Exploring Career Clusters

A modular, hands-on approach to career exploration by Career Clusters©

Agriculture, Food & Natural Resources

Architecture & Construction

Arts, A/V Technology and Communications

Business, Management & Administration

Education & Training

Finance

Government & Public Administration

Health Science

Hospitality & Tourism

Human Services

Information Technology

Law, Public Safety, Corrections & Security

Manufacturing

Marketing, Sales & Service

Science, Technology, Engineering & Mathematics

Transportation, Distribution & Logistics

Division of Career Education
Department of Elementary & Secondary Education
Jefferson City, Missouri

Missouri Center for Career Education
Department of Career & Technology Education
University of Central Missouri
Warrensburg, Missouri

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Advisory Committee

The Advisory Committee for the *Exploring Career Clusters* model course project spent many hours reviewing materials and provided keen insights to direct and shape the curriculum materials. We are sincerely indebted to them for their unselfish service.

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Assessment Recommendations

The purpose of this module is to introduce students to the myriad of Career Fields available within each career cluster being studied. It is **EXPLORATORY**. It should help students gain insight into their own interests and abilities, and learn important information to help them plan their high school courses/major and subsequent postsecondary educational program. As such, the assessment should reflect this and focus primarily on the quality of the students' experiences (not just their skill level) and their ability to complete a meaningful career search, incorporating this information into their Educational Career Plans.

The following is a recommended combination of modules and student assessment guide:

Participation	10
Unit 1: *Arts, A/V Technology and Communications*	30
Unit 2: *Information Technology*	30
Unit 3: *Transportation, Distribution and Logistics*	30
Total	**100%**

Some activity sheets may be very simple to complete (i.e., may only have a few lines to complete), the Learning Activity includes the "teacher talk" and class discussion. The learning will occur before the activity sheet is completed. A scoring guide or rubric should be established for these activities. See the *Individual Student Record*, page 5.

Individual Student Record

Student: _____ Period: _____ Semester: _____

Learning Activity	Points Possible	Points Earned
Information Technology		
Career Field Matching Activity		
Round Table Exploration Activity		
Client Criteria (Game Directions)		
Design Contract (Game Directions)		
Technical Writing Project		
Client Approval Form (Game Directions)		
Client Criteria (Website)		
Design Contract (Website)		
Website Design Ideas		
Web Page Design Ideas		
Client Approval Form (Website)		
Web Page Test Record		
Interest Assessment		
Career Search Identity		
Educational Career Plan (4-year Plan)		
Total Points		

Information Technology Student Competencies

The following competencies selected for this unit were taken directly from the Career Cluster resource for *Information Technology (*www.careerclusters.org*).*

Career Cluster Knowledge and Skills

- Read, understand and respond to English language technical and workplace documents required to pursue the full-range of career and postsecondary education opportunities within the IT career cluster.
- Apply active listening skills to obtain and clarify information.
- Use library, text and Internet resources.
- Demonstrate Mathematics knowledge and skills required to pursue the full-range of career and postsecondary education opportunities within the IT career cluster.
- Develop and interpret tables, charts and figures to support written and oral communications.
- Demonstrate Science knowledge and skills required to pursue the full-range of career and postsecondary education opportunities within the IT career cluster.
- Apply/use scientific methods for analysis, date gathering, observation, predictions and problem identification.
- Apply knowledge of computers and information processing including accessing and navigating the Internet (e.g., use a web browser) to search for information and resources.
- Develop and deliver formal and informal presentations using appropriate media to engage and inform audiences.
- Interpret verbal and nonverbal behaviors to enhance communication with co-workers and clients/participants.
- Explain the major components and benefits of health, safety and environmental management systems in multimedia and printing organizations.
- Select, inspect and use personal protective equipment (PPE) such as safety glasses and respiratory protection to ensure a safe workplace/jobsite.
- Demonstrate personal commitment to safety, health and environment policies and procedures.

Career Cluster Knowledge and Skills (continued)

- Demonstrate knowledge of the skills needed for leadership in the IT environment.
- Organize work teams to effectively manage assignments, using the best practices for successful team functioning.
- Demonstrate knowledge of the rights and responsibilities of IT workers.
- Demonstrate knowledge of social, ethical and legal issues in the information technology field.
- Explain written organizational policies, rules and procedures to help employees perform their jobs, identifying and demonstrating positive work behaviors and personal qualities.
- Identify and explore career opportunities in one or more career fields.
- Read and explain the various aspects of work/service contracts to ensure compliance.
- Recognize the relationship between the various parties to a contract in order to interpret responsibilities.
- Access appropriate resources to identify the roles, rights and responsibilities of an employee and an employer.
- Exhibit behaviors showing you are reliable and dependable.
- Maintain appropriate dress and behavior for the job to contribute to a safe and effective workplace/jobsite.
- Select tools, machinery and equipment to match requirements of the job.

Career Field Knowledge and Skills

- Use writing/publishing applications to prepare documents with integrated graphics and non-text elements.
- Use computer operations applications to manage file storage and compress or alter files.
- Demonstrate knowledge of the hardware and components associated with information systems.
- Demonstrate technical knowledge of the Internet.
- Apply knowledge of web page basics, web page design software and ISPs.

Career Field Knowledge and Skills (continued)

- Demonstrate and apply technical knowledge of hardware design, operation and maintenance.
- Demonstrate and apply knowledge of Information Systems Analysis and Design.
- Create, implement and test an interactive media product as a member of a development team.
- After identifying customer needs, design a software application, working as part of a software development team, using computer-aided software engineering (CASE) tools.

Introducing the Information Technology Cluster

The cluster of careers found in Information Technology encompasses planning, managing and supporting network systems, database development and administration, digital and multimedia development and production, web design, development and administration, as well as programming/software engineering and systems administration. Careers in this cluster also include technical support personnel, such as help desk specialists and many creative personnel like virtual reality specialists, web designers and 2D/3D artists and animators. This Career Cluster can be divided into four distinct career fields of *Network Systems; Information Support and Services; Interactive Media;* and *Programming and Software Development*.

Each career field has distinct knowledge and skill requirements as well as shared common knowledge and skill requirements. Students who understand these relationships will be prepared and able to make informed career decisions. Students should be given the opportunity to explore and investigate not only the traditional career options of information technologist or network specialist, but should be encouraged to touch on the many other related occupations found in this Career Cluster (see *Information Technology Career Fields Chart*, page 12).

Teacher Preparation

The suggested scenario for this unit is in two parts. The first is a technical writing job to develop the instructions for playing the Hopping Peg Game which will be inserted in the game package. The second part is the design and publication of a company website to advertise the Hopping Peg Game. Review the whole project and decide on any alterations to the scenario. Make part of or the entire project a simulation of a "real life" activity. Choosing a scenario of your own design is encouraged. If so, include as many occupations as time permits and make the scenario as true to authentic as possible.

Introduce the unit with a short activity which helps students quickly grasp the breadth and depth of this Career Cluster. Have every student engaged so they can begin the unit of study with the big picture of this Career Cluster.

Prepare a bulletin board display illustrating the four career fields (*Network Systems; Information Support and Services; Interactive Media;* and *Programming and Software Development*) found in the *Information Technology* cluster. Be sure to include photos/illustrations of non-typical careers such as database analyst, program manager or virtual reality specialist. List under each category some of the key skills and knowledge needed. Remember, the use of bulletin boards, web searches, posters and engaged projects will assist students in learning about and participating in various career experiences.

Reference - "Information Technology Pathways", *"Career Cluster Resources for Information Technology, National Association of State Directors of Career Technical Education Consortium"* (www.careerclusters.org)

Career Fields (Pathways):

- Network Systems
- Information Support and Services
- Interactive Media and Programming
- Software Development

Handout: *Information Technology Career Fields Chart* page 12
This handout is for teacher reference for the student activity, "Career Field Matching Activity." It should not be given to students until after the completion of this activity.

Suggested Activities

Introduction to the Cluster
Use one of the following activities or design appropriate activities that will allow students to comprehend the wide array of occupations involved in their built world.

1. How Many Jobs?
Use a PowerPoint presentation, and/or photos & drawings, to show an office or school computer lab with the various needed equipment for a network system. Include an exhaustive list of jobs so students or teams of students can try and match the job titles to the photos.

2. To E-Bay® or not to E-Bay®?
Use a PowerPoint presentation or a bulletin board to show E-Bay® web pages. Based on these pages, demonstrate several occupations within the *Information Technology* cluster such as e-business specialist, electronic transactions implementer, technical writer, electronic publications specialist and so on. Upon completion of the activity, discuss with students the various occupations needed to complete the networking systems, web pages or technical reports or articles. Make a point of discussing occupations that are not obvious.

3. Other Resources
Iseek.org IT career videos
http://www.iseek.org/sv/12000.jsp?code=11

Gettech.org career information
http://www.gettech.org/careers.asp?category=3

Kidzonline.org
http://www.kidzonline.org/StreamingFutures/careervideo.asp?careerid=7

Career Overview computer careers
http://www.careeroverview.com/computer-careers.html

U.S. Department of Labor, Bureau of Labor Statistics
http://www.bls.gov/oco/ocos042.htm

Emints.org, Ethemes
http://www.emints.org/ethemes/index.shtml

Webquest.org, web resources for inquiry-based instructional activities
www.webquest.org

Career Field Matching

Have students match (even if they have to guess) a random list of occupations to the three Career Fields found in the *Information Technology* cluster. Discuss with students what makes up each career field (see *Career Field Matching Activity*, page 13). This activity is designed to help students focus on the vast occupational opportunities available to them in this Career Cluster. It is not important at this point in the course students are able to recognize most of these occupations. It is important they begin to see their possibilities. Discuss with students the differences between the four Career Fields without listing the various occupations. Use the following activity, or design an appropriate activity, that will allow students to comprehend the wide array of occupations involved in their built world. You should review the list and become familiar with the occupations listed. (Two sources: www.stepfour.com/jobs and www.collegeboard.com/csearch/majors_careers/profiles)

Building Linkages in IT Occupations Framework: For Entry Level, Technical, and Professional Careers Related to the Design, Development, Support and Management of Hardware, Software, Multimedia, and Systems Integration Services.

Sample of Career Specialties / Occupations	**Network Design and Administration:** ❑ Communications Analyst * Data Communications Analyst * Information Systems Administrator * Information Systems Operator * Information Technology Engineer ❑ **Network:** Administrator * Analyst * Architect * Engineer * Manager * Operations Analyst * Security Analyst * Specialist * Technician * Transport Administrator ❑ PC Support Specialist * ❑ **Systems:** Administrator * Engineer * Support Lead ❑ Technical Support Specialist * User Support Specialist ❑ Telecommunications Network Technician	**Database Development and Administration:** ❑ **Data:** Administrator * Analyst * Architect * Management Associate * Modeler * Modeling Specialist ❑ **Database:** Administration Associate * Administrator * Analyst * Developer * Manager * Modeler * Security Expert * DSS (Decision Support Services) * Knowledge Architect ❑ **Senior:** Database Administrator * Systems Analyst ❑ **Systems:** Administrator * Analyst ❑ Tester **Technical Writer:** ❑ Desktop Publisher * Document Specialist * Documentation Specialist * Editor ❑ **Electronic** Publications Specialist * Publisher ❑ Instructional Designer, Online Publisher ❑ **Technical** Communicator * Editor * Publications Manager * Writer **Technical Support:** ❑ Analyst * Call Center Support Representative * Content Manager ❑ **Customer:** Liaison * Service Representative * Service Professional ❑ **Help Desk:** Specialist * Technician ❑ Maintenance Technician * PC Support Specialist * PC Systems Coordinator * Product Support Engineer * Sales Support Technician * Systems Analyst ❑ **Technical:** Account Manager * Support Engineer * Support Representative ❑ Testing Engineer **Enterprise Systems Analysis and Integration:** ❑ Application Integrator * Business Continuity Analyst * Cross-Enterprise Integrator ❑ **Data:** Systems Designer * Systems Manager * Warehouse Designer ❑ E-Business Specialist * Electronic Transactions Implementer ❑ **Information Systems:** Architect * Planner ❑ **Systems:** Analyst * Architect * Integrator	**Digital Media:** ❑ 2D/3D Artist * Animator * Audio/Video Engineer * Designer * Media Specialist * Media/Instructional Designer ❑ **Multimedia:** Author * Authoring Specialist * Developer * Specialist ❑ Producer * Production Assistant * Programmer * Streaming Media Specialist * Virtual Reality Specialist ❑ **Web:** Designer * Producer * Specialist **Web Development and Administration:** ❑ **Web:** Administrator * Architect * Designer * Page Developer * Producer * Site Developer * Specialist ❑ Webmaster	**Programming / Software Engineering:** ❑ **Applications:** Analyst * Engineer ❑ Business Analyst * Computer Engineer * Data Modeler ❑ **Operating System:** Designer/Engineer * Programmer Analyst ❑ Program Manager * Programmer * Programmer/Analyst * Project Lead ❑ **Software Applications:** Specialist * Architect * Design Engineer * Development Engineer * Engineer * QA Specialist * Tester ❑ **Systems:** Analyst * Administrator ❑ Test Engineer * Tester
Pathways/ Fields	**Network Systems**	**Information Support and Services**	**Interactive Media**	**Programming and Software Development**
Cluster K&S	**Cluster Knowledge and Skills** ♦Academic Foundations ♦Communications ♦Problem Solving and Critical Thinking ♦Information Technology Applications ♦ Systems ♦ Safety, Health and Environmental ♦Leadership and Teamwork ♦Ethics and Legal Responsibilities ♦Employability and Career Development ♦Technical Skills			

Resource: www.careerclusters.org

Student Name: _____

Date Assignment Due: _____ Date Assignment Submitted: _____

Activity Satisfactorily Complete: _____ Activity Not Completed: _____

Student Career Field Matching Activity

The *Information Technology* Career Cluster is divided into four career fields according to the tasks of planning, managing and supporting network systems, database development and administration, digital and multimedia development and production, web design, development and administration, as well as programming/software engineering and systems administration. Careers in this cluster include technical support personnel, such as help desk specialists and many creative personnel like virtual reality specialists, web designers and 2D/3D artists and animators.

The four career fields for the *Information Technology* Career Cluster are:

1. _____
2. _____
3. _____
4. _____

Occupation – Career field Matching

Given the list below, place the number of the career field from the list above next to the occupation it matches. If you think an occupation could match with more than one career field, you may put more than one number. Be ready to say why you think the occupation matches the career field or career fields you listed.

_____ **Network Systems Communications Analyst**

_____ **Applications Business Analyst**

_____ **Systems Tester**

_____ **Network Information Systems Operator**

_____ **Webmaster**

_____ **Systems Engineer**

_____ **Senior Database Administrator**

_____ **Network Architect**

_____ **Multimedia Authoring Specialist**

_____ **Multimedia Production Assistant**

_____ **Network Information Systems Administrator**

_____ **Applications Data Modeler**

_____ **Network Systems Support Lead**

_____ **Software Applications QA Specialist**

_____ **Streaming Media Specialist**

_____ **Website Developer**

_____ Virtual Reality Specialist	_____ Software Applications Engineer
_____ Network Manager	_____ Audio/Video Engineer
_____ Digital Media Specialist	_____ Network Operations Analyst
_____ Media/Instructional Designer	_____ Network Security Analyst
_____ Data Modeling Specialist	_____ Network Specialist
_____ Network Analyst	_____ Network Transport Administrator
_____ Technical Account Manager	_____ Network PC Support Specialist
_____ Help Desk Product Support Engineer	_____ Help Desk Technician
_____ Call Center Support Representative	_____ Systems User Support Specialist
_____ Technical Testing Engineer	_____ Telecommunications Network Technician
_____ Application Integrator	_____ Data Management Associate
_____ Business Continuity Analyst	_____ Electronic Transactions Implementer
_____ Cross-Enterprise Integrator	_____ Information Systems Architect, Planner
_____ Web Page Developer	_____ Artist, 2D/3D
_____ Applications Engineer	_____ Database Security Expert
_____ Database DSS (Decision Support Services)	_____ Data Warehouse Designer
_____ Database Knowledge Architect	_____ E-Business Specialist
_____ Multimedia Author	_____ Database Administrator
_____ Software Applications Architect	_____ Database Systems Analyst
_____ Software Applications Tester	_____ Digital Media Designer
_____ Customer Service Representative	_____ Applications Analyst
_____ Systems Administrator	_____ Desktop Publisher
_____ Multimedia Producer	_____ Network Systems and Data Communications Analyst
_____ Help Desk PC Support Specialist	_____ Documentation Specialist
_____ Technical Support Content Manager	_____ Help Desk Sales Support Technician
_____ Help Desk PC Systems Coordinator	_____ Electronic Publications Specialist
_____ Online Publisher	_____ Operating Systems Programmer
_____ Publications Manager	_____ Instructional Designer
_____ Customer Liaison	_____ Operating Systems Designer/Engineer

Student Name: ANSWER KEY

Date Assignment Due: _____ Date Assignment Submitted: _____

Activity Satisfactorily Complete: _____ Activity Not Completed: _____

Career Field Matching Activity

This activity should not be "scored" for right or wrong answers. The intent is to expose students to the very wide array of occupational options they have in this Career Cluster. "Scoring" should be based on the student's effort in completing the assignment. You, the teacher, should be actively involved with this activity and use it as an appropriate segue into class discussion about occupational opportunities.

The *Information Technology* Career Cluster is divided into four career fields according to the tasks of planning, managing and supporting network systems, database development and administration, digital and multimedia development and production, web design, development and administration, as well as programming/software engineering and systems administration. Careers in this cluster include technical support personnel, such as help desk specialists and many creative personnel like virtual reality specialists, web designers and 2D/3D artists and animators.

The four career fields for the *Information Technology* Career Cluster are:

1. Network Systems
2. Information Support and Services
3. Interactive Media
4. Programming and Software Development

Occupation – Career field Matching

Given the list below, place the number of the career field from the list above next to the occupation it matches. If you think an occupation could match with more than one career field, you may put more than one number. Be ready to say why you think the occupation matches the career field or career fields you listed.

	Network Systems		
1	**Communications Analyst**	3	**Multimedia Authoring Specialist**
4	**Applications Business Analyst**	3	**Multimedia Production Assistant**

4	Systems Tester	1	Network Information Systems Administrator
1	Network Information Systems Operator	4	Applications Data Modeler
3	Webmaster	1	Network Systems Support Lead
1	Systems Engineer	4	Software Applications QA Specialist
2	Senior Database Administrator	3	Streaming Media Specialist
1	Network Architect	3	Website Developer
3	Virtual Reality Specialist	4	Software Applications Engineer
1	Network Manager	3	Audio/Video Engineer
3	Digital Media Specialist	1	Network Operations Analyst
3	Media/Instructional Designer	1	Network Security Analyst
2	Data Modeling Specialist	1	Network Specialist
1	Network Analyst	1	Network Transport Administrator
2	Technical Account Manager	1	Network PC Support Specialist
2	Help Desk Product Support Engineer	2	Help Desk Technician
2	Call Center Support Representative	1	Systems User Support Specialist
2	Technical Testing Engineer	1	Telecommunications Network Technician
2	Application Integrator	2	Data Management Associate
2	Business Continuity Analyst	2	Electronic Transactions Implementer
2	Cross-Enterprise Integrator	2	Information Systems Architect, Planner
3	Web Page Developer	3	Artist, 2D/3D
4	Applications Engineer	2	Database Security Expert
2	Database DSS (Decision Support Services)	2	Data Warehouse Designer
2	Database Knowledge Architect	2	E-Business Specialist
3	Multimedia Author	2	Database Administrator
4	Software Applications Architect	2	Database Systems Analyst
4	Software Applications Tester	3	Digital Media Designer
2	Customer Service Representative	4	Applications Analyst
4	Systems Administrator	2	Desktop Publisher

3	Multimedia Producer	1	Network Systems and Data Communications Analyst
2	Help Desk PC Support Specialist	2	Documentation Specialist
2	Technical Support Content Manager	2	Help Desk Sales Support Technician
2	Help Desk PC Systems Coordinator	2	Electronic Publications Specialist
2	Online Publisher	4	Operating Systems Programmer
2	Publications Manager	2	Instructional Designer
2	Customer Liaison	4	Operating Systems Designer/Engineer

Round Table Exploration

Students should begin this unit by getting a broad overview of the types of occupations they will find in this Career Cluster. They need to see the big picture first before exploring individual occupations.

Teacher Preparation

Set up stations around your classroom/lab with short activities that represent the four career fields of occupations which are: *Network Systems; Information Support and Services; Interactive Media* and *Programming and Software Development*. Identify enough occupations so no more than two or three students are working at any one station. Be sure to include occupations such as virtual reality specialist, 3D artist and e-business specialist as well as typical occupations such as network administrator and web page developer.

Suggested Activities

Round-Table Exploration Activity
Have students rotate through each station (see *Student Round-Table Exploration Activity*, page 20). On this worksheet, have the students select the level of education/ training and basic skills **they think** they would need to successfully work in that occupation (area career center, community college or university). Students will research specific career occupations later in the unit of study (print enough *Student Round Table Exploration Information* sheets, page 19, and *Activity* sheets, page 20, for each student).

Round-Table Exploration Examples
Network Technician – Set up an area that displays (by simulation if necessary) a network computer system with router, server, cables and computers. Display brief descriptions of tasks related to each of these items. (For your information, network technicians assist in the installation, set up, testing, maintenance and troubleshooting of Local Area Networks (LANs) and/or Wireless Area Networks (WANs). They are responsible for routine tasks such as adding new accounts, assigning passwords and keeping a variety of logs. This would include wiring and software installations).

Web Page Developer – Set up a computer displaying web page development software on one side of the display and a hardcopy of a "file structure."

Class Discussion
Discuss various academic and career preparation requirements for each of the stations explored by the students. Help students understand the differences between each educational level and occupational level of technician, technologist and professional (see Student *Round-Table Exploration Information* sheet, page 19, and *Definitions of Three Levels of Occupations* sheet, page 37).

Research
Internet search to complete the occupation activity with oral report out. Show students an object and have them identify the occupations that went into creating that object.

Student Round Table Exploration Information

Every occupation requires a minimum amount of training and/or education and certain basic skills. As you rotate through each of the Occupation Stations, you will be asked to match the education and the skills **you think** are needed to enter that occupation. Below is a list with a brief description of each level. Use these definitions to determine the level needed for each occupation you examine.

Required Education Levels

No Schooling – not completing high school or dropping out at an age allowed by law

High School GEP (General Education Program) – graduating from high school with a general education or college preparatory program

High School CEP (Career Education Program/Area Career Center) – graduating from high school with a program in one of the career education occupations

On-the-Job Training/Apprenticeship – learning a job while you are working in that job (may or may not require a high school diploma)

Trade School – school that teaches specialized skills for specific occupations (can be public schools, private schools, or trade unions)

Military Training – similar to trade schools in that you are taught specialized skills for a specific occupation in the military (requires a minimum of a high school diploma)

Community College (2-year) – two-year college education that leads to an associate's degree and may include specialized technical skills

College/University (4-year) – four-year college education that leads to a bachelor's degree and may include higher levels of specialized technical skills, engineering, science and mathematics on a professional level

College/University (graduate degree) – education after a bachelor's degree in professional Career Fields such as engineering, science, medicine, law, management or education

Required Skills

Reading – Ability to read and comprehend at a high school level

Writing – Ability to write simple and complex sentences with correct spelling, grammar and punctuation which allows for clear communication

Calculating – Ability to perform simple mathematical operations such as add, subtract, multiply and divide and comprehend simple geometric relationships (this may include reading and measuring with a ruler or tape measure)

Computer Literacy – Ability to perform basic computer operations such as save and retrieve files, word processing and spreadsheet operations

Problem Solving/Critical Thinking – Ability to clearly identify and solve problems through a defined process

Leadership/Teamwork – Ability to successfully lead a group and work with a group to accomplish a task or solve a problem

Student Round Table Exploration Activity

Student Name: _____

Date Assignment Due: _____ **Date Assignment Submitted**: _____

_____ **Activity Satisfactorily Completed** _____ **Activity Not Completed (see notes below)**

Fill in the required spaces below after you have completed the activity for each station.

OCCUPATION: _____

Check (√) the minimum level of education needed for entry to this occupation:

___ No School ___ High School (GEP) ___ Community College (2 years)

___ Trade School ___ Military Training ___ College/University (4 years)

___ High School (CEP) ___ On-the-Job Training ___ College/University (graduate degree)

Check (√) all the required skills needed for entry to this occupation:

___ Reading ___ Writing ___ Calculating

___ Computer Literacy ___ Leadership/Teamwork ___ Problem Solving/Critical Thinking

Reflective Response:

Use complete sentences, correct spelling and correct punctuation when completing the statements below. Be sure to read what you write to make sure it is clear to you and others.

I think this occupation would be fun to work in because or I do not think this occupation would be fun to work in because:

An example of how I might use problem solving in this occupation is:

An example of how I might use teamwork in this occupation is:

The reason I checked _____ as the minimum level of education needed for this occupation is:

The reasons I checked these skills needed for this occupation are:

Exploration

Information Support and Services Career Field

Information Technology Career Fields:

Network Systems

Information Support and Services

Interactive Media

Programming and Software Development

Possible Careers: Technical Writer - Senior Database Administrator - Help Desk PC Support Specialist - E-Business Specialist – Desktop Publisher - Technical Testing Engineer - Customer Service Representative – Instructional Designer - Customer Liaison

Information Support and Services

People who enter careers in the Information Support and Services field usually have an interest in providing important "behind-the-scenes" activities to maintain continuous operations of the organization and its mission. Sometimes these workers must use their specialized knowledge and skills to keep the flow of information running and provide technical assistance around the clock, twenty four hours a day, seven days a week. Other people in this field have tremendously different jobs requiring creative expertise resulting in new brochures, business presentations via the Internet or maybe even meetings in rooms around the world as simulcast videoconferences.

Whatever career in this field they have chosen, all workers in this field must keep themselves current with new trends and innovations. The information and technology areas are changing so rapidly that what is new today could be outdated tomorrow! Even technical writers must attend conferences and workshops to learn about new hardware, software and the latest innovations in publishing.

Technical writers are responsible for planning, creating, maintaining and delivering user documentation, training materials, on-line help systems and marketing materials. They also write user documentation, instructions and training materials for customers. Most companies would like their writers to be very familiar with their products and/or services, so technical writers must be able to research whatever they are writing about. Harley-Davidson Motorcycle Company requires their technical writers know their motorcycles so well that before they can write about them they must be able to take them apart and put them back together. Not all companies have such strict requirements, but technical writers do need to know what they are writing about!

Teacher Preparation

Prepare a bulletin board or other visual display that illustrates the technical writing process from research to rough draft to end product. Be sure to include a mixture of gender and ethnicity in your displays. Have on hand several different types of technical writing examples for students to view.

Prepare to discuss and demonstrate the process of using client criteria to create successful technical documents. Help students recognize the need to consider not only client criteria, but basic writing standards and principles spelling and grammar. Arrange to have a technical writer visit with your students about technical writing and share about his/her occupation at the same time.

This scenario presents a technical writing project that your student company could complete. Choose this project or select one of your own, depending on students' abilities, facilities and budget.

Suggested Activities

Student Client Criteria (Board Game Directions)
Go over the *Client Criteria* form with your students to determine what requirements will be used for the design of the game directions. This example activity is for the Hopping Peg Game project. You may choose to use another project, in which case you will need to develop a different *Client Criteria* list (see *Student Client Criteria* activity, page 25).

Student Design Contract (Technical Writing Project, Board Game Directions)
The first step in this process is to estimate the cost of writing and publishing the board game directions. After estimating the cost, review and fill out the *Design Contract* with your students. Their estimates only need to be approximate. Remember, this is only a simulation. It is necessary they understand what a contract is and how important it is to live up to a contract (see *Student Design Contract* activity, page 25).

Technical Writing Project Ideas
This activity will give your students the opportunity to brainstorm ideas for the board game directions based on the criteria established in the first activity. You should review with students the fundamental rules to follow for writing directions before they begin this activity. Student Teams (or individuals) should use a word processing program for this activity. Remind them to include the client's logo, as well as some clip art or copyright free graphics to make the directions more interesting. You may want to give them a size limit or copies of sample directions from existing board games. Require students to check each other's work to make sure design concepts meet all of the client criteria. This will give them teamwork experience (Teacher prepared).

Student Client Approval Form
Students need to understand that the process of designing includes meeting the desires, wants and needs of the client. This activity provides accountability for the designer (student). The *Student Client Approval Form* also provides the teacher with a method of assessing the student work (see *Student Client Approval Form*, page 27).

References/Resources

Junior Achievement Student Center
http://studentcenter.ja.org/aspx/findcareer/field.aspx?industryid=11&fieldid=61

Illinois Center for Specialized Professional Support
http://www.icsps.ilstu.edu/careeropp/career_development_professionals/job_codes/is.html

Alberta Occupational Profiles
http://www.alis.gov.ab.ca/occinfo/Content/RequestAction.asp?format=html&aspAction=GetHomePage&Page=Home

The Process of Writing a Technical Manual
http://www.school-for-champions.com/techwriting/techprocess.htm

Possible Careers: Technical Writer - Senior Database Administrator - Help Desk PC Support Specialist - E-Business Specialist – Desktop Publisher - Technical Testing Engineer - Customer Service Representative – Instructional Designer - Customer Liaison

Information Support and Services - Student Handout

Student Design Company, Inc. (SDCI) has been awarded a contract to write board game directions to be used by the Hopping Peg Company for their new board game. These directions are to be written according to client criteria (a list of wants and needs by the person paying for the project). Use drawings and/or photographs to enhance the directions.

You have been employed by SDCI as a technical writer to produce these instructions. You should read the contract completely and become familiar with the requirements. It will be your responsibility as the technical writer to complete the job correctly. Begin the job by completing the tasks listed below.

Learning Objectives

Upon successful completion of this assignment, you will be able to:

- list the steps required to write and publish a document with specific requirements.
- explain why the writer needs to meet client criteria.
- explain why the writer needs to research and be familiar with the client's product or service.
- identify three differences between writing instructions and writing a story.

Design Tasks

Complete the following tasks to begin the design job.

- investigate what information is needed for the board game directions.
- investigate what clip art/graphics will be included in the board game directions.
- investigate the requirements for using clip art and copyright-free graphics.

Design Steps

1. Interview the Client to identify the design criteria, and then complete the *Design Contract* (see *Student Client Criteria* sheet, page 25, and *Student Design Contract* sheet, page 25).

2. Write directions to play the game and develop at least two page layout possibilities on separate sheets.

3. Obtain approval from the client on at least one of your design ideas (see *Student Client Approval Form*, page 27).

4. Finalize your instructions and send to the printing service.

Possible Careers: Technical Writer - Senior Database Administrator - Help Desk PC Support Specialist - E-Business Specialist – Desktop Publisher - Technical Testing Engineer - Customer Service Representative – Instructional Designer - Customer Liaison

Student Name: _____

Client Meeting Date: _____ Assessment Score: _____

Student Client Criteria

The technical writer is hired by a *client* (a person that needs a document written to meet specific requirements) to design a set of instructions for a board game. The client will often have some idea of what they want in their document, but will need the professional writer to develop the best text and layout for their document. The technical writer will begin by interviewing the client to gain an understanding of what the client wants and needs. This activity will provide you with an opportunity to experience finding out what the client wants and needs for this design project.

Client Questionnaire

Client Name: _____
Print Name

Name of Board Game: _____

Number of Players: _____ **Ages:** _____

Type of Game: ___Strategy ___Fantasy ___Juvenile ___TV/Movie Related Theme

___Real World Situation ___Mystery ___Word Game ___Other: _____

Game Objective: _____

Materials Needed for Playing: ___Game Board ___Game Pieces ___Money

___Action Cards ___Chance Cards ___Other: _____

Directions for Playing: _____

Criteria for Winning: _____

Exceptions to the Rules: _____

Additional Information: _____

Required Graphics: _____

Advertising of Other Products to be Included: _____

Possible Careers: Technical Writer - Senior Database Administrator - Help Desk PC Support Specialist - E-Business Specialist – Desktop Publisher - Technical Testing Engineer - Customer Service Representative – Instructional Designer - Customer Liaison

Student Design Contract

Assessment Score: _____

This Contract made and entered into this _____day of _____, 20 ____,

between _____
Print Name

called "Client" whose address is _____
Street Address City State Zip Code

and Student Design Company, Inc., called "Designer" whose address is

_____
Class Hour/Period

Both parties hereby agree:

1. DESIGN CRITERIA: Client will provide criteria for the design of game directions.
2. PRELIMINARY PLANS: Designer will provide preliminary designs (two designs) for *Client* to choose and approve.
3. PAYMENT: Client agrees to pay Designer the agreed points of _____, together with any additional points agreed upon prior to execution of said Contract. Final payment will be made upon final approval of the completed project by the Client.
4. COMPLETION: Designer shall begin design work immediately upon obtaining signed contract and shall have project completed no later than _____, subject to permissible delays as described in School Student Handbook and/or Instructor Regulations.
5. WORK PERFORMANCE: Designer shall perform all work and shall not pass on or relegate work to any subcontractor (student) inside or outside of class.
6. TOOLS & EQUIPMENT: Designer shall be responsible for the safe and correct use of all hardware and/or software used by Designer to complete the project.
7. DESIGN MATERIALS & SUPPLIES: Designer shall be responsible for requesting and obtaining all necessary materials and supplies for the project.
8. SAFETY: Designer shall be responsible for knowing and following all general and specific safety and conduct rules while working on the project. Designer shall keep work area clear of all clutter and/or hazards at all times during the project.

Design Criteria:

_____

_____

_____

_____

_____ _____
Client Signature Designer Signature

_____ _____
Print Name Print Name

Possible Careers: Technical Writer - Senior Database Administrator - Help Desk PC Support Specialist - E-Business Specialist – Desktop Publisher - Technical Testing Engineer - Customer Service Representative – Instructional Designer - Customer Liaison

Student Client Approval Form

TO BE COMPLETED BY THE DESIGNER

Attach three design proposals (*Board Game Directions*) in order of recommendation to this form. Explain below why you have chosen the first design to be number one.

_____

_____

_____ _____

Print Designer's Name Date Designs Submitted

TO BE COMPLETED BY THE CLIENT

The Client hereby (check one)

_____ accepts the attached design proposal from the designer in full

_____ accepts the attached design in part with the following changes to be made:

1. _____

_____

2. _____

_____

3. _____

_____

Use reverse side if needed

_____ rejects the attached design proposal based on the following:

4. _____

_____

5. _____

_____

Use reverse side if needed

_____ _____

Client Signature Date Reviewed

Exploration

Interactive Media Career Field

Information Technology Career Fields:

Network Systems

Information Support and Services

Interactive Media

Programming and Software Development

Possible Careers: Audio/Video Engineer – Animator – Media/Instructional Designer – Streaming Media Specialist – Web Page Developer – Webmaster – Multimedia Authoring Specialist – 2D/3D Artist – Virtual Reality Specialist – Web Page Designer

Interactive Media

According to the E-Stats Report published by the U.S. Census Bureau dated May 25, 2006, e-commerce continues to grow steadily, exhibiting faster growth this quarter in three out of four major economic sectors than total economic activity (http://www.census.gov/eos/www/papers/2004/2004reportfinal.pdf). People are interested in conducting business via the Internet, and companies are aware they must maintain a presence on the Web in order to compete for these dollars being spent electronically. Consequently, these companies will demand a better website than the one offered by their competition, and will look for a website designer who can deliver just that.

This new website must be quick to download because speed is the number one priority. No one wants to sit around waiting for a page to download. If the site is not available in 15 seconds or less, chances are the customer has clicked the button and gone on to another page. Whatever the designer worked so hard to create, never even made it to the screen.

Secondly, the website must be usable. End users do not always enter the site from the home page, so navigation should be easy and logical to follow. If users cannot find their way around, they will not want to come back.

Last, but not least, the site must be pleasing to look at. Appearance is important, but not if the end user never makes it to the site or becomes so confused navigating the site they cannot find what they want. The text should be easy to read and the graphics should enhance the site, not be overwhelming.

Teacher Preparation

Prepare a bulletin board or other visual display illustrating the website design process from scripting to end product. Be sure to include a mixture of gender and ethnicity in your displays. Have on hand several different types of website design examples for students to view.

Prepare to discuss and demonstrate the process of using client criteria to create successful website designs. Help students recognize the need to consider not only client criteria, but basic website design standards, elements and principles of design. You may want to arrange to have a website developer visit with your students about design and share about his/her occupation at the same time.

This scenario presents a design project your student company could complete. Have them do this project or select one of your own, depending on students' abilities, facilities and budget.

Suggested Activities

Client Criteria (Website Design)
Go over the Client Criteria form with your students to determine what requirements will be used for the design of the product logo. This example is for the Hopping Peg Game project as the Client. You may choose to use another project, in which case you will need to develop a different *Client Criteria* list. (See *Student Client Criteria* activity, page 32)

Design Contract (Website Design)
The first step in this process is to estimate the cost of designing and publishing the website. After estimating the cost, review and fill out the *Design Contract* with your students. Their estimates only need to be approximate. Remember, this is only a simulation. It is necessary they understand what a contract is and how important it is to live up to a contract. (See *Student Design Contract* activity, page 33)

Website Design Ideas
This activity will give your students the opportunity to brainstorm ideas for a website template based on the criteria established in the first activity. This template will be used as the basic design for all four pages the students will be required to create. You should review with students fundamental rules to follow for website design before they begin this activity. Student Teams (or individuals) should use a website authoring software (Word, Publisher, Navigator, Front Page) for the design problem. You may want to give them web page ideas or sample web pages from existing products or companies. Be sure the students label fonts, sizes and colors used. Require students to check each other's work to make sure design concepts meet all of the client criteria. This will give them teamwork experience. (See *Student Website Brainstorming Ideas* and *Template*, page 34 & 35)

Client Approval
Students need to understand that the process of designing includes meeting the desires/wants and needs of the client. This activity provides accountability for the designer (student). The *Client Approval* form also provides the teacher with a method of assessing the student work. (See *Student Client Approval Form*, page 36)

Website Development
This activity will give your students the opportunity to create and/or review a website created by someone else. Not all website are viewable with all browsers, on all platforms, and different pages layout differently on various monitors. Have the students check each of these items on different systems, monitors, or with different browsers to review how the pages load. (See *Student Website Development* activity, page 37)

References/Resources

Basic Web Page Layout and Design – terrific interactive tutorial for students (20-30 min)
http://library.albany.edu/imc/webdesign/

Web Style Guide, 2nd Edition – very thorough guide to all facets of web design
http://www.webstyleguide.com/index.html

Basic Web Design – great information
http://www.olemiss.edu/depts/it/webmaster/web_design.html

Web Page Design – From Planning to Posting – basic guide done for teachers to use with a class
http://www.essdack.org/webdesign/index.html

Basic Web Design Guidelines – simple, easy to follow
http://www.twospots.com/web-articles/5/

Possible Careers: Audio/Video Engineer – Animator – Media/Instructional Designer – Streaming Media Specialist – Web Page Developer – Webmaster – Multimedia Authoring Specialist – 2D/3D Artist – Virtual Reality Specialist – Web Page Designer

Student Name: _____

Client Meeting Date: _____ Assessment Score: _____

Student Client Criteria

The website designer is hired by a client (a person that needs a website designed and published to meet specific requirements) to design a set of linked pages for publishing on the Internet. The client will often have some idea of what they want on their website but will need the professional website designer to develop the best design for their website. The designer will begin by interviewing the client to gain an understanding of what the client wants and needs. This activity will provide you with an opportunity to experience finding out what the client wants and needs for this design project.

Client Questionnaire

Client Name: _____
Print Name

Name of Company: _____

Product/Service to be Featured: _____

Type of Website: ___E-commerce ___Blog ___Government ___Game ___Archive

___Database ___Directory ___Information ___News ___Personal

___WebPortal ___Other _____

Number of Pages Desired: _____

Pages Desired: ___Home Page ___Directions for Playing the Game ___FAQs

___Sales ___Online Game Playing ___Tournament Web Cam ___About Us
___ Other: _____

Optional Features: ___Counter ___Links to Other Pages ___Webmaster Email Link

___Last Updated On ___Company Logo ___Links to Other Company Products

___Customer Feedback Form ___ Other: _____

Preferences for Graphics: _____

_____

Possible Careers: Audio/Video Engineer – Animator – Media/Instructional Designer – Streaming Media Specialist – Web Page Developer – Webmaster – Multimedia Authoring Specialist – 2D/3D Artist – Virtual Reality Specialist – Web Page Designer

Student Design Contract

Assessment Score: _____

This Contract made and entered into this _____day of _____, 20____,

between _____
Print Name

called "Client" whose address is _____
Street Address City State Zip Code

and Student Design Company, Inc., called "Designer" whose address is

_____
Class Hour/Period

Both parties hereby agree:

1. DESIGN CRITERIA: Client will provide criteria for the design of website.
2. PRELIMINARY PLANS: Designer will provide preliminary designs (two designs) for *Client* to choose and approve.
3. PAYMENT: Client agrees to pay Designer the agreed points of _____, together with any additional points agreed upon prior to execution of said Contract. Final payment will be made upon final approval of the completed project by the Client.
4. COMPLETION: Designer shall begin design work immediately upon obtaining signed contract and shall have project completed no later than _____, subject to permissible delays as described in School Student Handbook and/or Instructor Regulations.
5. WORK PERFORMANCE: Designer shall perform all work and shall not pass on or relegate work to any subcontractor (student) inside or outside of class.
6. TOOLS & EQUIPMENT: Designer shall be responsible for the safe and correct use of all hardware and/or software used by Designer to complete the project.
7. DESIGN MATERIALS & SUPPLIES: Designer shall be responsible for requesting and obtaining all necessary materials and supplies for the project.
8. SAFETY: Designer shall be responsible for knowing and following all general and specific safety and conduct rules while working on the project. Designer shall keep work area clear of all clutter and/or hazards at all times during the project.

Design Criteria:

_____

_____

_____

_____

_____

_____ _____
Client Signature Designer Signature

_____ _____
Print Name Print Name

Possible Careers: Audio/Video Engineer – Animator – Media/Instructional Designer – Streaming Media Specialist – Web Page Developer – Webmaster – Multimedia Authoring Specialist – 2D/3D Artist – Virtual Reality Specialist – Web Page Designer

Student Website Brainstorming Ideas

Designing a website can be a lot of fun, but challenging. Your manager (instructor) will provide needed "how to" information for you to complete this task. After completing the review on how to create a website, use the blank *Brainstorming Website Template* (see *Brainstorming Web Page Template*) to create your ideas for the website. Before you begin, you must define the purpose of the site, identify who will visit the site and make sure you have a clear understanding of the client's needs.

Once you have developed your website concepts, you will need to gain the approval of your client (see *Student Client Criteria Form*).

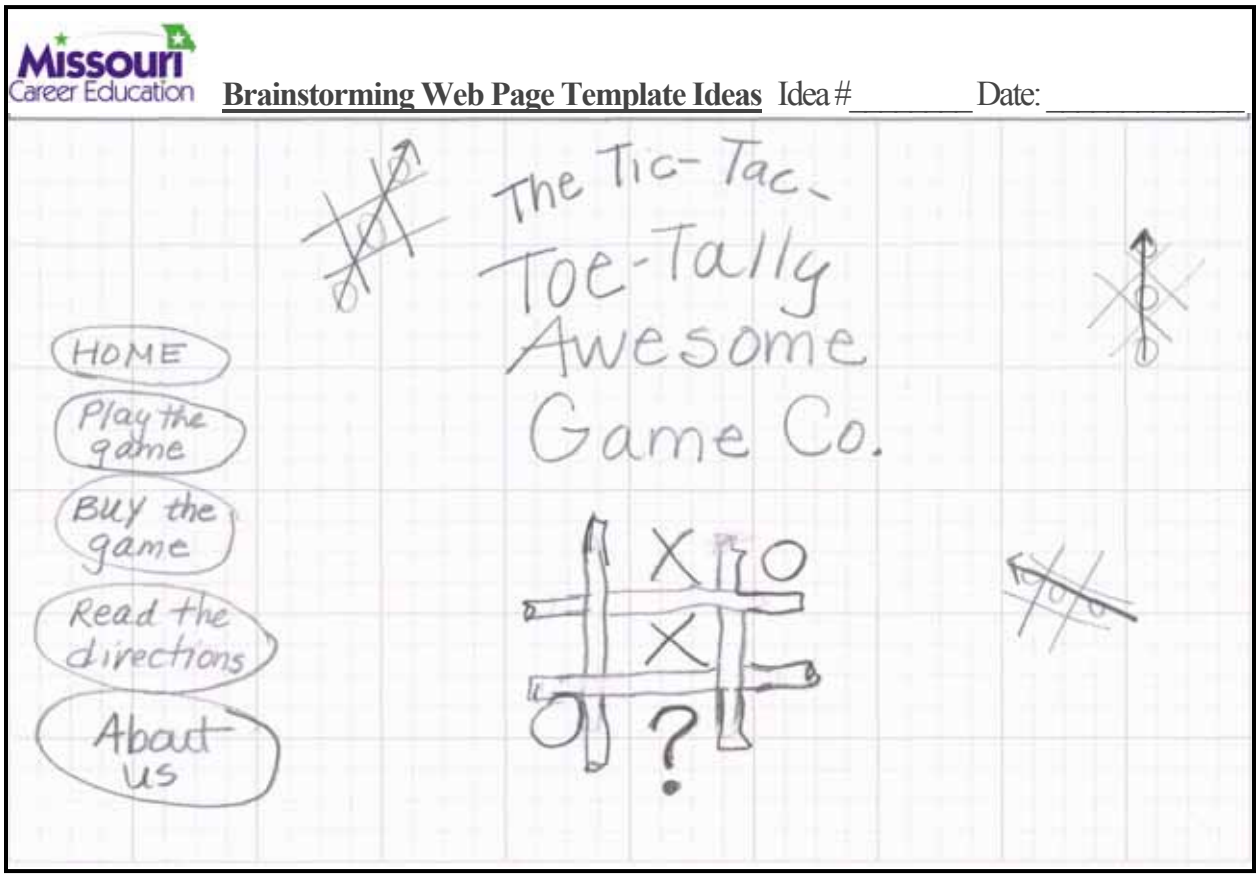

Fig. 1 Brainstorming Web Page Example

Reference: http://library.albany.edu/imc/webdesign/

Possible Careers: Audio/Video Engineer – Animator – Media/Instructional Designer – Streaming Media Specialist – Web Page Developer – Webmaster – Multimedia Authoring Specialist – 2D/3D Artist – Virtual Reality Specialist – Web Page Designer

Student Website Brainstorming Template

Brainstorming Web Page Template Ideas Idea #_____ Date: _____

Reference: http://library.albany.edu/imc/webdesign/

Possible Careers: Audio/Video Engineer – Animator – Media/Instructional Designer – Streaming Media Specialist – Web Page Developer – Webmaster – Multimedia Authoring Specialist – 2D/3D Artist – Virtual Reality Specialist – Web Page Designer

Student Client Approval Form

TO BE COMPLETED BY THE DESIGNER

- Attach Home Page and three additional pages proposed by the design team.
- Explain below why you feel these pages meet or exceed the client's criteria.

_____

_____

_____ _____
Print Designer's Name Date Designs Submitted

TO BE COMPLETED BY THE CLIENT

The Client hereby (check one)

_____ accepts the attached design proposal from the designer in full

_____ accepts the attached design in part with the following changes to be made:

1. _____

   _____

2. _____

   _____

3. _____

   _____

   Use reverse side if needed

_____ rejects the attached design proposal based on the following:

4. _____

   _____

5. _____

   _____

   Use reverse side if needed

_____ _____
Client Signature Date Reviewed

Possible Careers: Audio/Video Engineer – Animator – Media/Instructional Designer – Streaming Media Specialist – Web Page Developer – Webmaster – Multimedia Authoring Specialist – 2D/3D Artist – Virtual Reality Specialist – Web Page Designer

Student Website Development

Once client approval has been obtained for the design ideas, begin developing the web pages by using Word, Publisher, Navigator, or Front Page. As a web page designer, you may be called upon to use software which you have not used before. If this is the case, it is up to you, the designer, to learn the software. Your manager (instructor) will provide the necessary training.

When you have the web pages designed, it will be time to "test" your pages on different computer systems and different monitors. This is necessary since web pages may not work properly in all situations.

Use the following data sheet below to keep track of your tests. When you have successfully tested your web pages, you will be ready to "publish" them.

TEST RECORD

Internet Browser:

____ Microsoft Internet Explorer
___ Yes ___ No

____ Netscape
___ Yes ___ No

____ Web TV
___ Yes ___No

____ Opera
___ Yes ___ No

____ Mozilla Firefox
___ Yes ___No

____ Other _____
___ Yes ___ No

Operating Platforms:

____ Windows 98
___ Yes ___ No

____ Windows 2000
___ Yes ___ No

____ Windows XP
___ Yes ___ No

____ Linux
___ Yes ___ No

____ MacOS
___ Yes ___ No

____ IBM OS/2
___ Yes ___ No

Monitors Tested:

_____ _____

_____ _____

Career Search

Information Technology

Division of Career Education
Department of Elementary & Secondary Education
Jefferson City, Missouri

Missouri Center for Career Education
Department of Career & Technology Education
University of Central Missouri
Warrensburg, Missouri

Introduction to Career Search

The students have spent the last few weeks in hands-on experiences within this Career Cluster gaining an understanding of and an appreciation for various occupations. They should also have gained some understanding of what knowledge and skills are needed to enter these occupations. This unit of study is intended to help the student gain more detailed information about specific occupations that interest them. Before attempting the search, students should take an interest survey to give them insight and direction. Students will then be ready to select their occupations of interest and complete the career search. Remember, a major objective of this course is for students to gain an educated understanding of career options within specific clusters.

Teacher Preparation

There are several references available for teachers and students. View these references before finalizing lessons and before students begin their career search. Visit with your guidance counselor(s) at the beginning of this course to coordinate your efforts and arrange time for the counselor to help. Also, contact a area career center to arrange class presentations and/or a tour of the center facilities and programs.

Note: Teacher enthusiasm for this unit will be a huge encouragement for students. Help students understand that good planning now will save them time and money later. Emphasis the fact that plans can change and what they select now can be altered at any point in their high school and/or college life. Additionally, encourage students to share their findings with their parents or guardians.

Although there are many resources available in print and online students can use, Missouri Kuder (http://mo.kuder.com/) is the official college and career planning program recognized by Guidance & Placement Services, Division of Career Education, Department of Elementary and Secondary Education. A guidance counselor will be able to help access the website.

Prepare a bulletin board displaying various educational options after high school in this Career Cluster. Be sure to include both local and distant schools as well as low to high cost schools.

Resources:

- Missouri Kuder, http://mo.kuder.com
- Missouri Guidance and Placement Services, http://dese.mo.gov/divcareered/career_plan.htm
- Explore Careers, http://www.iseek.org/sv/10000.jsp
- Gettech, http://gettech.org/default2.asp
- Vocational Information Center, http://www.khake.com
- Technology Careers, http://www.fieldstotechnology.org
- Career Voyages, US Government, http://www.careervoyages.gov

Suggested Activities

Interest Assessment (if not taken previously)
This activity will only need to be completed once in the semester. Take the interest assessment (Kuder® Career Search with Person Match), the skills inventory (Kuder Skills Assessment) and print out the Composite Report from these two. If possible, enlist the help of a guidance counselor. Go to http://mo.kuder.com to find the assessment documents.

Career Search Identity
Make sure students have the *Information Technology Career fields Chart* available so they can select occupations relevant to this Career Cluster search. Decide how many searches students should complete. It is suggested they complete one search for each of the occupational levels, technician, technologist and professional. Ask them to complete more if time permits.

Handout: *Definitions of the Three Levels of Occupations* (page 37)
This handout will give students a brief description of the three levels of occupations students might find in any Career Field. This is a way of recognizing different levels of education and skills needed for an occupation.

Handout: *MLA Citation Style* (page 43) and *APA Crib Sheet* (page 46)
Students will be asked to cite their sources of information. This handout will give them the correct format for citing different sources. Review this information with students. Check with English teachers and/or librarians to confirm the style(s) being taught.

Career Center Presentation (if not completed previously)
Contact a career center director or guidance counselor and make arrangements for a tour of the center facilities and a presentation of the programs the center offers. If it is not possible to tour the facilities, arrange for presentations by career center faculty in your classroom or lab. Make sure the presentations include photos. If possible, make a video tour of the center with interviews by faculty and students.

Handout: *Career Center Information* (teacher designed)
Design an information sheet with appropriate questions about the various programs offered by the area career center in the cluster area of *Information Technology*. Include such topics as the type of activities for students, certifications available, types of jobs after the program, transferability to college, characteristics students should possess in order to be successful in each program, etc.

Four-Year High School Plan
Enlist the assistance of a guidance counselor. Students should identify courses that will prepare them for post high school employment and/or higher education programs. Use Missouri Kuder and the *Missouri Educational Career Plan* (Information Technology) form (page 42) and can also be found at http://dese.mo.gov/divcareered/career_plan.htm.

Student Definitions for Occupations Levels

TECHNICIAN

Technicians typically build, repair, maintain and/or operate specialized, complex, technical equipment and systems. A technician receives technical training through an apprenticeship program (on-the-job), a technical certification program or a two-year associate degree college program.

TECHNOLOGIST

Technologists typically work as technical managers and must be able to understand theories and apply the principles and concepts of mathematics, science and applications of computer fundamentals. Generally, a technologist is college educated with a four-year degree, which includes general education, technical specializations and technical management.

PROFESSIONAL

A professional is a person who has an occupation requiring training in the liberal arts or the sciences and usually advanced study (course work after the bachelor's degree or a master's degree) in a specialized field such as, but not limited to, architects, engineers, upper level managers, certified accountants and educators.

Career Fields: Network Systems, Information Support and Services, Interactive Media, Programming and Software Development

Student Career Search Identity

Student Name:_____ **Graduation Year:** _____

Activity Completed: _____ **Activity Assessment:** _____
Date

Your career search is designed to help you gain understanding and knowledge about career possibilities within your interest of the Career Cluster *Information Technology*. Based on your recent experiences in this class and the interest assessment you took in Kuder, you will choose at least one occupational field and an occupation from each of the three levels of occupations: technician, technologist and professional. When you have completed your search, you will:

1. know what level of education you must have.
2. know what technical skills you must have.
3. know what academic skills you must have.
4. know what the working conditions will be.
5. know what the average wage/salary will be.
6. know what the outlook for jobs will be.
7. know where the jobs will be found.

You should select your occupations from the *Information Technology Career fields Chart*. Within each career field, occupations can be divided into three levels: 1) technician, 2) technologist and 3) professional. You are to select one occupation from each of the occupational levels which may be from one career field or all three career fields. Your teacher can help you decide what level your choice of occupation falls under. Complete the following information:

Occupations I will research:

_____ Technician: _____
Field Occupation

_____ Technologist: _____
Field Occupation

_____ Professional: _____
Field Occupation

Possible Careers: Audio/Video Engineer – Animator – Media/Instructional Designer – Streaming Media Specialist – Web Page Developer – Webmaster – Multimedia Authoring Specialist – 2D/3D Artist – Virtual Reality Specialist – Web Page Designer

Student Career Search Activity

Career Field: _____ **Student Name:** _____

Activity Completed: _____ **Activity Assessment:** _____**Graduation Year:** _____

Occupation: _____ Level: ___Technician ___Technologist ___Professional

Sources of Information - Refer to Bibliographic Style Sheet for correct format to cite references:

Work Activities - Provide at least four activities this person would do on the job:

Work Conditions - List at least three physical conditions you would work under and if you would be required to work with other people:

Are you required to work with other people? _____ Yes _____ No

Skills, Abilities and Knowledge - List the required skills, abilities and knowledge in each of the areas listed below:

Communication: _____

Math Level: _____

Science Knowledge: _____

Technical Knowledge: _____

Tool/Equipment Skill: _____

Preparation - Check all education or training you need to enter this occupation:

___ High School Diploma ___ GED ___ On-The-Job Training/Apprenticeship

___ Technical ___ University Other _____

Length and Location of preparation: _____

Wages - List the hourly wage and the annual expected income:

Per Hour: _____ Per Month: _____ Per Year: _____

Outlook (Will there be jobs available in this occupation in the future?)

# of Jobs available: _____ In five years, 20____: _____ In ten years, 20____: _____

Major Employers and Job Locations - What type of companies will hire you and where will you live?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

EDUCATIONAL CAREER PLAN

Career Path: Industrial & Engineering Technology

Career Cluster: Information Technology

Career Major:

Date: _____

Student Name: _____

Student Signature: _____

Advisor Signature: _____

Parent/Guardian Signature (if required):

_____

High School

	9th Grade	***10th Grade***	***11th Grade***	***12th Grade****
	English I Algebra I or Geometry Physical Science or Biology I Geography/State History PE/Health or Fine Arts	English II Geometry or Algebra II Biology I or Chemistry I World History PE/Health or Fine Arts	English III Algebra II or Trigonometry Chemistry or Physics American History	English IV Trigonometry or Pre-Calculus Physics or Environmental Science Economics/Government Personal Finance Practical Art (if needed)
	Career Major Elective(s) Agriscience I Foundations Course (PLTW) Technology Education	Career Major Elective(s) Agriscience II Foundations Course (PLTW) Technology Education	***Career Major Coursework:*** **Aerospace Engineering Agriculture Power & Technology **Biotechnical Engineering **Civil Engineering and Architecture **Computer Integrated Information Tech Computer Numerical Control Drafting and CAD Drafting and Design Electronics **Engineering Design & Development Industrial Maintenance Introduction to Engineering Plastic Information Technology Precision Machining Principles of Ag. Technology Principles of Engineering Welding	
	Additional Coursework Foreign Language or Computer Technology	Additional Coursework Foreign Language or Computer Technology		

Postsecondary

Area Career Center	*Community College*	*College/University*	*Other*
❑ Automated Information Technology ❑ Drafting and CAD ❑ Electronics ❑ Industrial Maintenance ❑ Information Technology Engineering Technology ❑ Plastic Information Technology ❑ Precision Machining ❑ Welding	❑ Agriculture Engineering ❑ Apprenticeships ❑ Automated Aerospace Information Technology ❑ Engineering Technology ❑ Industrial Drafting ❑ Industrial Electronics ❑ Industrial Maintenance ❑ Machining ❑ Information Technology ❑ Pre-Engineering ❑ Precision Production Trades ❑ Tool & Die Making	❑ Education ❑ Engineering Technology ❑ Industrial Technology ❑ Mechanical Engineering ❑ Mechanical Engineering Technology	❑ Apprenticeship ❑ Military ❑ On-the-Job Training

Career Enhancement Options

Work-based Learning Opportunities	**Relevant High School Intra-Curricular/Co-Curricular Experiences**	**Graduation Exams**
After School Employment Cooperative Occupational Experience Internship/Mentorship Job-Shadowing On-The-Job Training Service Learning	Career and Technical Student Organization: SkillsUSA Technology Students of America (TSA) Other high school activities:	___U.S. Constitution ___MO Constitution

Adapted from National Career Cluster

*12th grade year should include at least 3 academic courses including college prep math or science.
**These courses are part of the Project Lead The Way curriculum. More information is available at www.pltw.org.
Note: All Career and Technical Education courses count as a practical arts credit.

MLA Citation Style

This guide provides a basic introduction to the MLA citation style. It is based on the 6th edition of the MLA Handbook for Writers of Research Papers published by the Modern Language Association in 2003.

Copies are available at the Vanier Library Reference Desk, in the Webster Library Reference Collection and on 3-hour Reserve (Webster). The call number for the handbook is LB 2369 G53 2003.

The MLA Handbook is generally used for academic writing in the humanities. The handbook itself covers many aspects of research writing including selecting a topic, evaluating sources, taking notes, plagiarism, the mechanics of writing, the format of the research paper as well as the way to cite sources.

This guide provides basic explanations and examples for the most common types of citations used by students. For additional information and examples, refer to the MLA Handbook.

Parenthetical references in the text

Parenthetical documentation allows you to acknowledge a source within your text by providing a reference to exactly where in that source you found the information. The reader can then follow up on the complete reference listed on the Works Cited page at the end of your paper.

- In most cases, providing the author's last name and a page number are sufficient:

  In response to rapid metropolitan expansion, urban renewal projects sought "an order in which more significant kinds of conflict, more complex and intellectually stimulating kinds of disharmony, may take place" (Mumford 485).

- If there are two or three authors, include the last name of each:

  (Winks and Kaiser 176)

  (Choko, Bourassa and Baril 258-263)

- If there are more than three authors, include the last name of the first author followed by "et al." without any intervening punctuation:

  (Baldwin et al. 306)

- If the author is mentioned in the text, only the page reference needs to be inserted:

  According to Postman, broadcast news influences the decision-making process (51-63).

Parenthetical documentation is not used for electronic or web documents if there is no pagination.
Further examples and explanations are available in Chapter 6 of the MLA Handbook.

Works Cited

The alphabetical list of works cited that appears at the end of your paper contains more information about all of the sources you've cited allowing readers to refer to them, as needed. The main characteristics are:

- The list of Works Cited must be on a new page at the end of your text
- Entries are arranged alphabetically by the author's last name or by the title if there is no author
- Titles are underlined (not *italicized*) and all important words should be capitalized
- Entries are double-spaced (for the purposes of this handout, single-spacing is used)

Below are some examples of the most common types of sources including online sources (web and databases).

Book with one author

Mumford, Lewis. The Culture of Cities. New York: Harcourt, 1938.

Book with two or three authors

Francis, R. Douglas, Richard Jones and Donald B. Smith. Destinies: Canadian History Since Confederation. Toronto: Harcourt, 2000.

Book with more than three authors

Baldwin, Richard et al. Economic Geography and Public Policy. Princeton: Princeton UP, 2003.

Two or more books by the same author

Replace the author's name by three hyphens and arrange alphabetically by the book's title

Postman, Neil. Amusing Ourselves to Death: Public Discourse in the Age of Show Business. New York: Viking, 1985.

---. The Disappearance of Childhood. New York: Vintage, 1994.

Anthology or compilation

Abate, Corinne S., ed. Privacy, Domesticity and Women in Early Modern England. Burlington, VT: Ashgate, 2003.

Work in an anthology or an essay in a book

Naremore, James. "Hitchcock at the Margins of Noir." Alfred Hitchcock: Centenary Essays. Eds. Richard Allen and S. Ishii-Gonzalès. London: BFI, 1999.

Book by a corporate author

Associations, corporations, agencies and organizations are considered authors when there is no single author

Organisation for Economic Co-operation and Development. Action Against Climate Change: The Kyoto Protocol and Beyond. Paris: OECD, 1999.

Article in a reference book or an entry in an encyclopedia

If the article/entry is signed, include the author's name; if unsigned, begin with the title of the entry

Guignon, Charles B. "Existentialism." Routledge Encyclopedia of Philosophy. Ed. Edward Craig. 10 vols. London: Routledge, 1998.

A translation

Kafka, Franz. The Metamorphosis. Trans. and Ed. Stanley Corngold. New York: Bantam, 1972.

A government publication

Canada. Dept. of Foreign Affairs and International Trade. Freedom From Fear: Canada's Foreign Policy for Human Security. Ottawa: DFAIT, 2002.

United Nations. Dept. of Economic and Social Affairs. Population Division. Charting the Progress of Populations. New York: UN, 2000.

Book in a series

Bloom, Harold, ed. André Malraux. Modern Critical Views. New York: Chelsea House, 1988.

Article in a journal

Ferrer, Ada. "Cuba 1898: Rethinking Race, Nation and Empire." Radical History Review 73 (1999): 22-49.

Man, Glenn K. S. "The Third Man: Pulp Fiction and Art Film." Literature Film Quarterly 21.3 (1993): 171-178.

Article in a newspaper or magazine

Semenak, Susan. "Feeling Right at Home: Government Residence Eschews Traditional Rules." Montreal Gazette 28 Dec. 1995, Final Ed.: A4.

Driedger, Sharon Doyle. "After Divorce." Maclean's 20 Apr. 1998: 38-43.

A review

Kirn, Walter. "The Wages of Righteousness." Rev. of Cloudsplitter, by Russell Banks. New York Times Book Review 22 Feb. 1998: 9.

Kauffmann, Stanley. "A New Spielberg." Rev of Schindler's List, dir. Steven Spielberg. New Republic 13 Dec. 1993: 30.

Television or radio program

"Scandal of the Century." Narr. Linden MacIntyre. The Fifth Estate. CBC Television. 23 Jan. 2002.

Sound recording

Ellington, Duke. "Black and Tan Fantasy." Music is My Mistress. Musicmasters, 1989.

Film, video recording or DVD

The Shining. Dir. Stanley Kubrick. Perf. Jack Nicholson, Shelley Duvall. Warner Bros., 1980.

Macbeth. Dir. Roman Polanski. Perf. Jon Finch, Francesca Annis and Nicholas Selby. 1971. DVD. Columbia, 2002.

Musical composition, published score

Beethoven, Ludwig van. Symphony no. 4 in B-flat major, op. 60. Mineola, NY: Dover, 2001.

Work of art, photographed, in a book

Cassatt, Mary. Mother and Child. 1890. Wichita Art Museum, Wichita. American Painting: 15601913. By John Pearce. New York: McGraw, 1964. Slide 22.

• Article from a database

Provide the same information as you would for a printed journal article and add the name of the database, the platform of the database (if applicable), the access provider (Concordia University Libraries), the date of access and the general URL for the database

NOTE - If the article is in HTML only, pagination is not required. However, you can include the start page followed by a hyphen, a space and then a period. If a PDF version is available, provide pagination.

Brennan, Katherine Stern. "Culture in the Cities: Provincial Academies During the Early Years of Louis XIV's Reign." Canadian Journal of History 38.1 (2003): 19-42. CBCA Complete. ProQuest. Concordia University Libraries. 29 Mar. 2004 <http://www.proquest.com>.

Dussault, Marc and Bruce G. Barnett. "Peer-assisted Leadership: Reducing Educational Managers' Professional Isolation." Journal of Educational Administration 34.3 (1996): 5- . ABI/INFORM Global. ProQuest. Concordia University Libraries. 29 Mar. 2004 <http://www.proquest.com>.

Heming, Li, Paul Waley and Phil Rees. "Reservoir Resettlement in China: Past Experience and the Three Gorges Dam." The Geographical Journal 167.3 (2001): 195-212. Academic Search Premier. EBSCOhost. Concordia University Libraries. 29 Mar. 2004 <http://search.epnet.com>.

• **Web page**

"Joyce Wieland." Celebrating Women's Achievements: Women Artists in Canada. 2000. National Library of Canada. 29 Mar. 2004. <http://www.nlc-bnc.ca/women/h12-523-e.html>.

• **Internet site**

Legends of our Times: Native Ranching and Rodeo Life on the Plains and Plateau. 22 Jan. 1999. Canadian Museum of Civilization. 29 Mar. 2004. <http://www.civilisations.ca/aborig/rodeo/rodeo00e.html>.

• **Article in online periodical**

Sehmby, Dalbir S. "Wrestling and Popular Culture." CCLWeb: Comparative Literature and Culture 4.1 (2002). 29 Mar. 2004 <http://clcwebjournal.lib.purdue.edu/clcweb02-1/sehmby02.html>.

Revised:
March 2004

APA CRIB SHEET

Dr. Abel Scribe PhD - October 2006

The *APA Crib Sheet* is a concise guide to using the style of the American Psychological Association in writing research papers. It is based on the current fifth edition of the APA *Publication Manual*. The latest version is at www.docstyles.com. The *Crib Sheet* is routinely updated; it is the product of many contributors. This version was revised in Fall 2006 by Dr. Abel Scribe PhD. Doc Scribe is not affiliated in any way with the APA--this style sheet is free! Freeware Copyright 2006 by Dr. Abel Scribe PhD.

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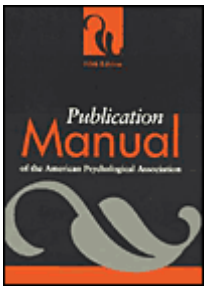
READ ME



APA style is the style of writing used by journals published by the American Psychological Association (APA). The style is documented in the *APA Publication Manual* (5th ed., 2001). The APA *Manual* began as an article published in *Psychological Bulletin* in 1929, the product of a 1928 conference of anthropologists and psychologists who gathered "to discuss the form of journal manuscripts and to write instructions for their preparation" (APA, 2001, p. xix). The APA first published the guidelines as a separate document called the *Publication Manual* in 1952. Today the manual is in its fifth edition, and *APA style* is widely recognized as a standard for scientific writing in psychology and education, used by over a thousand research journals.

APA Manual at Amazon.com: (Paperback $26.95) (Spiral Bound $33.95).

Some of the more common rules and reference sources in APA style are covered in the APA *Crib Sheet*. However, this document is no substitute for the 440 page APA *Manual*, which has evolved into a comprehensive style guide. The APA *Manual* should be purchased by any serious student preparing an article, theses, or dissertation in psychology or education. It answers question you may not think to ask. The APA *Crib Sheet* has no affiliation with the American Psychological Association. It began as a "community service" project by Professor Dewey, and has become the most widely consulted resource on APA style on the Internet.

The APA *Manual* draws a distinction between *final manuscripts* such as class papers, theses, and dissertations, and *copy manuscripts* to be submitted for review and publication. The *APA Crib Sheet* follows the instructions given in chapter six for "Material Other Than Journal Articles" (APA, 2001, pp. 321-330). Final manuscripts differ from copy manuscripts in these ways:

- *Spacing*. "Double-spacing is required throughout most of the manuscript. When single-spacing would improve readability, however, it is usually encouraged. Single spacing can be used for table titles and headings, figure captions, references (but double-spacing is required between references), footnotes, and long quotations" (APA, 2001, p. 326).
- *Figures, tables, and footnotes*. "In a manuscript submitted for publication, figures, tables, and footnotes are placed at the end of the manuscript; in theses and dissertations, such material is frequently incorporated at the appropriate point in text as a convenience to readers" (APA, 2001, p. 325).

The most notable **additions and changes** to fifth edition of the APA *Manual* (2001) include:

- *Electronic sources* require new formats in references. The formats previously featured on the APA Web site have been superseded. Several formats are included in the *Crib Sheet*.
- *Italics or underline?* "Use the functions of your word-processing program to create italic, bold, or other special fonts or styles following the style guidelines specified in this *Publication Manual*" (APA, 2001, p. 286).
- *Hanging indents.* "APA publishes references in a *hanging indent* format. . . . If a hanging indent is difficult to accomplish with your word-processing program, it is permissible to indent your references with paragraph indents" (APA, 2001, p. 299).

Acknowledgements are noted at the end of the Crib Sheet. The *APA Crib Sheet* can be freely distributed, but not sold! A good faith effort has been made to assure the accuracy of this document, both by the author and by the many people who have offered suggestions. The *APA Crib Sheet* has benefited greatly from their insight and expertise. The more comprehensive *Writer's Guide to APA Psychology* is avialable free at www.docstyles.com.

APA EDITORIAL STYLE (TEXT RULES)

These Style Notes cover details commonly encountered when drafting a research paper. These are also the details that knowledgeable readers are likely to note when you get them wrong. You may elect to apply your own best judgment on the more esoteric features, as long as you remember to be slavishly consistent throughout your paper.

Abbreviations

Use acronyms only for long, familiar terms (MMPI).

- Explain what an acronym means the first time it occurs: American Psychological Association (APA).
- If an abbreviation is commonly used as a word, it does not require explanation (IQ, LSD, REM, ESP).
- To form plurals of abbreviations, add s alone, without apostrophe (PhDs, IQs, vols., Eds).

Use periods when making an abbreviation within a reference (Vol. 3, p. 6, pp. 121-125, 2nd ed.)

- Use two-letter postal codes for U.S. state names (e.g., GA for Georgia) in references (write the state name out in text).
- Use the abbreviation **pp.** (plain text) in references to newspaper articles, chapters in edited volumes, and text citations only, *not* in references to articles in journals and magazines.
- Use **hr** for hour or hours, **min** for minutes, **s** for seconds, **m** for meter or meters (all in plain text, no period, no bold font).
- In using standard abbreviations for measurements, like m for meter, do not add an s to make it plural (100 seconds is 100 s).

Do not use Latin abbreviations in the text unless they are inside parentheses. An exception is made for et al. when citing a source. For example, "Smith et al. (2002) found monkeys measured higher in IQ tests than grad students." Instead, write out the equivalent word or phrase:

cf.	[use **compare**]	**etc.**	[use **and so forth**]	**viz.**	[use **namely**]
e.g.	[use **for example**]	**i.e.**	[use **that is**]	**vs.**	[use **versus**]

- Do not use the old abbreviations for subject, experimenter, and observer (S, E, O).
- Do not use periods within degree titles and organization titles (PhD, APA).
- Do not use periods within measurements (lb, ft, s) except inches (in.).

Avoiding Biased and Pejorative Language

In general, avoid anything that causes offense. The style manual makes the following suggestions:

DO NOT use . . .	When you can use . . .
ethnic labels (e.g., Hispanic)	geographical labels (e.g., Mexican Americans if from Mexico)
"men" (referring to all adults)	"men and women"
"homosexuals"	"gay men and lesbians"
"depressives"	"people with depression"

Correct Use of the Terms "Gender" and "Sex"

- The term "gender" refers to culture and should be used when referring to men and women as social groups, as in this example from the *Publication Manual:* "sexual orientation rather than gender accounted for most of the variance in the results; most gay men and lesbians were for it, most heterosexual men and women were against it" (APA, 2001, p. 63).
- The term "sex" refers to biology and should be used when biological distinctions are emphasized, for example, "sex differences in hormone production."
- Avoid gender stereotypes. For example, the manual suggests replacing "An American boy's infatuation with football" with "An American child's infatuation with football" (see APA, 2001, p. 66).

Sensitivity to Labels

Be sensitive to labels. A person in a clinical study should be called a "patient," not a "case." Avoid equating people with their conditions, for example, do not say "schizophrenics," say "people diagnosed with schizophrenia." Use the term "sexual orientation," not "sexual preference." The phrase "gay men and lesbians" is currently preferred to the term "homosexuals." To refer to all people who are not heterosexual, the manual suggests "lesbians, gay men, and bisexual women and men" (APA, 2001, p. 67).

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Ethnic labels can be tricky, and the manual has a lot to say about them. For example, "American Indian" and "Native American" are both acceptable usages, but the manual notes that there are nearly 450 Native American groups, including Hawaiians and Samoans, so specific group names are far more informative, such as *Hopi* or *Lakota*.

- Capitalize *Black* and *White* when the words are used as proper nouns to refer to social groups. Do not use color words for other ethnic groups. In racial references, the manual simply recommends that we respect current usage. Currently both the terms "Black" and "African American" are widely accepted, while "Negro" and "Afro-American" are not. These things change, so use common sense.
- The terms *Hispanic, Latino,* and *Chicano* are preferred by different groups. The safest procedure is use geographical references. Just say "Cuban American" if referring to people from Cuba.
- The term *Asian American* is preferable to *Oriental*, and again the manual recommends being specific about country of origin, when this is known (for example, Chinese or Vietnamese). The manual specifies that hyphens should not be used in multiword names such as Asian American or African American.
- People from northern Canada, Alaska, eastern Siberia, and Greenland often (but not always!) prefer *Inuk* (singular) and *Inuit* (plural) to "Eskimo." But some Alaska natives are non-Inuit people who prefer to be called Eskimo. This type of difficulty is avoided by using geographical references. For example, in place of "Eskimo" or "Inuit" one could use "indigenous people from northern Canada, Alaska, eastern Siberia, and Greenland."
- In referring to age, be specific about age ranges; avoid open-ended definitions like "under 16" or "over 65." Avoid the term *elderly*. *Older person* is preferred. *Boy* and *Girl* are acceptable referring to high school and and younger. For persons 18 and older use *men* and *women*.

In general, call people what they want to be called, and do not contrast one group of people with another group called "normal." Write "we compared people with autism to people without autism" not "we contrasted autistics to normals." Do not use pejorative terms like "stroke victim" or "stroke sufferers." Use a more neutral terminology such as "people who have had a stroke." Avoid the terms "challenged" and "special" unless the population referred to prefers this terminology (for example, Special Olympics). As a rule, use the phrase "people with _____" (for example, "people with AIDS," not "AIDS sufferers").

Capitalization

- Capitalize formal names of tests (Stroop Color-Word Interference Test).
- Capitalize major words and all other words of four letters or more, in headings, titles, and subtitles outside reference lists, for example, "A Study of No-Win Strategies."
- Capitalize names of conditions, groups, effects, and variables only when definite and specific. (Group A was the control group; an Age x Weight interaction showed lower weight with age.)
- Capitalize the first word after a comma or colon if, and only if, it begins a complete sentence. For example, "This is a complete sentence, so it is capitalized." As a counter example, "no capitalization here."
- Capitalize specific course and department titles (GSU Department of Psychology, Psych 150).
- Do not capitalize generic names of tests (Stroop color test). "Stroop" is a name, so it remains capitalized.
- Capitalize nouns before numbers, but not before variables (Trial 2, trial *x*).
- Do not capitalize names of laws, theories, and hypotheses (the law of effect).
- Do not capitalize when referring to generalities (any department, any introductory course).

Commas

- Do not use commas to separate parts of measurement (9 lbs 5 oz). Use the metric system, as a rule.
- Use commas before "and" in lists, for example, height, width, and depth.
- Use commas between groups of three digits, for example, 1,453.
- Use commas to set off a reference in a parenthetical comment (Patrick, 1993).
- Use commas for seriation within a paragraph or sentence. For example, "three choices are (a) true, (b) false, and (c) don' t know." Use semicolons for seriation if there are commas within the items. For example, (a) here, in the middle of the item, there are commas; (b) here there are not; (c) so we use semicolons throughout.
- Use commas in exact dates, for example, April 18, 1992 (but not in April 1992).

Compound Words

Compound words are two or more words that work together in a specified order. This order cannot be reversed or rearranged without destroying the compound word's meaning. A dictionary is the best guide to spelling and usage. If it is not in the dictionary it is not likely a hyphenated compound, but check the following rules for possible exceptions. If it is in the dictionary, use the first spelling given.

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"With frequent use, open or hyphenated compounds tend to become closed (*on line* to *on-line* to *online*). Chicago's general adherence to Webster does not preclude occasional exceptions when the closed spellings have become widely accepted, pronunciation and readability are not at stake, and keystrokes can be saved" (CMS, 2003, p. 300).

General Rules

Full-time compound words are hyphenated whatever their role in a sentence—as an adjective or a noun. "The court-martial hearing is set for 1000 hours. The hearing will determine whether a court-martial is warranted." *Court-martial* is a full-time compound word (as is "full-time"). This information is given in a dictionary.

Conditional compounds are hyphenated as ***adjectives***, but not when used as nouns.

1. *Adjectival compound.* "The counselor suggested a *role-playing* technique to reduce the stress of encounters, but cautioned that *role playing* alone would not solve the problem." *Role-playing* is a compound adjective, but not a compound noun.
2. *Add a hyphen* to any prefix attached to a proper noun, capitalized abbreviation, or number. For example, the *post-Freudian* era, the *pre-1960s* civil rights movement, the many *non-ASA* journals in sociology.
3. *Fractions.* "When . . . a fraction is considered a single quantity, it is hyphenated [whether it is used as a noun or as an adjective]" (CMS, 2003, p. 383). *One-fourth* the audience was comprised of former refugees. A *two-thirds* majority was required to pass the initiative.
4. *Made-up compound.* A compound may be of the *made-up-for-the-occasion* variety: "The *up-to-date* figures were unadjusted." But when these terms are used in the predicate they are not hyphenated: The compound word was *made up for the occasion.* "The unadjusted figures were *up to date*."
5. *Serial compounds.* When two or more compound modifiers have a common base, this base is sometimes omitted in all but the last modifier, but the hyphens are retained. Long- and short-term memory, 2-, 3-, and 10-minute trials.
6. *Do not hyphenate* a compound term using an adverb ending in *-ly*. "The widely used term was not yet in the dictionary. Such clearly understood terms are eventually documented if they endure."

Avoid confusion! A *re-creation* is not the same as *recreation*. Does "the fast sailing ship" refer to a ship that was designed for speed, or one that is making an unusually fast passage? If the former, then it is a *fast* sailing ship. If it is the latter, then it is a *fast-sailing* ship (CMS, 1993, p. 203).

Prefixes

Through long usage most common prefixes do not require a hyphen: *aftereffect, antifreeze, cofounder, Internet, microwave, oversight, preempt, reexamine, supermarket, unbiased, underground*. There are many exceptions. When in doubt check a dictionary. Note the following exceptions:

1. *Same two letters.* If the prefix puts the same two letters together, a hyphen is sometimes inserted. For example, write: anti-industrial, co-op, non-native, post-trial. But also write: cooperative, coordinate, nonnegotiable, overrate, overreach, overrule, reelect, unnamed.
2. *Superlatives-diminutives.* Some prefixes, best-, better-, ill-, lesser-, little-, well-, are hyphenated when they precede the noun they modify, but are not hyphenated when preceded by a modifier, or when used as a predicate adjective. The ill-advised attack failed, the strategy was ill advised.
3. *Weird terms.* If the prefix creates an unfamiliar or weird term, a hyphen may improve clarity. The Turabian *Guide* offers these examples: *pro-ally, anti-college* instead of *proally, anticollege* (1976, p. 101).

The following prefixes *always* require a hyphen.

Prefix	Example	Prefix	Example	Prefix	Example
all-	all-powerful leader	great-	great-grandfather	self-	self-reliant person
ever-	ever-faithful friend	half-	half-baked plan	still-	still-active volcano
ex-	ex-president	much-	much-loved pastor		

Emphasis: Italics or Quotation Marks?

Italicize or underline the titles of books, species names, novel or technical terms and labels (the first time only), words and phrases used as linguistic examples, letters used as statistical symbols, and the volume numbers in references to journal articles.

- Add emphasis to a word or short phrase by putting it intalics (the first time only). Use this sparingly!
- Add emphasis to a word or phrase in a quotation with italics, *followed by the note* [italics added] in brackets.
- Note a word used as a word, or a foreign term, with italics, for example, *hutte* means *hut* in German.
- Introduce a keyword or technical term (the *neoquasipsychoanalytic* theory), or identify endpoints on a scale (*poor* to *excellent*) with italics.
- Do not italicize foreign words that have entered common usage (et al., a priori, laissez-faire, arroyo).

Use quotation marks for:

- odd or ironic usage the first time--the "outrageous" use of social security funds to finance the deficit.

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- article and chapter titles cited in the text but not in the reference list. (In Smith's (1992) article, "APA Style and Personal Computers," computers were described as "here to stay" (p. 311).

Do not use quotes to hedge, cast doubt, or apologize (e.g., he was "cured"). Leave off the quotes.

Numbers

"Use figures to express numbers 10 and above and words to express numbers below 10" as long as the numbers below 10 do not express precise measurements and are not grouped with numbers above 10 (APA, 2001, p. 122).

- Spell out common fractions, common expressions, and centruries (one-half, Fourth of July, twentieth century).
- Spell out numbers beginning sentences (Thirty days hath September . . .).
- To make plurals out of numbers, add *s* only, with no apostrophe (the 1950s).
- When numbers below 10 must be mixed with numbers above 10 in the same sentence they should be written as numerals. For example, write "the students trying out for the soccer team included 5 girls and 16 boys."
- Use words and numerals with two numbers in series (five 4-point scales).
- Use combinations of numerals and written numbers for large sums (over 3 million people).
- Use numerals for exact statistical references, scores, sample sizes, and sums (multiplied by 3, or 5% of the sample). "We studied 30 subjects—two year olds–who cried an average of 1 hr 20 min per day.
- Use metric abbreviations with physical measure (4 km) but not when written out (many *meters* distant).
- Use the percent symbol (%) only with figures (5%) not with written numbers (five percent).
- Put a leading zero before decimal fractions less than one (e.g., 0.25 km), unless the fraction can never be greater than one as in probabilities (e.g., $p < .01$).
- Ordinal numbers follow the same rules as other numbers. Spell out ordinals below 10: first, second, . . . ninth. Use numerals for ordinals 10 and above: 10th, 43rd, 99th, and so on. Exception—the *twentieth* century.

APA style has a special set of numbers that are always written as numerals. These are "numbers that represent time; dates; ages; sample, subsample, or population size; specific numbers of subjects or participants in an experiment; scores and points on a scale; exact sums of money; and numerals as numerals" (APA, 2001, p. 124).

Statistics

- Most symbols for statistics are placed in italics (exceptions are very rare).
- Place a space before and after all arithmetic operators and signs (= , < , > , - , + , etc.).

Nonstandard symbols are used for some common statistics (:check the APA *Manual*, Table 3.9, for a complete list of accepted symbols):

M = mean ($\bar{x}$), *Mdn* = median,
SD = standard deviation (σ), *SS* = sum of squares (ΣX^2).

Descriptive Statistics & Inferential Statistics

Descriptive statistics give summary information about a sample or population, such as the average (mean) or standard deviation of some characteristic. For example, "Abigail Scribe has a GPA of 3.65, which is below the average for students accepted at Ivy and Oak University ($M = 3.85$, $SD = 0.21$)." Descriptive statistics may be presented in the text with the appropriate syntax (e.g., "a GPA of 3.85"). When referred to indirectly they are set in parentheses, as with ($M = 3.85$, $SD = 0.21$).

Inferential statistics reason from a sample to the characteristics of a population, often expressed as a probability. For example, "Abbie Scribe has a chance of being accepted at Ivy and Oak University ($p < .15$), but counselors advise her that her odds are not great based on last year's applicants, $X^2(2, N = 2247) = 2.81$, $p < .15$ (one-tailed)." Inferential statistics are presented in the text (no parentheses) with "sufficient information to allow the reader to fully understand the results of the analysis. . . . [Which] depends on the analytic approach selected" (APA, 2001, p. 138). Examples from the APA *Manual* (2001):

"$t(60) = 1.99$, $p = .03$ (one-tailed), $d = .50$; $X^2(4, N = 90) = 10.51$, $p = .03$."

The first number in parentheses is degrees of freedom of the analysis; the N in the X^2 statistic is the sample population.

Punctuation & Lists

- Do not use a colon or other punctuation after an introduction which is not a complete sentence such as this one, or any other sentence in the body of text which flows into an extended quote. The quote "picks up where the sentence leaves off" and provides the punctuation.
- Use a dash (an em dash or double hyphen) when there is a sudden interruption like this one--zoiks!--in the flow of a sentence. Overuse "weakens the flow of the writing" (APA, 2001, p. 81).
- Use parentheses to introduce an abbreviation, for example, the galvanic skin response (GSR).

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- When enumerating a series of topis or subjects: (a) introduce each topic with a letter in parenthese, (b) following a colon, to (c) emphasize their distinctiveness. This is called enumeration or seriation.
- When listing separate paragraphs in a series, use a number and a period, not parentheses and letters.
  1. The first paragraph goes here.
  2. The second paragraph goes here.

Space once after all punctuation, including:

- after commas, colons, and semicolons;
- after punctuation marks at the ends of sentences;
- after periods that separate parts of a reference citation
- after periods of the initials in personal names (e.g., J. R. Zhang).

Do not space after internal periods in abbreviations (e.g., a.m., i.e., U.S.) or around colons in ratios (APA 2001, 291).

No bullets? The APA *Publication Manual* makes no mention of using bullets in research papers. There are no examples of the use of bullets in recent publications. “Bullets (heavy dots . . .) make good visual signposts in unnumbered lists but can lose their force if used too frequently” (CMS, 2003, p. 272).

Quotations

Quotations must be placed in quotes or indented as a block quote. All quotations must include a citation referring the reader to the source document. As a matter of form quotations should be integrated into the flow of your text, and may be edited to do so.

- Reproduce a quote exactly. If there are errors, introduce the word *sic* italicized and bracketed—for example, “the speaker stttutured [*sic*] terribly”—immediately after the error to indicate it was in the original.
- When the author is introduced in the text the page number follows the quotation, but the date follows the author’s name. Smith (1999) reported that “the creature walked like a duck and quacked like a duck” (p. 23). The abbreviation “p.” for page (“pp.” for pages) is lower cased.
- Without an introductory phrase, the author, date, and page are placed together. For example, It was reported that “the creature walked like a duck and quacked like a duck” (Smith, 1999, p. 23).
- If a quote begins in what is mid-sentence in the original, the first word may be uppercased to open a sentence. “Quotations should be integrated into the flow of your text.” Do not write “[Q]uotations should be. . . .” Conversely, a uppercased word should be lowercased “as a matter of form” without indicating the change.
- Expand or clarify words or meanings in a quotation by placing the added material in quotes. For example, "They [the Irish Republican Army] initiated a cease-fire.”
- Use three dots with a space before, between, and after each (ellipsis points) when omitting material, four if the omitted material includes the end of a sentence (with no space before the first). Do not use dots at the beginning or end of a quotation unless it is important to indicate the quotation begins or ends in midsentence.
- “The punctuation mark at the end of a sentence [in a quotation] may be changed to fit the syntax [without indicating the change in the text]” (APA, 2001, p. 119).
- Double quotation marks may be changed to single quotes, and the reverse, without indicating the change.
- Add emphasis in a quotation with italics, *followed by the note* [italics added] in brackets.

Block Quotes

For quotations over 40 words in length, indent and single space the whole block (double space in papers for review or publication). Indent the first line five spaces (one-half inch, 1.25 cm) if there are paragraphs within the long quotation after the first. Add the citation *after* the final punctuation in a block quote.

Block quotes may be single spaced in research papers, but must be double spaced in copy manuscripts submitted for publication or review (see APA, 2001, p. 326).

Terminology

Despite dictionary advice to the contrary, APA style insists that *data* is the plural form of *datum*. Preferred forms of words are (see APA, 2001, p. 89):

appendix (*appendixes not* appendices)
datum (*data* is plural only!)
matrix *(matrices not* matrixes)
phenomenon (*phenomena* is plural)
schema (*schemas* is plural)

Internet terms are in a state of transition. Whatever form you use, be consistent!

- **e-mail** The *hyphenated form is found in the AMA, APA, CMS, and MLA style manuals!* The *e* is never uppercased except at the beginning of a sentence.
- **Internet [Net]** Internet is a proper noun.
- **electronic mailing list [listserv]** The APA manual notes that *Listserv* is a trademarked name for an *electronic mailing list* (the term it prefers instead).

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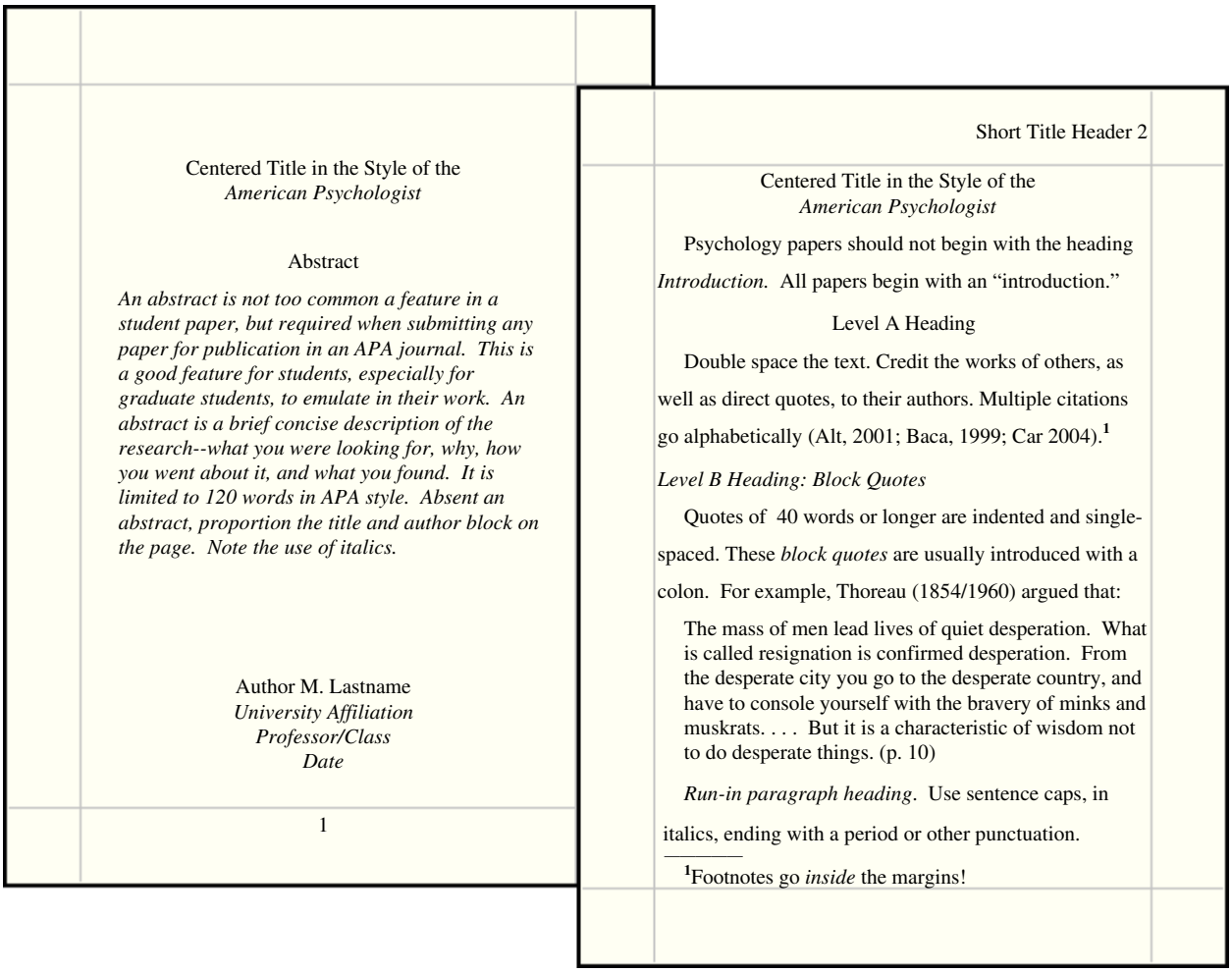
- **Since** is used in its temporal sense: "Since 11:00 AM all air traffic was shut down." That is, the term introduces events after a specific point in time. Use *since* to mean "after that" not "because" (2001, p. 57).
- **Web** This is a proper noun. When *Web* is used in an open compound term (or with a hyphen when used as an adjective), as in *Web page*, *Web* is uppercased. When the compound term is closed, *Web* is spelled lowercased, as in *webmaster*.
- **Web based [Web-based]** This term was found in the APA manual, spelled open as a noun. It was found in *Wired Style* spelled with a hyphen used as an adjective (1999, p. 173).
- **Web page [Web page]** This term is spelled open. When a compound term is spelled open (without a hyphen), or as a compound adjective (with a hyphen), as in *Web page, Web-page design*, then *Web* is uppercased.
- **Web site [Web site]** This term is spelled open.
- **webmaster, web. . .** Most Web terms (except *Web ring*) are spelled lowercased and closed (without a hyphen): *webcam, webcast, webhead, webmail, webzine*, etc. (then again, there's also *WebTV)*. But some of these terms should probably be spelled open in formal writing—*Web cam, Web cast, Web mail, Web TV.*
- **While** is used in its precise temporal sense. For example, "While Tom is a good fellow, he's not all that bright" makes sense in everyday conversation. *While* in this context means "even though." But in the temporal sense, the example reads, "*During the time* (While) Tom is a good fellow, he's not all that bright." This makes no sense. Write instead, "*Whereas* or *Although* Tom is a good fellow, he's not all that bright."

PAGE FORMATS

The APA *Manual* notes that "the size of the type should be one of the standard typewriter sizes (pica or elite) or, if produced from a word processing program, 12 points" (2001, p. 285).

The body of the paper should be in a *serif typeface* (like Courier or Times Roman) with lettering on figures in a sans serif typeface (such as Helvetica or Arial).



Centered Title in the Style of the
American Psychologist

Abstract

An abstract is not too common a feature in a student paper, but required when submitting any paper for publication in an APA journal. This is a good feature for students, especially for graduate students, to emulate in their work. An abstract is a brief concise description of the research--what you were looking for, why, how you went about it, and what you found. It is limited to 120 words in APA style. Absent an abstract, proportion the title and author block on the page. Note the use of italics.

Author M. Lastname
University Affiliation
Professor/Class
Date

1

Short Title Header 2

Centered Title in the Style of the
American Psychologist

Psychology papers should not begin with the heading *Introduction.* All papers begin with an "introduction."

Level A Heading

Double space the text. Credit the works of others, as well as direct quotes, to their authors. Multiple citations go alphabetically (Alt, 2001; Baca, 1999; Car 2004).[1]

Level B Heading: Block Quotes

Quotes of 40 words or longer are indented and single-spaced. These *block quotes* are usually introduced with a colon. For example, Thoreau (1854/1960) argued that:

> The mass of men lead lives of quiet desperation. What is called resignation is confirmed desperation. From the desperate city you go to the desperate country, and have to console yourself with the bravery of minks and muskrats. . . . But it is a characteristic of wisdom not to do desperate things. (p. 10)

Run-in paragraph heading. Use sentence caps, in italics, ending with a period or other punctuation.

[1]Footnotes go *inside* the margins!

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Text Details

- Abstracts are limited to 120 words (APA, 2001, p. 13).
- Double space the text, but *single space* within block quotes, references, and the abstract. This is suggested in chapter 6 of the APA *Manual*, "Material Other then Journal Articles" (see "Read Me" at the beginning of the *Crib Sheet*.
- Footnotes are rarely used in APA papers, except for author affiliation and contact information--the *author note*. If you need to add an explanatory note make it an endnote.
- Hyphenation should not occur at the end of lines, only between words when necessary. Right justifying a paper can introduce ambiguities with uncertain hyphenation, a *ragged right* margin is preferred in research writing.
- Indent paragraphs, block quotes, and hanging indents one-half inch (1.25 cm or five to seven spaces).
- Keyword emphasis requires the use of italics, but only the first time a term is used. If the intent is to indicate odd or ironic usage, use quotation marks.
- Margins should be at least 1" all around (about 2.5 cm).
- Page numbers are required on every page: Number pages consecutively.
- The page header summarizes the title in a few words. The header and page number go inside the margin space, double spaced above the text, next to the right margin, except on the title page.
- Word processor features—such as bold and italic fonts and hanging indents—should be used as appropriate.

Headings?

APA headings follow a complex hierarchy, with provision for up to five levels. These come, in descending order, as levels 5, 1, 2, 3, 4. But if up to three levels of headings are required, use levels 1, 3, and 4, in that order. If four levels are required, insert level 2 between levels 1 and 3. If five levels are required, start with level five and work down in order (5, 1, 2, 3, 4). Confused? Most papers will need no more than three levels. To avoid confusion these are labeled A, B, and C (APA levels 1, 3, and 4 respectively) (see APA, 2001, pp. 114–115).

> Level A Heading Centered and Set in Heading Caps
>
> *Level B Heading: At Left Margin, Italicized, in Heading Caps*
>
> *Level C heading: Indented, italicized, sentence caps.* These *paragraph* or *run-in* headings end with a period (or other punctuation); are not complete sentences.

Use headings in the order presented. Level A and B headings do not end with punctuation except to add emphasis with an exclamation point or question mark. Do not begin a paper with the heading *Introduction,* this is understood.

Line Spacing?

"Double-spacing is required throughout most of the manuscript. When single-spacing would improve readability, however, it is usually encouraged. Single spacing can be used for table titles and headings, figure captions, references (but double-spacing is required between references), footnotes, and long quotations" (APA, 2001, p. 326). This directive applies only to research papers presented as *final manuscripts*. See "Read Me."

References & Tables

Table Notes

Number tables consecutively as they appear in your text. Use only whole numbers, no 5a, 5b, etc. See recent issues of the *American Psychologist* or other APA journals for more complex table layouts. "Tables are efficient, enabling the researcher to present a large amount of data in a small amount of space" (APA, 2001, p. 147).

- Place tables close to where they are first mentioned in your text, but do not split a table across pages. (Tables in papers submitted for review or publication are placed on separate pages at the end of the paper.)
- Label each table beginning with the table number followed by a description of the contents in italics.
- Horizontal rules (lines) should be typed into tables; do not draw them in by hand.
- Each row and column must have a heading. Abbreviations and symbols (e.g., "%" or "nos.") may be used in headings.
- Do not change the number of decimal places or units of measurement within a column. "Use a zero before the decimal point when numbers are less than one" (APA, 2001, p. 128). Write "0.23" not ".23" *unless* the number is a statistic that cannot be larger than one, for example a correlation $r = .55$, or a probability $p < .01$.
- Add notes to explain the table. These may be general notes, footnotes, or probability notes.
- General notes follow the word *Note: (in italics)* and are used to expalin general information about the table, such as the source.
- Footnotes are labeled "a, b, c, etc." and set in supercript. They explain specific details.

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- Probability notes are indicated by asterisks and other symbols to indicate statistical significance. This is explained in the probability note at the bottom of the table. "Assign a given alpha level the same number of asterisks from table to table within your paper, such as *$p < .05$ and **$p < .01$; the larger [greater] probability receives the fewest asterisks [the smaller or lessor probability gets more asterisks]" (APA, 2001, p. 170).
- You may both single space and double space within a table to achieve clarity. Tables in papers submitted for review or publication (only!) must be double spaced throughout.

References

Allport, G. W. (1979). *The nature of prejudice*. Cambridge, MA: Addison-Wesley. (Original work published 1954)

Berry, D. S., & Pennebaker, J. W. (1993). Nonverbal and verbal emotional expression and health. *Psychotherapy and Psychosomatics, 59,* 11–19.

Booth, W. C., Colomb, G. G., & Williams, J. M. (1995). *The craft of research*. Chicago: University of Chicago Press.

Goleman, D. (1991, October 24). Battle of insurers vs. therapists: Cost control pitted against proper care. *New York Times*, pp. D1, D9.

Morse, S. S. (1995). Factors in the emergence of infectious diseases. *Emerging Infectious Diseases, 1*(1). Retrieved October 10, 1998, from http://www.cdc.gov/ncidod/EID/eid.htm

Stephan, W. G. (1985). Intergroup relations. In G. Lindzey & E. Aronson (Eds.), *The handbook of social psychology* (3rd ed., Vol. 2, pp. 599–658). New York: Random House.

Wilson, E. O. (1998, March). Back from chaos. *Atlantic Monthly, 281*, 41–62

Place tables and figures in the text close to where they are first discussed. In manuscripts for publication they come at the end of the paper on separate pages.

Table 1

Homicides by Race of Victim: United States 1993

Race	Population[a]	Homicides	Rate[b]
Black[c]	29,986	12,114	40.5*
White	199,686	12,153	6.1
Other	19,038	635	3.3**
Total[d]	248,710	24,932	10.0

Note: Data developed from the *Statistical Abstract of the United States: 1993.*
[a]Population in 1000s. [b]Rate per 100,000 persons in the population. [c]The rate for Black males was 69.2, for White males 9.0. [d]About one-half the "Other" category was comprised of Asian Americans and Native Americans.
*$p < .05$, two-tailed test. **$p < .01$, two-tailed test.

There are three kinds of notes that may be added to a table: general notes (indicated by the word *Note* in italics), specific notes (noted with superscript letters), and probablitiy notes. Readers rarely study tables--think small, concise, focused.

RESEARCH DOCUMENTATION

Text Citations Use the author-date format to cite references in text. For example: as Smith (1990) points out, a recent study (Smith, 1990) shows. . . . Every source cited in your text--and only those sources cited in your text--are referenced in the reference list.

Source	Citation	Source	Citation
No Author	(*Short Title*, 2004) ("Short Title," 2004)	**Chapter**	(APA, 2001, chap. 6)
1 Author	(Smith, 2005) (Smith, 2005, p. 123)	**Data File**	(Corporate Author, 2002
2 Authors	(Smith & Jones, 2004, pp. 123-126)	**In Press**	(Adams, in press)
3/5 Authors	(Smith, Jones, and Garcia, 2003) Next Cite: (Smith et al., 2003, p. 123)	**Message/E-Mail**	(A. B. Smith, personal communication, January 1, 2004)
6 Authors+	(Smith et al., 2002, pp. 123-456)	**Multiple**	(Adam, 2003; Baca, 2004; Burton, 2002)
Corporate Acronym	(United Nations [UN], 1999) Next Cite: (UN, 1999, p. 123)	**No Date Reprint**	(Smith, n.d.) (Freud, 1920/2002)

- Citations with three to five authors list all authors in the first citation; the lead author *et al.* (and others) in subsequent citations: first, (Smith, Jones, Andrews, Baker, & Charles, 2001); next, (Smith et al., 2001).
- Citations with six or more authors list the lead author *et al.* in all citations.

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- The first time "et al." is used in a citation the year is included. If the citation is repeated in the same paragraph, the year may be omitted. For example (Smith et al., 2002, p. 22), then (Smith et al., p. 23).
- Join the last name in a multiple-author citation with *and* (in text) or an ampersand (&) in reference lists and parenthetical citations. For example: As Smith and Sarason (1990) point out, the same argument was made in an earlier study (Smith & Sarason, 1990).
- If a group is readily identified by an acronym, spell it out only the first time. For example, "As reported in a government study (National Institute of Mental Health [NIMH], 1991) . . . ." The next citation gives just the initials and year, (NIMH, 1991).
- If the author is unknown or unspecified, use the first few words of the reference list entry (usually the title), for example: ("Study Finds," 1992). Remember to use *heading caps* in the text when noting a title; always use *sentence caps* in references!
- Reprints cite the he original publication date and reprint date if both are known, for example: (James, 1890/1983). Translations of classics note the date of the translation: (Aristotle, trans. 1931).
- For e-mail and other "unrecoverable data" use personal communication, for example: (C. G. Jung, personal communication, September 28, 1933). These do not appear in the reference list.
- Always cite page numbers after quotations. For example, the author stated, "The effect disappeared within minutes" (Lopez, 1993, p. 311). Or, Lopez (1993) found that "the effect disappeared within minutes" (p. 311).
- If there are two or more citations that shorten to the same lead author and date, give as many additional names as needed to identify them, e.g., (Smith, Jones, et al., 1991) and (Smith, Burke, et al., 1991).
- When citing multiple works by the same author, arrange dates in order. In general, use letters after years to distinguish multiple publications by the same author in the same year, e.g., (Johnson, 1988, 1990a, 1990b).

Reference Lists

List references alphabetically by author. When there are multiple works by the same author, list references by date, the most recent *last*.

1. Use prefixes if they are commonly a part commonly part of the surname (e.g., *de Chardin* comes before *Decker*, *MacGill* comes before *McGill*. But do not use *von* (e.g,, write: Helmholtz, H. L. F. von).
2. Disregard apostrophes, spaces, and capitals in alphabetizing; *D'Arcy* comes after *Daagwood*, *Decker* comes after *de Chardin*. Single-author citations precede multiple-author citations (Zev, 1990 then Zev et al., 1990).
3. Alphabetize corporate authors by first significant word. Do not use abbreviations in corporate names.

Abbreviations

Use the abbreviation p. (pp.) before page numbers in encyclopedia entries, multi-page newspaper articles, chapters or articles in edited books, but ***not*** in journal or magazine article citations, where numbers alone are used. The following abbreviations are commonly used in APA references:

chap. chapter	**No.** number	**Pt.** part	**Trans.** translator
ed. edition [**Rev. ed.** revised]	**p. (pp.)** page (pages)	**Suppl.** supplement	**Vol.** volume (as in Vol. X)
Ed. (Eds.) editor(s)	**para.** paragraph	**Tech. Rep.** technical report	**vols.** volumes (as in xx vols.)

Basic Rules

1. *Authors & editors.* List up to six authors to a work, if more than six add et al. Invert all authors' names, using first & middle initials. Withe two or more authors place an ampersand> & < before the final name. Note, unless they are serving in place of authors in a reference, editors' names go in their normal order (First. M. Last).
2. *Character Spacing.* Space once after all punctuation except inside abbreviations, ratios, and URLs where no space is required (APA, 2001, pp. 290–291). Space once after the periods in references and initials.
3. *City, State.* Include the country or state except with the following cities: Baltimore, Boston, Chicago, Los Angeles, New York, Philadelphia, San Francisco, Amsterdam, Jerusalem, London, Milan, Moscow, Paris, Rome, Stockholm, Tokyo, and Vienna (APA, 2001, p. 217). Use postal abbreviations for states, provinces.
4. *Date.* Use the month-day-year format for full dates, but see the sample references for newspapers.
5. *E-documents.* When quoting electronic documents without page numbers, cite paragraph numbers if given, after the paragraph symbol or abbreviation *para.* (e.g., Smith, 2000, ¶ 17). If there are no paragraph numbers, cite the nearest preceding section heading and count paragraphs from there (e.g., Smith, 2000, Method section, para. 4).
6. *E-mail* and other "unrecoverable data" are cited as a personal communication, for example: (A. B. Carter, personal communication, April 1, 2005). These do not appear in the reference list.
7. *Titles of Works.* All titles require sentence caps (all words lowercase except for the first word, first word after a colon, and proper nouns). Article titles are not placed in quotes in references (they are when mentioned in the text). Italicize titles of books, reports, working and conference papers, dissertations, and similar documents.

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Sample References

Anonymous or Unknown Author:

Annual smoking attributable mortality, years of potential life lost and economic costs: United States 1995-1999. (2002). *Morbidity and Mortality Weekly Report, 51*, 300-303.

Citation: ("Annual Smoking," 2002). Use heading caps when citing titles in text citations.

Articles in Research Journals:

Abelson, R. P. (1997). On the surprising longevity of flogged horses: Why there is a case for the significance test. *Psychological Science, 8*, 12-15.

Citation: (Abelson, 1997). APA style places the volume (but not the issue number in a volume) in italics with the name of the journal.

Two to three authors:

McGlynn, E. A., & Brook, R. H. (2001). Keeping quality on the policy agenda. *Health Affairs (Millwood), 20*(3), 82-90.

Citation: (McGlynn & Brook, 2001).

Three to five authors:

Miller, F. G., Emanuel, E. J., Rosenstein, D. L., & Straus, S. E. (2004). Ethical issues concerning research in complementary and alternative medicine. *JAMA, 291*, 599-604.

First Citation: (Miller, Emanuel, Rosenstein, & Straus, 2004); next citations: (Miller et al., 2004).

Six authors:

Mokdad, A. H., Bowman, B. A., Ford, E. S., Vinicor, F., Marks, J. S., & Koplan, J. P. (2001). The continuing epidemics of obesity and diabetes in the US. *JAMA, 286*, 1195-1200.

All citations: (Mokdad et al., 2001).

More than six authors:

McGlynn, E. A., Asch, S. M., Adams, J., Keesey, J., Hicks, J., & DeCristofaro. A., et al. (2003). The quality of health care delivered to adults in the United States. *New England Journal of Medicine, 348*, 2635-2645.

All citations: (McGlynn et al., 2003). In the reference list the first six authors, then add *et al.*

Group author & online variants:

Hypericum Depression Trial Study Group. (2002a). Effect of *Hypericum perforatum* (St John's Wort) in major depressive disorder: A randomized controlled trial. *JAMA, 287,* 1807–1814.

Citation: (Hypericum Depression Trial Study Group, 2002). Cite the full name of a corporate author.

Electronic formats:

Hypericum Depression Trial Study Group. (2002b). Effect of *Hypericum perforatum* (St John's Wort) in major depressive disorder: A randomized controlled trial [Electronic version]. *JAMA, 287,* 1807–1814.

Many documents are now available online as exact facsimile copies of the print original (usually in Adobe's PDF format). References to these facsimiles just add the note [Electronic version] to the reference. If the document is not an exact copy of a print version—"(e.g., the format differs from the print version or page numbers are not indicated)"—add the date you retrieved the document and the URL to the reference (APA, 2001, p. 271).

Hypericum Depression Trial Study Group. (2002c). Effect of *Hypericum perforatum* (St John's Wort) in major depressive disorder: A randomized controlled trial. *JAMA, 287,* 1807–1814. Retrieved July 7, 2002, from http://www.jama.org/articles.html

Annual Review:

Andresen, E. M., Diehr, P. H., & Luke, D. A. (2004). Public health surveillance of low-frequency populations. *Annual Review of Public Health, 25*, 25-52.

Book review:

Camhi, L. (1999, June 15). Art of the city [Review of the book *New York modern: The arts and the city*]. *Village Voice*, p. 154.

Journals paged by issue (online):

Barry, J. M. (2004). The site of origin of the 1918 influenza pandemic and its public health implications [Commentary]. *Journal of Translational Medicine, 2*(3), 1-4. Retrieved November 18, 2005, from http://www.translational-medicine.com/content/2/1/3

Conway, L. G., III. (2001). Number and age of citations in social-personality psychology over the lifespan of the field: Older and wiser? *Dialogue*, *16*(2), 14-15.

Add the issue in the volume (in parentheses in plain text) to these reference after the volume number.

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Regular column:

Coyle, J. T. (2003). Use it or lose it--do effortful mental activities protect against dementia? [Perspective]. *New England Journal of Medicine, 348*, 2489-2490.

Special issue or supplement:

Seligman, M. E. P., & Csikszentmihalyi, M. (Eds.). (2000). Positive psychology [Special issue]. *American Psychologist, 55*(1).

Troiano, R. P., & Flegal, K. M. (1998). Overweight children and adolescents: Description, epidemiology, and demographics. *Journal of Pediatrics, 101*(Suppl. 2), 497-504.

Books and Chapters:

Group author:

American Psychological Association. (2001). *Publication manual of the American Psychological Association* (5th ed.). Washington, DC: Author.

Citation: (American Psychological Association [APA], 2001); next citation (APA, 2001). Note: "Author" is used for the publisher's name above when the author and publisher are identical, an APA quirk.

Three to five authors:

Booth, W. C., Colomb, G. G., & Williams, J. M. (1995). *The craft of research*. Chicago: University of Chicago Press.

Citation: (Booth, Colomb, & Williams, 1995); next citation (Booth et al., 1995).

Chapter or section in a book (online & print):

Beers, M. H., & Berkow, R. (1999). Mood disorders. In *The Merck manual of diagnosis and therapy* (17th ed., sec. 15, chap. 189). Retrieved January 17, 2003, from http://www.merck.com/pubs/mmanual/section15/chapter189/189a.htm

Stephan, W. G. (1985). Intergroup relations. In G. Lindzey & E. Aronson (Eds.), *The handbook of social psychology* (3rd ed., Vol. 2, pp. 599–658). New York: Random House.

Citations: (Beers & Berkow, 1999, chap. 189); (Stephan, 1985).

Edited book (two or more editors):

Friedman, H. S. (Ed.). (1990). *Personality and disease*. New York: Wiley.

Guyatt, G., & Rennie, D. (Eds.). (2002). *Users' guides to the medical literature: A manual for evidence-based clinical practice*. Chicago: American Medical Association.

Edition other than the first (two authors):

Strunk, W., Jr., & White, E. B. (1979). *The elements of style* (3rd ed.). New York: Macmillan.

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State Abbreviations Used in References

AL	Alabama	**GA**	Georgia	**MD**	Maryland	**NM**	New Mexico	**SD**	South Dakota
AK	Alaska	**GU**	Guam	**MA**	Massachusetts	**NY**	New York	**TN**	Tennessee
AS	American Samoa	**HI**	Hawaii	**MI**	Michigan	**NC**	North Carolina	**TX**	Texas
AZ	Arizona	**ID**	Idaho	**MN**	Minnesota	**ND**	North Dakota	**UT**	Utah
AR	Arkansas	**IL**	Illinois	**MS**	Mississippi	**OH**	Ohio	**VT**	Vermont
CA	California	**IN**	Indiana	**MO**	Missouri	**OK**	Oklahoma	**VA**	Virginia
CO	Colorado	**IA**	Iowa	**MT**	Montana	**OR**	Oregon	**VI**	Virgin Islands
CT	Connecticut	**KS**	Kansas	**NE**	Nebraska	**PA**	Pennsylvania	**WA**	Washington
DE	Delaware	**KY**	Kentucky	**NV**	Nevada	**PR**	Puerto Rico	**WV**	West Virginia
DC	Dist. Columbia	**LA**	Louisiana	**NH**	New Hampshire	**RI**	Rhode Island	**WI**	Wisconsin
FL	Florida	**ME**	Maine	**NJ**	New Jersey	**SC**	South Carolina	**WY**	Wyoming

Acknowledgements

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From the original APA Crib Sheet:

> This page is a summary of rules for using APA style. The version you are reading was revised 10/10/96, edited and revised again on September 5, 2000 with Bill Scott of the College of Wooster, and updated in February 2004 by Doc Scribe. I have made every effort to keep this document accurate, but readers have occasionally pointed out errors and inconsistencies which required correction. I am grateful to them and invite additional feedback. This document may be reproduced freely if this paragraph is included. --Russ Dewey, rdewey@georgiasouthern.edu]

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