ideas. Technical design has become the backbone of the manufacturing industry. Anything that is invented and needs to be manufactured is a technical drawing before it can be reproduced. Technical design is a universal language that is easy to learn and is recognized around the world. Students will have the opportunity to become familiar with the rules that govern technical design and its many applications. With the rise in popularity of Computer-Aided Design, complex technical drawings are being produced with less time and effort. This unit will cover the various aspects of Computer-Aided Design and its many practical applications in school and industry.

OBJECTIVES:

1. Explain what the different lines and symbols in a technical drawing mean.
2. Identify the various kinds of special equipment that are used in the field of field of technical drawing.
3. Explain the different kinds of technical drawings.
4. Explain the importance of orthographic projections.
5. Describe the ways in which CAD drafting is different from traditional drafting.

6. Explain the basic components of a CAD system.

POSSIBLE UNIT ACTIVITIES:

1. Research the history of the computer. Be sure to include information about he abacus in the research. When finished build a model of the abacus and perform some basic calculations.
2. Perform basic computer skills such as; formatting a new disk, creating a new folder, copying files, and downloading information from the internet.
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Communication Technology Today
Secondary Education

Optical Systems

(4 Weeks)

GOALS:

1. Explain the principles of typical optical systems.
2. Discuss the major pieces of equipment and methods relating to photography.
3. Explain the major applications of photography.

RATIONALE FOR UNIT:

The human eye can be seen as the most fundamental example of all optical systems. It can record color, instantly focus, and adjust to many different lighting conditions. This unit is going to be a means to introduce several kinds of optic systems. Since the basic purpose of an optic system is to focus and record light, cameras are probably the most common example of an optic system that is used by everyone. Photography is one area of study that has had an affect on everyone in some shape or form. Items such as books, magazines, billboards, and newspapers use photographs to grab the reader's attention to portray a message. By studying this unit the learner will have the opportunity to gain an understanding of how optic systems work by using photography as the basis for learning.

OBJECTIVES:

1. Explain the history of the camera and basic photography.
2. Discuss the many different properties of light
3. Explain the light spectrum.
4. Summarize the manner in which the human eye works.
5. Compare the differences between a rangefinder camera and an SLR camera.
6. Justify the necessary accessories that are useful for taking good pictures.
7. Compare the difference between color photography and black and white

photography.
8. Explain the steps that occur during film processing.
9. Summarize the steps that occur while processing prints.
10. Explain the manner in which lighting and camera settings affect a photograph.

POSSIBLE UNIT ACTIVITIES:

1. Research the history of photography and construct a timeline of the major innovations. Construct a scale model of one of the major historical inventions.
2. Develop a group of photograms. Cut stencils of various images out of black construction paper. Place the stencils on the photographic print paper and expose it to the light of the enlarger. Develop the print and mount it.
3. Construct a pinhole camera. Obtain a container and seal it so that it will not allow any light to enter. Use this camera to take a photograph and develop the print.
4. Develop a series of prints to tell a story. Once receiving a list of required pictures from your teacher, use an SLR camera to take the photographs and develop the prints.

REFERENCES:

Mark Sanders (1991) "Communication Technology Today and Tomorrow" Glencoe/McGraw-Hill Mission Hills CA

Richard J. Broekhuizen (1995) "Graphic Communications" Macmillan/McGraw-Hill, Peoria IL

Michael F. O'Brien and Norman Sibley (1995) "The Photographic Eye: Learning to See with a Camera" Davis Publications, Inc. Worchester Ma

Communication Technology Today
Secondary Education

Graphic Production Systems

(3 Weeks)

GOALS:

1.Explain message design, message composition, and message assembly.
2. Explain film conversion and assembly.
3. Explain message transfer and product conversion.

RATIONALE FOR UNIT:

Graphic production is one of the oldest and most common commercial examples of communication. One area in which graphic production is most widely used is in the field of advertising. When designers don't have the advantage of audio and live movement, they have to use various design techniques to produce their message graphically. There are several methods of graphic production that designers use to accomplish their desired message. After this unit the learner should have a greater understanding of how a graphic message in constructed and the implementation of the many different phases of graphic production.

OBJECTIVES:

1. List the guidelines that should be followed when designing a graphic message.
2. Describe the materials and techniques that help graphic designers to compose their work.
3. Explain the manner in which words and illustrations come together on one page.
4. Explain the role of film in the graphic production process.
5. Summarize the purpose and operation of the basic printing press.
6. Explain how color illustrations are reproduced.

7. Explain the major message transfer processes and the way in which they work.
8. Describe how printed materials are converted to finished products.

POSSIBLE UNIT ACTIVITIES:

1. Construct a design principles magazine. Look through various magazines at the advertisements. Chose two examples of each design principle and use them to construct a magazine. The magazine will contain explanations as to why the particular advertisement applies to a given design principle.
2. Construct an eye-catching advertisement for a fictional product using computer graphics and text. The advertisement will contain elements such as clip-art, various colors, and typefaces.
3. Construct a notepad design and produce a stack of 500 pages using the offset printing press.
4. Design a CD cover using the design process and computer graphics.
5. Invent a fictional product and construct the label and packaging that the product will be sold in.
6. Using screen printing techniques, construct a t-shirt design with a fictional sports team logo and name.

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Communication Technology Today
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POSSIBLE UNIT ACTIVITIES:

1. Choose a high-tech piece of communication equipment and label each part as it relates to the universal systems model, and the communication system model.
2. Interview classmates, family, and friends to find out how many have computers in their homes. Make a list of the various applications that are used most often and the ways in which these applications are making their lives easier.
3. Select a new communication technology that is currently being widely used in our society. Write a report on the task(s) that it has eliminated or made easier. Explain what people did before the technology and ways that the device is being improved from its current form.

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Mark Sanders (1991) "Communication Technology Today and Tomorrow" Glencoe/McGraw-Hill Mission Hills CA

Richard J. Broekhuizen (1995) "Graphic Communications" Macmillan/McGraw-Hill, Peoria IL

Communication Technology Today
Secondary Education

Audio And Video Systems

(3 Weeks)

GOALS:

1. Explain the principles of audio and video communication.
2. Review the various types of current audio and video equipment that is used in our everyday society.
3. Discuss the applications of audio and video systems.

RATIONALE FOR UNIT:

The application of audio and video systems is extremely common in our society today. As the years go by these systems are becoming more technologically advanced. With the growing popularity of a digital world, things that were unheard of ten years ago are becoming a reality. Internet communication, web cameras, distance learning, virtual classrooms, home theaters, and global media are only a few examples of places where new audio and video applications are being implemented. Students will have to possess knowledge of how these technological advancements are affecting today's industry and the many ways that we as a society are delivering, accepting, and transferring information.

OBJECTIVES:

1. Gain an understanding of how electricity and magnetism are the basis for audio and video communication.
2. Demonstrate the process of how an electronic message is sent and received.
3. Explain the definition of radio waves, including how they are used to transmit audio and video from one place to another.
4. Explain the operation of the telephone including the manner in which

sound waves are converted into electric signals and back into sound.
5. Explain the operation of a radio and the role satellites play in the aid of radio transmission.
6. Demonstrate the operation of the television camera including how it converts images into electrical signals.
7. Explain how audio and video has improved industries such as medicine and the space program.

POSSIBLE UNIT ACTIVITIES:

1. Make an electromagnet using a battery, copper wire, and an iron nail. Demonstrate how the magnetic field is affected by the flow of current.
2. Research an early audio and visual (electronic) communication device and explain in the report how the devise works. Construct a scale model of the early piece of equipment.
3. Compose a mock television news broadcast. Include editing techniques as well as scripts and special effects.
4. Research the manner in which your local news station receives its stories and broadcast it out to the public. Write a brief story on your findings and prepare a video presentation.

REFERENCES:

Mark Sanders (1991) “Communication Technology Today and Tomorrow” Glencoe/McGraw-Hill Mission Hills CA

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Curriculum Evaluation

Student Evaluation #1:

- Unit 4 objectives one and two photography evaluation

Test on Photography

Name: _____ Date: _____

1. What is the term used to describe the number of waves that pass through a given point in one second?
   A. Amplitude B. Frequency
   C. Focal point D. Photon
2. Which of the following is not one on the behaviors of light when it hits a surface?
   A. Absorbed B. Refracted
   C. Reflected D. Amplified
3. What is the name of the colors of the rainbow that can be seen by the human eye?
   A. Optic System B. Photon
   C. Optical fibers D. Visible spectrum
4. What kind of lens would you use to burn something using the sun light?
   A. concave B. convex
   C. focal lens D. diverging lens
5. Which of the following is not one of the additive primary colors?
   A. red B. blue
   C. white D. green
6. What type of lens is used to make far away objects look closer?
   A. graphic B. wide angle
   C. telephoto D. concave
7. What type of chemical is used first to develop a strip of negatives?
   A. stop bath B. fixer
   C. developer D. water
8. What chemical makes the image permanent and removes any unexpected silver crystals?
   A. developer B. fixer
   C. stop bath D. water

9. Which chemical halts the developing process?

A. developer B. fixer

C. stop bath D. water

10. Setting the opening of the lens of a camera is also known as setting the _____.

A. exposure B. depth of field

C. aperture D. speed

11. When light is concentrated, the point where the rays meet is called _____.

A. focal point B. refractory point

C. holography D. visible spectrum

12. _____ is the use of lasers to record realistic images of three dimensional objects.

A. photography B. holography

C. Optics D. Developing

13. A camera is a light tight box in which the only place for light to enter is through the _____.

A. focus ring B. camera body

C. film advance lever D. lens

14. Lenses that tend to have a big field of view are called _____.

A. telephoto lenses B. wide angle lenses

C. convex lenses D. concave lenses

15. The layer of film that contains tiny light-sensitive silver halide crystals is known as the _____ layer.

A. development B. photon

C. emulsion D. contrast

16. What is the part of the camera that is used to push the film forward in the camera?

A. Film advance lever B. Rewind Lever

C. Shutter Release Button D. Sprocket Wheel

17. What part of the camera is used to open and close the shutter?

A. The film advance lever B. Rewind Lever

C. Shutter Release button D. Sprocket Wheel

18. What part of the camera is used to attach a flash?

A. Pressure Plate B. Hot shoe

C. Sprocket Wheel D. Focus Ring

19. What part of the camera is used to advance the film back into the container in order to be removed for development?

A. Film advance lever B. Sprocket Wheel
C. Shutter release button D. Rewind Lever

20. What piece of equipment is used to make prints that are larger than the negatives?

A. Developing tank B. Enlarger
C. Lens D. Reel

Bonus What unit is aperture measured in? _____

Student Evaluation #2

- Unit 5, objective one evaluation

Test #1 Graphic Messages and Principles of Design

Name: _____ Date: _____

1. What is the name of the design principle when the weight of an ad is equally distributed?

A. Harmony B. Emphasis
C. Balance D. Variety

2. What is the name of the design principle that is the most important of all of the principles and deals with everything working well together.

A. Harmony B. Emphasis
C. Balance D. Variety

3. What is the name of the design principle that has to do with the size relationship of one design element to another?

A. Rhythm B. Proportion
C. Balance D. Variety

4. What is the name of the design principle that has to do with an ad drawing attention to one specific element and drawing attention away from everything else?

A. Rhythm B. Variety
C. Balance D. Emphasis

5. What is the name of the design principle that has to do with an ad containing several different elements such as colors, sizes, and shapes?

A. Rhythm B. Variety

C. Balance D. Emphasis

6. What is the name of the design principle that has to do with an ad having repetition or motion.

A. Balance B. Emphasis
C. Rhythm D. Variety

7. What type of rhythm deals with things being the same on both sides of the ad?

A. Formal Balance B. Informal Balance
C. Proper Balance D. Improper Balance

8. What type of rhythm deals with things that aren't the same on both sides of the ad?

A. Formal Balance B. Informal Balance
C. Proper Balance D. Improper Balance

9. _____ colors are opposite eachother on the color wheel.

A. Intermediate B. Secondary
C. Complementary D. Primary

10. The _____ is the material on which a given graphic message is being printed.

A. Surface B. Paper
C. Substrate D. Screen

11. Intermediate Colors _____

12. Secondary Colors _____

13. Primary Colors _____

14. Hot Colors _____

15. Cool Colors _____

16. Content _____

17. Audience _____

18. Purpose _____

19. Design _____

20. Image Generation _____

A. The first step in the development of a graphic message.
B. Colors that are created when equal parts of a primary color and an adjacent secondary color are mixed.
C. Colors that include red, blue, and yellow.
D. This is the group that you are gearing your message to when it is designed.
E. These colors include violet, blue, and dark green
F. This is the second step in the development of a graphic message.
G. These are colors that are generated by mixing equal parts of two primary colors.
H. This is the response that your ad should inspire in your reader.
I. This step in the design process describes what is to be communicated and why.
J. These colors include red, yellow, and orange

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Validation of
Communication Technology Curriculum

I would send a copy of my curriculum to the Chesapeake Public Schools Instructional Services Center. The curriculum would be directed to the department of Vocational and Technology Education. Robert F. Head is the program administrator for this department, and I would be asking him for his opinion on the scope and content of the curriculum. Mr. Head works closely with the Chesapeake Center for Technology and would be able to give me some insight as to practical applications being taught in this facility. This would give me ideas of ways in which I could modify my curriculum to better prepare students for the real world applications of the information that they would be learning through the curriculum.

Robert F. Head
Program Administrator for Vocational Ed.
Instructional Services Center
304 Cedar Rd.
P.O. Box 15204
Chesapeake, VA 23328

Dear Mr. Head:

I am a curriculum developer that would like for you to evaluate the enclosed curriculum program in Communication Technology. I have also composed a survey to help you with your evaluation in terms of the curriculum content and cohesiveness.

I would greatly appreciate any of your comments that you feel could improve this curriculum. Your extensive experience in the field of Technology Education is a great help to those of us that develop curriculum in this field. Thank you for your time, and cooperation in this matter

Sincerely,

Maurice Frazier
1994 Tiger Dr.
Chesapeake Va 23320

Survey Form

It would be a great help if you could answer the following questions by circling the appropriate numbered response, and provide any additional comments of the curriculum that you feel may need attention.

1= Strongly Agree
2= Agree
3= Disagree
4= Strongly Disagree

1. Does the definition of the program content cover all the necessary facets of the subject area? 1 2 3 4

2. Does the rationale sufficiently provide enough explanation for the basis

of the program? 1 2 3 4

3. Does the content source relate appropriately to the subject material?
   1 2 3 4

4. Do you see any units that do not correlate with the goals of the curriculum? 1 2 3 4

5. Do the learning activities meet the aims, goals, and objectives of this curriculum. 1 2 3 4

6. What can I do to improve this curriculum?

Additional Comments: