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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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.

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. Mitch Comer</td>
<td>Technology Education Teacher</td>
<td>Camdenton High School</td>
</tr>
<tr>
<td>Mr. Dee Crosby</td>
<td>Technology Education Teacher</td>
<td>Lange Middle School</td>
</tr>
<tr>
<td>Mr. Mike Egloff</td>
<td>Technology Education Teacher</td>
<td>Southern Boone County R-1 Schools</td>
</tr>
<tr>
<td>Ms. Trisha Guffey</td>
<td>Business Education Career Exploration</td>
<td>Raytown Middle School</td>
</tr>
<tr>
<td>Ms. Laura Henny</td>
<td>Technology Education Teacher</td>
<td>Clinton Middle School</td>
</tr>
<tr>
<td>Mr. Richard Myers</td>
<td>Career Exploration</td>
<td>Lee’s Summit West High School</td>
</tr>
<tr>
<td>Mr. John Petsch</td>
<td>Technology Education Supervisor</td>
<td>St. Louis</td>
</tr>
<tr>
<td>Ms. Suzan Smith</td>
<td>FACS/Career Exploration</td>
<td>Grandview High School</td>
</tr>
<tr>
<td>Mr. Bob Willis</td>
<td>Technology Education Teacher</td>
<td>Liberty High School</td>
</tr>
<tr>
<td>Ms. Linda Washburn</td>
<td>Coordinator</td>
<td>KC Career Education Consortium</td>
</tr>
<tr>
<td>Dr. Gail White</td>
<td>ACC Director</td>
<td>Lake Area Career Center</td>
</tr>
<tr>
<td>Mr. Gavin Allan</td>
<td>Director, Industrial Education</td>
<td>DESE</td>
</tr>
<tr>
<td>Mr. Doug Miller</td>
<td>Technology Education Supervisor</td>
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<tr>
<td>Dr. Bragg Stanley</td>
<td>Director of Guidance</td>
<td>DESE</td>
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<tr>
<td>Ms. Rochelle Parsons</td>
<td>Graduate Assistant</td>
<td>University of Central Missouri</td>
</tr>
<tr>
<td>Dr. Larae Watkins</td>
<td>Coordinator of Research and Curriculum</td>
<td>University of Central Missouri</td>
</tr>
<tr>
<td>Dr. Michael Wright</td>
<td>Department Chair for Career and Technology Education</td>
<td>University of Central Missouri</td>
</tr>
<tr>
<td>Mr. Ben Yates</td>
<td>Technology Education Program Coordinator</td>
<td>University of Central Missouri</td>
</tr>
</tbody>
</table>
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:

<table>
<thead>
<tr>
<th>Participation</th>
<th>10</th>
</tr>
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<tbody>
<tr>
<td>Unit 1: Arts, A/V Technology and Communications</td>
<td>30</td>
</tr>
<tr>
<td>Unit 2: Information Technology</td>
<td>30</td>
</tr>
<tr>
<td>Unit 3: Transportation, Distribution and Logistics</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

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:  _________________

<table>
<thead>
<tr>
<th>Learning Activity</th>
<th>Points Possible</th>
<th>Points Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information Technology</strong></td>
<td></td>
<td></td>
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<tr>
<td>Career Field Matching Activity</td>
<td></td>
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<tr>
<td>Round Table Exploration Activity</td>
<td></td>
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<tr>
<td>Client Criteria (Game Directions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design Contract (Game Directions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Writing Project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Client Approval Form (Game Directions)</td>
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<tr>
<td>Client Criteria (Website)</td>
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<tr>
<td>Design Contract (Website)</td>
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<tr>
<td>Website Design Ideas</td>
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<td>Web Page Design Ideas</td>
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<tr>
<td>Client Approval Form (Website)</td>
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<tr>
<td>Web Page Test Record</td>
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<tr>
<td>Interest Assessment</td>
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<tr>
<td>Career Search Identity</td>
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</tr>
<tr>
<td>Educational Career Plan (4-year Plan)</td>
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</tr>
</tbody>
</table>

| **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.

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

Gettech.org career information

Kidzonline.org

Career Overview computer careers

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

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 *
  - Systems: Administrator * Analyst
  - Telecommunications Engineer

- **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

Resource: www.careerclusters.org

Exploring Career Clusters
Missouri Center for Career Education
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
- 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
Exploring Career Clusters in Information Technology

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

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.

<table>
<thead>
<tr>
<th>Network Systems</th>
<th>Multimedia Authoring Specialist</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Communications Analyst</td>
<td>3 Multimedia Production Assistant</td>
</tr>
<tr>
<td>4 Applications Business Analyst</td>
<td></td>
</tr>
<tr>
<td>Job Title</td>
<td>Quantity</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Systems Tester</td>
<td>4</td>
</tr>
<tr>
<td>Network Information Systems Operator</td>
<td>1</td>
</tr>
<tr>
<td>Webmaster</td>
<td>3</td>
</tr>
<tr>
<td>Systems Engineer</td>
<td>1</td>
</tr>
<tr>
<td>Senior Database Administrator</td>
<td>2</td>
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<tr>
<td>Network Architect</td>
<td>1</td>
</tr>
<tr>
<td>Virtual Reality Specialist</td>
<td>3</td>
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<tr>
<td>Network Manager</td>
<td>1</td>
</tr>
<tr>
<td>Digital Media Specialist</td>
<td>3</td>
</tr>
<tr>
<td>Media/Instructional Designer</td>
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<tr>
<td>Data Modeling Specialist</td>
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<tr>
<td>Network Analyst</td>
<td>1</td>
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<tr>
<td>Technical Account Manager</td>
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</tr>
<tr>
<td>Help Desk Product Support Engineer</td>
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<tr>
<td>Call Center Support Representative</td>
<td>2</td>
</tr>
<tr>
<td>Technical Testing Engineer</td>
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<td>Application Integrator</td>
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<tr>
<td>Business Continuity Analyst</td>
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<td>Cross-Enterprise Integrator</td>
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<tr>
<td>Web Page Developer</td>
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<td>Applications Engineer</td>
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<tr>
<td>Database DSS (Decision Support Services)</td>
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<tr>
<td>Database Knowledge Architect</td>
<td>2</td>
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<tr>
<td>Multimedia Author</td>
<td>3</td>
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<tr>
<td>Software Applications Architect</td>
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<td>Database Systems Analyst</td>
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<td>Data Warehouse Designer</td>
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<tr>
<td>E-Business Specialist</td>
<td>2</td>
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<tr>
<td>Database Administrator</td>
<td>2</td>
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<td>Software Applications Tester</td>
<td>4</td>
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<tr>
<td>Customer Service Representative</td>
<td>2</td>
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<tr>
<td>Systems Administrator</td>
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<tr>
<td>Network Information Systems Administrator</td>
<td>1</td>
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<tr>
<td>Applications Data Modeler</td>
<td>4</td>
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<tr>
<td>Network Systems Support Lead</td>
<td>1</td>
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<tr>
<td>Streaming Media Specialist</td>
<td>3</td>
</tr>
<tr>
<td>Website Developer</td>
<td>3</td>
</tr>
<tr>
<td>Audio/Video Engineer</td>
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</tr>
<tr>
<td>Network Operations Analyst</td>
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<td>Network Security Analyst</td>
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<td>Network Specialist</td>
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<td>Network Transport Administrator</td>
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<td>Network PC Support Specialist</td>
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<td>Help Desk Technician</td>
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<td>Systems User Support Specialist</td>
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<td>Telecommunications Network Technician</td>
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<tr>
<td>Data Management Associate</td>
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<td>Electronic Transactions Implementer</td>
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<tr>
<td>Information Systems Architect, Planner</td>
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<tr>
<td>Artist, 2D/3D</td>
<td>3</td>
</tr>
<tr>
<td>Database Security Expert</td>
<td>2</td>
</tr>
<tr>
<td>Data Warehouse Designer</td>
<td>2</td>
</tr>
<tr>
<td>E-Business Specialist</td>
<td>2</td>
</tr>
<tr>
<td>Database Administrator</td>
<td>2</td>
</tr>
<tr>
<td>Database Systems Analyst</td>
<td>2</td>
</tr>
<tr>
<td>Digital Media Designer</td>
<td>3</td>
</tr>
<tr>
<td>Applications Analyst</td>
<td>4</td>
</tr>
<tr>
<td>Desktop Publisher</td>
<td>2</td>
</tr>
<tr>
<td>Count</td>
<td>Role</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>3</td>
<td>Multimedia Producer</td>
</tr>
<tr>
<td>2</td>
<td>Help Desk PC Support Specialist Manager</td>
</tr>
<tr>
<td></td>
<td>Technical Support Content Manager</td>
</tr>
<tr>
<td>2</td>
<td>Help Desk PC Systems Coordinator</td>
</tr>
<tr>
<td>2</td>
<td>Online Publisher</td>
</tr>
<tr>
<td>2</td>
<td>Publications Manager</td>
</tr>
<tr>
<td>2</td>
<td>Customer Liaison</td>
</tr>
<tr>
<td>1</td>
<td>Network Systems and Data Communications Analyst</td>
</tr>
<tr>
<td>2</td>
<td>Documentation Specialist</td>
</tr>
<tr>
<td>2</td>
<td>Help Desk Sales Support Technician</td>
</tr>
<tr>
<td>2</td>
<td>Electronic Publications Specialist</td>
</tr>
<tr>
<td>4</td>
<td>Operating Systems Programmer</td>
</tr>
<tr>
<td>2</td>
<td>Instructional Designer</td>
</tr>
<tr>
<td>4</td>
<td>Operating Systems Designer/Engineer</td>
</tr>
</tbody>
</table>
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
Exploring Career Clusters in Information Technology

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  

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

Alberta Occupational Profiles  

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

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: ____________________________________________________________

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: _________________________________
## Student Design Contract

**Assessment Score:** __________

This Contract made and entered into this ______ day of ________________, 20 ____, between ________________________________

called “Client” whose address is

<table>
<thead>
<tr>
<th>Street Address</th>
<th>City</th>
<th>State</th>
<th>Zip Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Street Address</th>
<th>City</th>
<th>State</th>
<th>Zip Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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:**

____________________________________________________________________________________
<p>| | | |</p>
<table>
<thead>
<tr>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

_________________________ _______________________
Client Signature          Designer Signature

Print Name

Print Name
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
Exploring Career Clusters in Information Technology

Exploration
Interactive Media Career Field

Information Technology Career Fields:

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

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: ____________________________________________________________

________________________________________
Exploring Career Clusters in Information Technology


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
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).

Reference:  http://library.albany.edu/imc/webdesign/
Exploring Career Clusters in Information Technology


Student Website Brainstorming Template

Brainstorming Web Page Template Ideas  Idea #________ Date: ____________

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

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. ____________________________________________________________________________

   ____________________________________________________________________________

______ rejects the attached design proposal based on the following:

4. ____________________________________________________________________________

   ____________________________________________________________________________

5. ____________________________________________________________________________

   ____________________________________________________________________________

   Use reverse side if needed

   Use reverse side if needed

Client Signature ___________________________ Date Reviewed ____________

Exploring Career Clusters
Missouri Center for Career Education
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 ___ Netscape ___ Web TV
___ Yes ___ No ___ Yes ___ No ___ Yes ___ No

___ Opera ___ Mozilla Firefox ___ Other __________________
___ Yes ___ No ___ Yes ___ No ___ Yes ___ No

Operating Platforms:

___ Windows 98 ___ Windows 2000 ___ Windows XP
___ Yes ___ No ___ Yes ___ No ___ Yes ___ No

___ Linux ___ MacOS ___ IBM OS/2
___ Yes ___ No ___ Yes ___ No ___ 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
- Explore Careers, http://www.iseek.org/sv/10000.jsp
- Vocational Information Center, http://www.khake.com
- Technology Careers, http://www.fieldstotechnology.org
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: ___________________ Date ___________________ Activity Assessment: ________________

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:

<table>
<thead>
<tr>
<th>Field</th>
<th>Technician: Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field</th>
<th>Technologist: Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field</th>
<th>Professional: Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exploring Career Clusters in Information Technology


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. __________________________________________ 4. ______________________________

2. __________________________________________ 5. ______________________________

3. __________________________________________ 6. ______________________________
**EDUCATIONAL CAREER PLAN**

**Career Path:** Industrial & Engineering Technology

**Career Cluster:** Information Technology

**Career Major:**

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

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Exploring Career Clusters
Missouri Center for Career Education
<table>
<thead>
<tr>
<th><strong>Area Career Center</strong></th>
<th><strong>Community College</strong></th>
<th><strong>College/University</strong></th>
<th><strong>Other</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated Information Technology</td>
<td>Agriculture Engineering</td>
<td>Education</td>
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</tr>
<tr>
<td>Drafting and CAD</td>
<td>Apprenticeships</td>
<td>Engineering Technology</td>
<td>Military</td>
</tr>
<tr>
<td>Electronics</td>
<td>Automated Aerospace Information Technology</td>
<td>Industrial Technology</td>
<td>On-the-Job Training</td>
</tr>
<tr>
<td>Industrial Maintenance</td>
<td>Engineering Technology</td>
<td>Mechanical Engineering</td>
<td></td>
</tr>
<tr>
<td>Information Technology Engineering Technology</td>
<td>Industrial Drafting</td>
<td>Mechanical Engineering Technology</td>
<td></td>
</tr>
<tr>
<td>Plastic Information Technology</td>
<td>Industrial Electronics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precision Machining</td>
<td>Industrial Maintenance</td>
<td></td>
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</tr>
<tr>
<td>Welding</td>
<td>Machining</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information Technology</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Pre-Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Precision Production Trades</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tool &amp; Die Making</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Work-based Learning Opportunities</strong></th>
<th><strong>Relevant High School Intra-Curricular/Co-Curricular Experiences</strong></th>
<th><strong>Graduation Exams</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>After School Employment</td>
<td>Career and Technical Student Organization:</td>
<td>____ U.S. Constitution</td>
</tr>
<tr>
<td>Cooperative Occupational Experience</td>
<td>SkillsUSA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technology Students of America (TSA)</td>
<td></td>
</tr>
<tr>
<td>Internship/Mentorship</td>
<td>Other high school activities:</td>
<td>____ MO Constitution</td>
</tr>
<tr>
<td>Job-Shadowing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-The-Job Training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Learning</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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](http://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

Book with two or three authors

Book with more than three authors

Two or more books by the same author
*Replace the author’s name by three hyphens and arrange alphabetically by the book’s title*

Anthology or compilation

Work in an anthology or an essay in a book

Book by a corporate author
*Associations, corporations, agencies and organizations are considered authors when there is no single author*

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*

A translation

A government publication


Book in a series
Article in a journal


Article in a newspaper or magazine


A review


Television or radio program


Sound recording


Film, video recording or DVD


Musical composition, published score


Work of art, photographed, in a book


• 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.


• Web page


• Internet site


• Article in online periodical


Revised:
March 2004
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.

Crib Sheet Contents

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<tr>
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</tr>
<tr>
<td>Capitalization</td>
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</tr>
<tr>
<td>Compound Words</td>
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<td>Conference Papers</td>
</tr>
<tr>
<td>Emphasis (Italics-Quotes)</td>
<td>Tables (notes)</td>
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</tr>
<tr>
<td>Numbers &amp; Statistics</td>
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</tr>
<tr>
<td>Punctuation &amp; Lists</td>
<td>Text Citations</td>
<td>Reports &amp; Papers</td>
</tr>
<tr>
<td>Quotations</td>
<td>Reference Lists</td>
<td>Web Pages</td>
</tr>
<tr>
<td>Terminology</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

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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 questions 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 available free at [www.docstyles.com](http://www.docstyles.com).

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

- Do not use the old abbreviations for subject, experimenter, and observer (S, E, O).
- Do not use period 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:

<table>
<thead>
<tr>
<th>DO NOT use . . .</th>
<th>When you can use . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethnic labels (e.g., Hispanic) &quot;men&quot; (referring to all adults) &quot;homosexuals&quot; &quot;depressives&quot;</td>
<td>geographical labels (e.g., Mexican Americans if from Mexico) &quot;men and women&quot; &quot;gay men and lesbians&quot; &quot;people with depression&quot;</td>
</tr>
</tbody>
</table>

### 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).
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, Latina, and Chicano are preferred by different groups. The safest procedure is to 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 Inu (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 school 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 is called "normal." Write "we compared people with autism to people without autism" not "we contrasted autistics to normals.

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.

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.

Dr. Abel Scribe PhD - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - www.docstyles.com
“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 a-tw-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.

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Example</th>
<th>Prefix</th>
<th>Example</th>
<th>Prefix</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>all-</td>
<td>all-powerful leader</td>
<td>great-</td>
<td>great-grandfather</td>
<td>self-</td>
<td>self-reliant person</td>
</tr>
<tr>
<td>ever-</td>
<td>ever-faithful friend</td>
<td>half-</td>
<td>half-baked plan</td>
<td>still-</td>
<td>still-active volcano</td>
</tr>
<tr>
<td>ex-</td>
<td>ex-president</td>
<td>much-</td>
<td>much-loved pastor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 italics (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, hütte means hut in German.
• Introduce a keyword or technical term (the neouapsychoanalytic 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.
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 centuries (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).
- 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):

\[ M = \text{mean (} \bar{X} \text{),} \]
\[ SD = \text{standard deviation (} \sigma \text{),} \]
\[ Mdn = \text{median,} \]
\[ SS = \text{sum of squares (} \Sigma X^2 \text{).} \]

**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):

\[ t(60) = 1.99, p = .03 \text{ (one-tailed),} \]
\[ d = .50; \quad X^2(4, N = 90) = 10.51, p = .03. \]

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).
When enumerating a series of topics or subjects: (a) introduce each topic with a letter in parentheses, (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 stttutered [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] quotations 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 (appendices 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).
• **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).

<table>
<thead>
<tr>
<th>1</th>
<th>Short Title Header 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Centered Title in the Style of the American Psychologist</td>
</tr>
<tr>
<td>3</td>
<td>Abstract</td>
</tr>
<tr>
<td>4</td>
<td>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.</td>
</tr>
<tr>
<td>5</td>
<td>Author M. Lastname University Affiliation Professor/Class Date</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

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Footnotes go inside the margins!
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 than 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).

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 explain general information about the table, such as the source.
- Footnotes are labeled “a, b, c, etc.” and set in superscript. They explain specific details.
- 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.

<table>
<thead>
<tr>
<th>Source</th>
<th>Citation</th>
<th>Source</th>
<th>Citation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Author</td>
<td>(Short Title, 2004) (“Short Title,” 2004)</td>
<td>Chapter</td>
<td>(APA, 2001, chap. 6)</td>
</tr>
<tr>
<td>1 Author</td>
<td>(Smith, 2005) (Smith, 2005, p. 123)</td>
<td>Data File</td>
<td>(Corporate Author, 2002)</td>
</tr>
<tr>
<td>6 Authors+</td>
<td>(Smith et al., 2002, pp. 123-456)</td>
<td>Multiple</td>
<td>(Adam, 2003; Baca, 2004; Burton, 2002)</td>
</tr>
<tr>
<td>Corporate Acronym</td>
<td>(United Nations [UN], 1999) Next Cite: (UN, 1999, p. 123)</td>
<td>No Date</td>
<td>(Smith, n.d.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reprint</td>
<td>(Freud, 1920/2002)</td>
</tr>
</tbody>
</table>

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.

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 probability notes. Readers rarely study tables—they think small, concise, focused.
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.


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.
Sample References
Anonymous or Unknown Author:
Citation: (“Annual Smoking,” 2002). Use heading caps when citing titles in text citations.

Articles in Research Journals:
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:
Citation: (McGlynn & Brook, 2001).

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

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

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

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

Electronic formats:
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).


Annual Review:

Book review:

Journals paged by issue (online):
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.
Regular column:

Special issue or supplement:

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

Chapter or section in a book (online & print):
Citations: (Beers & Berkow, 1999, chap. 189); (Stephan, 1985).

Edited book (two or more editors):

Edition other than the first (two authors):

Reprint/translation (one author & editors):
(Original work published 1885)
Citation: (Ebbinghaus, 1885/1913).

Conference Papers:
Published (referenced as a chapter in an edited book):

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Newspapers and Magazines:
Magazine article:
Newspaper articles (online/letter):
Reference Works:

Multivolume references:


Statistical abstract:

Reports, Software, Theses:

Computer software:

Government report online accessed through GPO database:

Citation: (National Institute of Mental Health [NIMH], 2002); next citation (NIMH, 2002).

Monograph online:


Pamphlet-brochure

Technical report (print/online versions):


Theses or dissertation:

Web Pages:

Purdue University Online Writing Lab. (2003). Using American Psychological Association (APA) format (Updated to 5th edition). Retrieved February 18, 2003 from the Purdue University Online Writing Lab at http://owl.english.purdue.edu/handouts/print/research/r_apa.html
### State Abbreviations Used in References

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### Acknowledgements

The APA Crib Sheet is built upon the venerable APA Crib Sheet by Professor Dewey (see below). The Crib Sheet was brought up to date with the current APA Publication Manual (5th ed.; 2001) by Doc Scribe in 2004. The sections on compound words, quotations, terminology, page format, statistics, text citations, and references have been added, revised, or expanded by Doc Scribe.

From the original APA Crib Sheet:

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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 by 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, rwdevey@georgiasouthern.edu

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