Curriculum for an online course in technical communications using the I-CARE delivery system

Linda Diane Guillen

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CURRICULUM FOR AN ONLINE COURSE IN
TECHNICAL COMMUNICATIONS USING THE
I-CARE DELIVERY SYSTEM

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education: Vocational Education

by
Linda Diane Guillen
June 1999
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Approved by

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ABSTRACT

This project addressed the need to adapt the current, cross-listed, on-campus offering of the Technical Communications curriculum in the Electronics and Engineering Technology Departments at Riverside Community College to an online facilitation format. The literature review outlines the increasing importance of communication skills in the electronics, engineering, and manufacturing industries. Professionals from these industries recognize that job specific skills are the minimum requirements to secure employment, and that it is transferable communication skills, specifically communication skills, that lead to advancement and raises within their chosen professions.

Implementation of the cross-listed Electronics/Engineering Technical Communication class in an online, for-credit course format provides an alternate access for training opportunities to hundreds of workers associated with the electronics, engineering, and manufacturing industries that may have been excluded from traditional classroom participation due to work and class schedule conflicts. Course outline, detailed lesson plans using the I-CARE system, syllabus, and sample I-CARE online lesson are provided.
ACKNOWLEDGEMENTS

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CHAPTER I
BACKGROUND

Introduction

The objective of this project was to convert the existing, traditionally structured, in-class Technical Communications course into a quality, online presentation format. This curriculum was designed to augment certificate and degree programs offered by the Electronics, Engineering and Manufacturing Departments at Riverside Community College (RCC), Riverside, California. To continue providing opportunities for communication skills development to a growing student population that is increasingly mobile, it was necessary to expand access to the Technical Communication class for electronics, engineering, and manufacturing students.

Electronics, engineering, and manufacturing worker skills reflect the needs of today's workplace. Dale Carnevale (1991) indicates that in order to customize products and services and provide convenience for customers, workers need both the softer communications and personal skills necessary to interact effectively with customers and the adaptability and influencing skills necessary to bend the organization to the customers' demands. This view is supported by comments from RCC's Electronics Advisory Committee and students. They report that communication skills are increasingly important to employers, employees and customers but that heavy workloads, commuting issues, global traveling, varying work hours or course scheduling conflicts act as deterrents to course enrollment for RCC's Electronics and Engineering students. By providing an alternate means of access to the Technical Communications course, RCC is able to minimize the effects of at least one of the deterring factors students frequently
encounter when pursuing a formal education that terminates in a certificate or associate degree.

The Problem

Students entering the fields of electronics, engineering, and manufacturing will spend most of their day engaged in some form of communication: reading, writing, listening and speaking. Carnevale, Gainer, and Meltzer (as cited in Carnevale, 1991) found that, “The average worker spends 8.4 percent of his or her communication time at work writing, 13.3 percent reading, 23.0 percent speaking, and 55.0 percent listening. While an employee may spend only 8.4 percent of his or her time writing, it is this communication mode that is most often used at critical junctures in the work process.” (p. 112) However, it is the transferable skill of clear communication that is associated with promotions and increasing salaries.

Thus, the purpose of this project was to analyze concepts and materials of the existing Technical Communication curriculum, analyze the capabilities of the I-CARE delivery system selected by RCC for online class deliveries, and then to develop the instructional materials for a quality, online Technical Communications class using the I-CARE delivery system.

Statement of the Problem

The problem was to determine if the existing Technical Communication course could be adapted to an online format and still maintain quality of instruction. By offering the class in both face-to-face and online formats, the college was able to address current access issues and to target new audiences. Although this class was required by an increasing number of students, during the fall 1999 semester access to the class was
severely affected when RCC converted its eighteen-week semester to a sixteen-week semester format. As a result, class sessions were lengthened and, as in the case of the Technical Communications class, time slots conducive to student enrollment were regularly eliminated. Traditional face-to-face class offerings meant delaying students' time-to-completion for certificates and degrees by a minimum of one semester. Those students wishing to meet established completion dates could avoid lengthy delays by enrolling in the online course as a viable alternative. While addressing the needs of current students, access to continuing education was expanded to include a new target audience.

Online classes offer access to a large audience that in the past have found it difficult, if not impossible, to attend traditional college classes. This new target audience included disabled persons, homemakers, and also those requiring or preferring atypical study and class times. If students preferred, they were able to complete the class from the comfort of their normal surroundings. For example, a bed-ridden student, a parent with children taking afternoon naps, a customer service person minding the shop on a slow day, or a third-shift worker could each access the class at their own convenience. Since group and individual assignments are completed using the Internet and WWW, many of the restrictions inherent to traditional class offerings were eliminated.

Offering Technical Communications in an online format while maintaining quality provides alternative options for students addressing scheduling conflicts and provides access to quality formal education to a significant mass of adult learners.
Purpose of the Project

The purpose of the project was to develop a quality, one-semester, online course. The proposed course was designed to provide an alternate means of access to students wishing to enroll in the Technical Communication class. This curriculum was not designed to eliminate the existing course in Technical Communications, as many students continue to benefit from classes offered in a face-to-face format. The curriculum and instructional materials were designed for students with Internet access, some word-processing and spreadsheet skills, and the self-discipline to complete course work in a timely manner. A course outline, syllabus, and hypertext lesson plans constitute the curriculum.

Assumptions

This course was designed as an entry-level technical writing class. The Technical Communications course builds upon previously developed writing skills. Therefore, a brief review of grammar and spelling was assumed sufficient for students to successfully complete the course.

Assumptions are also made that students enrolling in an online course 1) have access to a computer with Internet access, 2) are familiar with logging-on to the Internet, 3) are familiar with their systems' means of copying, saving, and sending files, and 4) are somewhat familiar with word-processing and spreadsheet programs.

Limitations

The scope of this project was limited to the current capabilities of the World Wide Web (WWW), the Internet, and programs. Students must be able to send their work in a text format for editing and grading purposes, as well as in a file format that allows
viewing of formatted documents. For those students without private Internet access, RCC has computer rooms with Internet access available. This project does not pretend to predict budget costs. As with all budgetary decisions, appropriate spending levels for technology must be determined by individual institutions based on their specific goals and current infrastructure. The costs for implementation of this particular class are minimal, as RCC currently conducts online classes and has a well-developed infrastructure in place. It is beyond the scope of this project to review the pros and cons of using the Internet as a delivery system. Rather, this project is limited to identifying characteristics of quality online courses for courses offered in Riverside and San Bernardino counties located in Southern California.

**Delimitations**

This curriculum is designed specifically for California community college students enrolled in electronics, engineering, and manufacturing programs. The course offering could be expanded to include other states and provinces. Students possessing minimum technical competencies associated with the Internet and computer usage receive instruction delimited to the most frequently employed communication skills as identified by local advisory committees, industry employers, and student feedback.

**Significance of the Project**

The change to high performance work organization drives the increase in demand for skilled workers. With the flattening of organizational hierarchies, decentralization of responsibility, and greater employee involvement at all levels, workers are given more responsibility and discretion in their jobs and must incorporate some of the supervisory, planning, repair, maintenance and support functions that were previously reserved for
managers or specialists (Berryman, & Bailey, 1992). Accurate communication and interpersonal skills are increasingly recognized as significant factors regarding promotions and raises within today's workplace. However, according to the American Society for Training and Development, $27 billion of $30 billion was paid out for training by only one half of one percent of all American employers (as cited in Berryman and Bailey, 1992). Those employees looking to move ahead in today's competitive workplace frequently turn to community colleges to expand transferable skills; accessibility and flexible scheduling policies of community colleges are essential to the continuing education of today's workers. The Electronics, Engineering, and Manufacturing certificates and degree patterns currently include the Technical Communications course to ensure that graduates have been provided opportunities to develop their writing, speaking, and interpersonal skills. Adapting the existing curriculum to an online format without sacrificing quality increases accessibility to a course that proves critical to employee empowerment and increasing disposable income.

Definition of Terms

The following terms are defined as they apply to this project.

Andragogy – Adult learner training theory (problem-centered, active participation, integration of past experience, collaborative oriented, mutual planning, experimental and active involvement (Knowles, 1978).

Basic Skills – Reading, writing, arithmetic and mathematics, speaking, and listening skills (SCANS 2000, 1992).

Browser – Computer program that allows navigation of a system using hypertext links (Pfaffenberger, 1996).
Computer-based Training – Courses presented on a computer, usually one that is not connected to a network when the course is in use (Carliner, 1998).

Curriculum Development – Focuses primarily on content and areas related to it (Kindred et al., 1976).

Distance Learning – Any type of educational situation in which the instructor and students are separated by time, location, or both (Carliner, 1998).

Hypertext Links – Underlined phrases containing information that tell a browser exactly how to go to a computer that contains information you have requested (Pfaffenberger, 1996).

I-CARE – Acronym for the words introduce, connect, apply, reflect, and evaluate as used in the online training system developed by San Diego State University, CA.

Instructional Development – Planning done in direct support of student learning. Taken into account are the principles of human learning and the conditions under which it occurs (Kindred et al., 1976).

Internet – A connection of millions of computers around the world used by commercial industries, corporations, educational institutions, and home users to share software, messages, and information (Spellerberg, 1998).

Interpersonal Skills Competencies – Productively work in teams, teach others, serve customers, lead, negotiate, and work well with people from culturally diverse backgrounds (SCANS 2000, 1992).

Online Course – Instruction with specific goals and objectives that is available on an intranet, extranet, or the Internet. Due to network connections, the courses can include
links to other materials, electronic mail and discussions, and videoconferencing (Carliner, 1998).

**Online Instruction** — A form of computer-based training. Refers to courses available on an intranet, extranet, or the Internet. Due to network connections, the courses can include links to other materials, electronic mail and discussions, and videoconferencing (Carliner, 1998).


**Thinking Skills** — The ability to learn, to reason, to think creatively, to make decisions, and to solve problems (SCANS 2000, 1992).

**Technology-based Instruction** — Training through media other than the classroom. This includes computers, but also refers to television, audiotape, videotape, and print (Carliner, 1998).

**Transferable Skills** — The most basic units or functional skills of a job or a career that can easily be transferred from one career to another (Bolles, 1998).

**Vocational Education** — Organized educational programs that are directly related to the preparation of individuals for paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree (Carl D. Perkins Vocational and Applied Technology Education Act of 1990).

**Web-based Instruction** — Used interchangeably with the term online instruction. (Crumlish, 1995).
World Wide Web – Hypertext links promote ease of navigation to geographically distributed pools of information through communication mediums such as the Internet (Pfaffenberger, 1996).


Organization of the Project

This project is divided into four chapters. Chapter One provides an introduction to the context of the problem, purpose of the project, significance of the project, limitations, delimitations, and definitions of terms. Chapter Two consists of a review of the literature. Chapter Three outlines the population to be served and the project design. Chapter Four presents conclusions and recommendations gleaned from the project.
CHAPTER II
THE LITERATURE REVIEW

Introduction

The electronics, engineering, and manufacturing industries are not immune to the changes taking place in the workforce. As companies have flattened their organizations and global competition continues to increase, technicians, and engineers are required to do more than install, repair, or design equipment. They must be able to communicate clearly and accurately and to work well with others. Increasing numbers of workers are looking to community colleges for classes that will help them develop their communication and interpersonal skills as they strive to increase their marketability in the mobile workplace. At the same time, classroom availability on college campuses is increasingly limited and alternate means of access to classes are being sought. As revealed through reports, books, research papers, and monographs, this review contains the background leading to expected workplace competencies, attributes and characteristics of successful online classes, and andragogical instructional design issues.

The necessity for providing alternate means of education at Riverside Community College is described, and the foundation for the Technical Communications curriculum is discussed.

Historical Perspective

A historical look at the changing marketplace provides the framework for continuing to offer the Technical Communications class for electronics, engineering, and manufacturing students. The literature indicates that industry needs technically skilled workers with well-developed softer skills such as communication, teamwork, and self-
motivation skills. With the United States losing ground in the global market, the necessity to alter process and operating systems could no longer be ignored. The federal government called upon business and industry to work closely with education, and through the Secretaries Commission On Achieving Necessary Skills (SCANS), (1992) identified necessary skills for the 21st Century workforce that provided a basis upon which industry and education could begin build partnerships. “How best to train, what to teach, how do we learn, and which entity should be responsible for doing what,” are questions with no definitive answers. Regardless, the literature clearly makes the point that training must occur. Today, traditional classrooms, internships, partnerships, computer-based training, and web-based instruction are common delivery methods for training employees. The community college system has been identified as the primary training source for the workforce of the 21st Century. However, many colleges, including RCC, are faced with increasing numbers of students and limited classroom space. Alternate methods of delivering training must be identified, and the Internet is rapidly becoming an accepted medium for delivery. As the Internet continues to expand and computing systems and programs become more powerful and affordable, distance learning using the Internet becomes increasingly doable. A consensus is emerging supporting the belief that the characteristics of quality curriculum change little. Curriculum and instructional development must continue to be done carefully and conscientiously if adult learners are to take ownership of a class, particularly an online class. Instructional design and relationships established between instructor and students are critical components of a successful online class.
To help understand the importance of technical communication in the workplace, it was necessary to examine its relevance within today’s workplace and the significance of good communication skills to the worker, our adult learner. A review of the literature that addressed the changing needs of business and industry revealed salient points that directly affect the qualification and promotion of employees.

The Changing Workplace

By the early 1980s, warnings to business, industry, and education had gained momentum as Western industry continued to decline. Dr. W. Edwards Deming was already world renown for his management method and was continuing to make speeches “in which he soundly scolded his audience of executives for their poor management practices” (Walton, 1986, p. xiii). Many industries enjoyed periods of stability during the 1950s, 1960s, and early 1970s, but have undergone periods of frantic innovation and technological change since then. As a 1988 Office of Technology Assessment report puts it, “Many markets formerly dominated by a comparatively small number of relatively homogenous products are becoming ‘boutique’ markets, combining a wide range of specialties” (as cited by Berryman & Bailey, 1992, p. 12). The traditional production system “emphasizes narrowly defined jobs that can be filled by interchangeable, low-skilled workers; large inventory buffers that minimize the disruption caused by production errors or poor quality parts; extra employees to cope with higher absenteeism; sophisticated quality control inspection systems and specialized personnel to catch defects after production is completed; and technologies designed to minimize the number of workers and to control or limit worker discretion” (Thomas & Kochan, 1990, p. 19-20). “Flexibility, fast response time, and innovation, as much as cost, are proving to be
decisive keys to Western industrial growth. Rather than the low-skill, high-control system characteristic of mass production, the new economic environment requires the integration of traditionally separate functional roles (design, engineering, marketing, manufacturing, and so forth), flatter organizational hierarchies, decentralization of responsibility, and greater employee involvement at all levels” (Berryman & Bailey, 1992, p. 16-17). To that end, workers today must be more flexible and skilled, and as they are given more responsibility and discretion, their jobs incorporate some of the supervisory, planning, repair, maintenance, and support functions that were previously reserved for managers or specialists. In today’s economy, learning is pervasive in the organizational structure, and institutions work to balance learning from the top down with learning from the bottom up. Carnevale (1991) states that “The responsibility for innovations extends beyond the ivory tower to the workaday world, and beyond white-collar and technical elites to the whole workforce. Learning occurs continuously in all phases of the economic cycle” (p. 64-65). The question then becomes “What are the necessary skills to learn if one is to be successful in this changing workforce?”

Skills for the 21st Century Workforce

Technology continues to subsume more and more of the hands-on and repetitive aspects of work, while human labor becomes more peripheral to the actual fabrication of goods and delivery of services. Dale Carnevale found that skill requirements become less job specific and more general. Adaptability becomes significant, and one's ability to adapt to change requires self-esteem, the ability to set goals and the motivation to achieve them. Carnevale, Gainer, and Meltzer findings (as cited by Carnevale, 1991) lend further support to the position that the scope of action in the workplace has expanded. The
substitution of flexible networks for top-down hierarchies means employees need interpersonal skills to get along with customers and co-workers, listening and oral communications skills to ensure effective interaction, negotiation and teamwork skills to be effective members of working groups, leadership skills to take charge when needed to move work teams forward, and organizational skills to utilize effectively the work processes, procedures, and culture of the employer institution.

Individual workers must be able to understand the impact of their work on others and on production and service processes as their scope of responsibility expands. High-order conceptual skills and communication skills become increasingly important as industrial and service oriented employees move to flexible technologies with greater autonomy. Berryman and Bailey (1992) report similar findings regarding managerial and higher level workers. Managers accustomed to taking orders from above and passing them to subordinates are finding that the spread of knowledge throughout an organization alters power and authority. Teams are often formed that integrate design, engineering, production, finance, marketing, and customer service departments. They go on to say, “Cross-functional teams expose managers and professionals to a wide set of activities, and if they are to participate effectively, they must also have broader knowledge” (p. 41).

Industrial workers may spend a good portion of the workday monitoring processes. They must, however, be able to draw upon reserve skills to adapt to technical and work process changes, recognize and respond to anomalies, maintain and repair equipment, and reprogram technologies to respond to customized products. The ability to draw upon robust reserve skills is becoming the norm, whether you are an industrial, service, or education employee. Carnevale (1991) indicates that there is a trend for
required skills to be hands-off, general, abstract, personal in content, and applied in the context of groups and unique situation. He also states that, “In addition, the expansion in service functions in manufacturing and natural resource industries, in combination with the increasing dominance of the service sector, ensures that a growing proportion of us need the broad, abstract, flexible skills typically required in service jobs” (p. 106). In 1992, the Secretary’s Commission on Achieving Necessary Skills (SCANS) 2000 report was released by the U.S. Department of Labor. Its conclusions echoed Carnevale’s and presented education, employers, and students with a blueprint for necessary skills of the 21st Century workforce. The SCANS defined a high-performance workplace and broke the characteristics of those workers into the following workplace competencies and foundation skills.

Workplace Competencies - Effective workers can productively use:

- Resources - They know how to allocate time, money, materials, space, and staff.
- Interpersonal skills - They can work on teams, teach others, serve customers, lead, negotiate, and work well with people from culturally diverse backgrounds.
- Information - They can acquire and evaluate data, organize and maintain files, interpret and communicate, and use computers to process information
- Systems - They understand social, organizational, and technological systems, monitor and correct performance, and design or improve systems.
- Technology - They can select equipment and tools, apply technology to specific tasks, and maintain and troubleshoot equipment.

Foundation Skills - Competent workers in the high-performance workplace need:
- Basic Skills - reading, writing, arithmetic and mathematics, speaking, and listening.
- Thinking Skills - the ability to learn, to reason, to think creatively, to make decisions, and to solve problems.
- Personal Qualities - individual responsibility, self-esteem and self-management, sociability, and integrity. (p. 6)

SCANS research also found workers with high-levels of know-how earn wages that are 58 percent higher than people with lower level skills do. This translates into sizeable differences of disposable income that might be used for a down payment on a home, a year of college education, or a moderately priced car. The literature clearly indicates that basic skills combined with technical skills are critical to survival in the workplace of today. Because of advances in technology and growth in global competition, boundaries between companies, countries, and continents are blurring and jobs are being redefined. Kristin Woolever (1999) offers this description of technical professionals, “Women as well as men, engineers and scientists of all types, computer programmers, MIS professionals, technicians, laboratory personnel, biotechnical workers - anyone whose job entails working with specialized skills and knowledge in the hands-on fields of science, engineering, and technology” (p. 1). Business and industry have become more dynamic and complex. Woolever concludes, “While technical professionals used to prepare for
one area of specialization, find a job, and remain with the same company for the duration of their careers, today’s professionals have to be more flexible. They often collaborate on “cross functional” teams with specialists from marketing, design, production, quality assurance, and documentation; their work may be “cross cultural,” putting them in touch with people from all over the globe; and their careers are less static than in the past, as they carry their skills from company to company, shifting their roles and responsibilities with the needs of the changing workplace” (p. 1).

Thus far, the literature review has enumerated a variety of skills required of workers in the 21st Century. Maris Roze (1990) states that, “Two nationally prominent reports on the job market listed the most important skills cited by recruiters of recent college graduates. Michigan State University’s Recruiting Trends, 1988-89 listed written communication skills as the number one requirement, and Northwestern University’s The Lindquist-Endicott Report 1989 listed poor communication skills as the most common reason for not offering a job to a candidate” (p. 1-2). “Case studies suggest that to an increasing extent poor literacy skills hamper labor market entrants in finding and holding jobs that pay enough to support a family” (Aaron & Schultze, 1992, p. 191). For example, Thomas Bailey (1989) reports that textile companies formerly recruited mechanics from the ranks of machine operator, who usually had little education. Informal (on-the-job training) was adequate to teach them the skills they needed. But in recent years, the companies have introduced looms with microprocessors and other electronic components. Repairing these machines requires that mechanics follow complicated manuals and updates provided by manufactures and literacy skills are much more important in making repairs.
Communication skills encompass reading, writing, listening, and speaking; and even though individual excellence is laudable, workers must be able to use them effectively in team environments, during negotiations, and with customers. A clear understanding of acceptable competencies in these areas is crucial to developing curriculum deemed useful by employees and employers of today's workforce.

Communication Skills - Curriculum and Competencies for the Workplace

Reading, writing, speaking, and listening skills constitute a foundation upon which the results of analytical, problem-solving, decision-making, synthesizing, computational, and computer skills may be shared with others. Carnevale (1991) indicates that the curriculum for reading should ideally be based upon the workplace where the skill will be used. Workers should be able to read, recognize, and understand common job-related words and sentences. If workers are required to use forms, charts, and schematics, then these should be included in the curriculum. Carnevale also indicates that workers should develop reading-to-learn skills such as synthesizing written information from several sources and inferring meaning from texts that do not explicitly provide the required information. Competencies for reading skills will vary with the job. An eighth grade reading level is considered sufficient for front-line workers who typically must read forms, work orders, and basic manuals. "Technicians, engineers, and computer programmers require higher reading skill levels, usually around the thirteenth for fourteenth grade level. Managers and professionals must stay alert for new trends and technical information, so a college or graduate reading level is generally required. When measuring competencies, performance of the task should be the indicator of success rather than by direct tests of reading ability" (Carnevale, p. 109).
Scientists, engineers, technical writers, administrators, analysts, consultants, government employees, industry professionals, managers, teachers, and military personnel write technical reports for a variety of different reasons. “Successful engineers report that they spend 24 percent of their day writing and 31 percent working with the writing of others” (McGuire, 1988, p. 3). As people progress in their careers, writing requirements typically increase. McGuire (1988) found that in addition to writing many of the same documents that their technical subordinates do, supervisors also write job descriptions, requests for personnel, employee performance evaluations, descriptions of procedures, and budget justifications. Carnevale (1991) writes, “42 percent (of writing at work) involves filling out prepared forms, 25 percent requires recording, summarizing, or using language peculiar to specific occupations and jobs, 23 percent involves writing memos and letters; and only 10 percent is dedicated to writing academic-style reports and articles” (p.109). Accordingly, the literature indicates that the curriculum should reflect what the students would use in the workplace, and the mastery of writing skills should be tied to work-related tasks. McGuire (1988) indicates that because writing tasks affect the success of an employee’s work and the reader’s perception of that employee, the employee’s professional reputation depends to a significant degree on what is written. Roze (1990) describes the necessity for writing and speaking skills as follows. “Today the stereotype of the technical specialist working in isolation, scribbling numbers, sketching symbols, and mumbling acronyms is dead. The specialist must be a communicator precisely because the work has become more complex and the stakes higher. Specialists are problem solvers who apply their knowledge, skill, and judgment to new projects or existing operations that must be explained to others, coordinated with
others, and approved by others. The writing and speaking this requires is as much a part of the problem to be solved as the technical analysis or design” (p. 2,3). Carnevale (1991) reports that speaking skills needed for work can be broken down into three areas: 1) non-verbal skills - body language and appearance which deliver 55 percent of the meaning in face-to-face communication; 2) vocal skills - rate, pitch, and loudness, which transmit 38 percent of the message in face-to-face communication and 70 to 90 percent of the message over the telephone; and 3) verbal skills - language, which transmits only 7 percent of the message. However, these tend to be skills worth more when the listener gets past nonverbal and vocal characteristics in the communication process. Therefore, the curriculum for speaking skills should build awareness of communication styles, provide opportunities for students to learn to appreciate different styles through practice, and provide opportunities for students to learn to adjust communication styles to different situations through role playing and group practice. When students are able to get a point across, competency is recognized. Students should also be able to track their personal progress, measure objectives, and deepen self-awareness. Curriculum for listening skills involves receiving and assigning meaning to aural stimuli (Carnevale, 1991). Students should assess their individual listening style, learn to reduce environmental and interpersonal barriers to effective listening, and practice active listening skills as the fundamental part of the listening skills curriculum. Competency can be measured by supervisors who should also provide feedback to the employee, and listening skills instruments should be used in testing awareness and skill. Technical professionals must be skilled not only in writing clearly, but in presenting their ideas orally as well. Dr. Ronald M. Evans an eminent research professor at the Salk Institute for Biological
Studies states (as cited in Carnegie and associates, 1993), “Many scientists don’t know how to effectively communicate what they are doing. They know what they are doing. They have a pretty good idea of why they’re doing it. But they have difficulty putting that into perspective, transmitting the ideas outside the laboratory. It’s a major limitation at many levels” (p. 36). Carnegie and associates continue with another example and report that Lee Iacocca discovered a similar limitation at the Ford Motor Company, “I’ve known a lot of engineers with terrific ideas who had trouble explaining them to other people. It’s always a shame when a guy with great talent can’t tell the board or a committee what’s in his head” (p. 36). Without the mastery of that very basic human skill - the ability to talk and listen to others, members of a company, a school or a family can’t thrive for long (Carnegie, 1993).

Attributes of Online Class Environments

During the last twenty years, industry has become increasingly customer-service oriented and quality based. Just as industry used technology to meet a wider spectrum of customers’ wants, education is being pressed to expand educational opportunities using technology to reach a broader spectrum of current or potential students. Teachers’ roles and classroom responsibilities are changing as a result. A recommitment to creating an ideal learning environment for students and a shift from a professor-centered to student-centered system of learning are changes that have begun to emerge throughout the education system.

To facilitate students learning online, one must determine appropriate instructional activities and which technologies will be used to deliver those activities. Ordinary email, web pages, synchronous chat rooms, asynchronous forums and
list servers, and document and screen sharing are possibilities for delivering instruction (Ritchie, 1998). Selecting the most effective delivery method must be done carefully. Delivery of course materials, sending assignments, getting and giving feedback are frequently accomplished using email. Bulletin boards and newsgroups are appropriate for discussion of special topics. At times, downloading of course materials or tutorials is more efficient than stepping through an online tutorial (Kerka, 1996). Knowing your audience and addressing their needs will help to determine the best method.

Preparing online documents follow guidelines similar to print materials. Ritchie (1998) reminds us that online materials change and evolve over time. When designing materials, the technology available to students should be seriously considered. Video clips and large graphics are stimulating on a fast computer system, but frustrating to wait for when using a slower system. Type of print, headings and layout affect readability. Long documents should allow ease of use through hyperlinks (Ritchie, 1998). An example of this strategy can be seen in the ‘Apply’ component of Lesson 1 in Appendix E. Students can scroll or jump through the document in the preferred sequential manner or in a random order if they choose.

Activities are independent of time and place which allows greater freedom for students. Carefully designed online courses can enhance interactivity between instructors and learners as well as learners and learners. The relative anonymity of computer communication has the potential to give voice to those reluctant to speak in face-to-face situations (Kerka, 1996). Social norms develop and evolve in online classes. Often new communication competencies are learned through consensus building and group projects, through which learners develop skills in collaborating with colleagues and cooperating.
with diverse individuals (Kerka, 1996). Other benefits of the current text-based nature of online classes is the reduction of race, physical features, age, socioeconomic status, and gender concerns (Ritchie, 1998). Kerka (1996) indicates the medium supports self-directed learning, as computer conferencing requires learner motivation, self-discipline, and responsibility.

Characteristics of Successful Online Courses

The foundations of successful online courses are quite similar to those of face-to-face classes. Wilkes and Burnham (1991) assert that those factors, which influence good instruction, may be generally universal across different environments and populations. Hypermedia contexts such as the Web support constructivist approaches to learning, which are based on the belief that individuals construct their own understanding of the world as they acquire knowledge and reflect on experiences.

Dede (1996) describes how carefully designed online learning can assist the construction of knowledge by showing learners the links among pieces of information and supporting the individual learning styles. Wiesenbery and Hutton (1995) recommend that instructors give learners an orientation to the online learning environment, provide technical support, and foster self-directed learning and learning-to-learn skills. In 1996, Susan Polyson et al. (as cited by Balch and Patino, 1998) report the following items found in successful online courses:

1. “Online syllabus - allows for rapid changes and can include hypertext links to resources;

2. personal home pages - creates a sense of community for the students;
3. interactivity - connections with other learners and faculty with a variety of communications methods including email, forums and online chat rooms;
4. assignments - reading, homework and exams;
5. announcements - communicating new information;
6. testing - online drills or practice test to reinforce course work;
7. course management - keeping the page updated; and
8. content - the most difficult and important part.” (p. 13-16)

Organization of presentation and the material within is critical. Schlosser and Anderson (as cited by Engineering Outreach, 1995), found that because distance education and its technologies require extensive planning and preparation, distance educators must consider the following in order to improve their effectiveness suggest the following:

- Extensive pre-planning and formative evaluation is necessary. Teachers cannot “wing it.” Distance learners value instructors who are well prepared and organized (Egan, et al., 1991).

- Learners benefit significantly from a well-designed syllabus and presentation outlines (Egan, et al., 1991). Structured note taking, using tools such as interactive study guides, and the use of visuals and graphics as part of the syllabus and presentation outlines contribute to student understanding of the course. However, these visuals must be tailored to the characteristics of the medium and to the characteristics of the students.

- Teachers must be properly trained both in the use of equipment and in those techniques proven effective in the distance education environment. Learners
get more from the courses when the instructor seems comfortable with the technology, and possesses a sense of humor (Egan, et al., 1991).

Students do not automatically make effective use of the Internet; skilled facilitation is essential. Rohfeld and Hiemstra (1995) provide five suggestions to overcome the challenges of the electronic classroom.

1. Establish the tone early in the course;
2. overcame the text-based nature of online discussion and to build group rapport and cohesion, introduce participants to each other, match them with partners, and assign group projects;
3. offer training and guidelines to help learners acquire technical competence and manage discussions;
4. provide a variety of activities, such as debates, polling, reflection, and critique; and
5. use learning contracts to establish goals for participation.

Developing and delivering instruction is based on well-designed learning goals and objectives. What distinguishes online instruction from entertainment or recreation is the purposefulness of the designers and developers in provoking certain intelligent responses to the learning materials, context, and environment (Berge, 1996). Berge implores designers of online instruction to be aware that the higher the content density of the materials to be learned, the more self-pacing becomes the responsibility of the learner, and the learner must have access to revisit material at his or her convenience and individual pace. Rohfeld and Hiemstra (1995) remind us that online teachers must model effective teaching and bear the responsibility of keeping discussions on track, contributing special knowledge and insights, weaving together various discussion threads.
and course components, and maintaining group harmony. Berge (1996) categorized the many necessary conditions for successful online tutoring into four areas: pedagogical, social, managerial, and technical. He also clarifies that the same person need not carry out all of the roles in their entirety.

Berge defines the pedagogical role as intellectual and task oriented, and suggests that it may be one of the most important roles. The moderator or facilitator must be skillful in the use of questions and probes to elicit student responses that focus discussions on critical concepts, principles, and skills. For example, instructors who pose open-ended questions will be much more likely to evoke responses than a long and elaborate sequence of comments. From a social perspective, the instructor is responsible for creating a friendly, social environment in which learning is promoted. Successful conferencing (chat room) activities should be designed to promote human relationships, develop group cohesiveness, maintain the group as a unit, and help members work together in a mutual cause. Berge stresses that the tone should be set early. Respect of others is primary - watch for ridicule, offensive humor, and sarcasm. Bad discussant behavior should not be ignored; privately request change in poor discussant behaviors. A written “netiquette” statement should be easily referenced and strictly adhered to. In the role of manager, the facilitator is responsible for setting the agenda and clearly establishing the objectives of the discussion, the timetable, procedural rules, and decision-making norms. As a guide, instructor comments should approximate one-quarter to one-half of the contributions of the online material. Easy access to information regarding admissions, registration, counseling, and bookstore activities should be available. And lastly, Berge stresses that students must be made comfortable with the
system and software used. Telephone access may be crucial to getting beyond the first session for novice online students. Methods of indicating feedback must be developed. For example, corrections and notes to the author must be accommodated, but no hardcopies are available in an online assignment. Time must also be allowed for students to learn new software. The goal for the instructor is to make the technology transparent to the user so that the learner may concentrate on the academic task at hand (Berge 1996).

Students thriving in today’s workplace are placed in continual modes of learning. The job of the instructional developer is to provide organized and significant material that challenges yet does not frighten, disappoint or drive away the learner. Balch and Patino (1998) write that “those involved with instructional design for online courses will need to be aware of the following six items: 1) knowledge of Internet technology; 2) knowledge of instructional design for technology-based material; 3) knowledge of subject matter; 4) knowledge of interface design; 5) talent in graphic design; and 6) development time” (p. 6). Balch and Patino (1998) also recommend that schools develop a template for all courses to reduce the learning curve time for students enrolling in successive courses.

Quality online courses must meet the needs of its learners. Instructional designers must adhere to curriculum requirements and produce courses that are appropriate for the intended audience. If that audience is adult learners, then instruction should be developed along andragogical rather than pedagogical lines.

**Characteristics of Adult Learners**

The concept of adult learner is not new and dates back to the early 1800s in Germany. Studies conducted by Malcolm Knowles and others (1973) regarding adult
learning expectancies led to the term "andragogy" or adult learning theory compared to the term "pedagogy" or child learning theory. The differences were summed up as:

- Problem-centered rather than content-centered,
- Active participation in learning,
- Integration of past experiences with new data and new problems,
- Collaborative as opposed to authority-oriented,
- Mutual planning between the learner and the instructor,
- Mutual evaluation leading to a reappraisal of needs and interests, leading to a redesign and new learning activities, and
- Experimental and active involvement, not passive "transmit and absorb" as in pedagogy (Knowles, 1978).

Curriculum development of vocational education classes in California requires input from advisory committees, as well as students and faculty. Vocational education curriculum should be relevant to the workplace and instructional design for community college learners should be based on andragogical theory. The instructor must develop clear objectives, yet remain flexible enough to allow input when developing assignments that address adult learner needs. Activities can be designed around issues at work, school or home to bring relevancy to the curriculum. Berge (1996) suggests avoiding the authoritarian teaching style when online. Adult learners have chosen to learn and have many experiences upon which to draw that will bring relevance and meaning to their learning process. Online instructors can easily use this to encourage collaborative efforts that more closely resemble the workplace of today where these skills will be transferred.
Summary of the Literature Review

The literature clearly revealed that the needs of the workplace are continuing to change. Organization structures are flatter and employees earning sufficient disposable income typically have specific technical skills and well-developed transferable skills. Technicians and engineers continue to install, maintain, repair and design equipment. However, they must also interface with customers, generate new sales, and work in team environments that require different sets of skills. Equipment logs, sales leads, and design suggestions are shared responsibilities in today’s empowered workplace. Those currently employed are returning to school to develop and strengthen “softer” skills, that is, interpersonal and communication skills. Once the decision is made to enroll in a class, it is not unusual to hear future and continuing students lament a variety of difficulties. For example, adult learners attempting to enroll in classes often express frustration with conflicting work, family, and commuting schedules and traditional college offerings.

With over forty percent of RCC Electronics, Engineering and Manufacturing students own computers with Internet access, online courses provide a viable solution to scheduling conflicts. As an alternate means of access to students, and if curriculum is deemed suitable to an online format using adult learning theory, then courses are apt to succeed and instructional development should begin.
CHAPTER III
METHODOLOGY

Introduction

This chapter contains a description of the population to be served by this curriculum. Results of the literature review are applied to the analysis of the existing Technical Communications curriculum and a course description is provided.

Population

The population to be served by this curriculum is students enrolled in Electronics Technology, Electronics Computer Systems, Engineering Technology, Manufacturing Automated Systems, Manufacturing Mechatronics, or Manufacturing Quality Systems at RCC. As part of the certificate or degree program, students enrolled in Electronics Technology, Electronics Computer Systems, or Engineering Technology are required to successfully pass the Technical Communications cross-listed course, Electronics/Engineering 27. Manufacturing students may select this course as an elective to satisfy certificate or degree requirements.

Students enrolled in the above programs have ranged in age from thirteen to over sixty. With the average age of students enrolled hovering around thirty-two, attention to adult learning preferences is important in developing the curriculum. During the last five years, the percentage of Electronics and Engineering students that own their own computer system has risen to a peak of forty percent. Approximately eighty percent of these students are connected to the Internet (either privately or at work) and are familiar with navigating the Web. Consequently, courses suitable for presentation using an online...
medium for instruction are likely to be successful in the Electronics and Engineering programs.

Analysis of Existing Technical Communications Curriculum

In conducting the study that led to the development of this curriculum, managers, directors, students, advisory committee members and faculty were consulted. Interviewees agreed that strong communication skills are important during the interview process and critical for anyone wishing to advance within a company. As reflected in the literature review, managers and those in positions to promote others indicated that personal perceptions are influenced by an employee’s ability to document information clearly and accurately. Results of informational interviews conducted by students indicated that the degree of communication skill development and emphasis varied by disciplines and level of employment. A large corporation such as IBM, reflects very similar findings. To encourage promotions from within, education and training initiatives are offered to IBM employees wishing to change their job classification. Accurate documentation and interpersonal skill knowledge coupled with technical expertise add up to advancement and increased wages (America’s Choice, 1990). In our local area, manufacturing frontline employees must be capable of properly filling in forms and working well with others, yet, electronic end engineering technicians might be expected to create or deliver a presentation explaining troubleshooting or operating procedures of equipment to peers and supervisors. Business and industry interviewees agreed that the existing curriculum provides a broad spectrum of useful skills and that the objectives should not be changed. Students who had successfully completed the existing course provided further validation of this conclusion when they indicated that the curriculum
adequately prepared them to complete common writing tasks appropriately and fostered
development of fundamental interpersonal communication skills deemed useful in the
workplace.

Course Description

The content of this course of study has been developed with input from industry,
advisory committees, students, and faculty. The primary objectives to be measured are
procedures for organizing and presenting data, writing memorandums, letter reports,
formal technical reports, personal resumes and cover letters, and completing job
applications. The curriculum is suitable for traditional face-to-face or online instructional
design. Either method of presentation provides students with opportunities to build self-
esteeem while working to develop speaking, listening, reading, and writing skills.

I-CARE Delivery System Review

The I-CARE system is a product of San Diego State University (SDSU)
Educational and Technology departments that is designed to facilitate course
development for online classes. The system allows the course developer to address the
needs of students by providing a template consisting of five components: Introduction,
Connect, Apply, Reflect, and Extend, thus the acronym I-CARE. Each template is
designed with a similar look and feel to it. For example, Figure 1 and Figure 2 show
Netscape screen captures of the opening pages for Introduction and Apply components of
Technical Communications, Lesson 1. Headings indicate the component that is currently
active. Graphics are kept simple and small to minimize transmission times. During peak
usage times, the Internet can slow down the transfer of information to the point of
frustration. By keeping file sizes small, this problem can be minimized for most students.
The template organization of the I-CARE system into five components is helpful, yet the instructor must carefully organize material within each of these five sections. For example, the Apply component of Lesson 1 is further subdivided into six sections,

FIGURE 1. Lesson 1: Introduction component with simple graphic and topic identified.

FIGURE 2. Lesson 1: Apply component with simple graphic and topic identified.
A through F as shown in Figure 3. These six sections are then hyperlinked to allow ease of movement through the page and to other files. Since this format is consistent throughout all lessons, students familiar with hypertext links will easily follow the “flow” of any lesson. Students new to an online learning environment come to appreciate the consistency between lesson formats as their learning curve associated with technology is reduced and they are able to divert their concentration to the subject content as desired.

Even so, students should find relevancy in their coursework. The challenge for the instructional developer is to create basic lesson plans that are flexible enough to provide relevancy to assignments for students from diverse backgrounds. Once done, the instructor must be mindful of adult learning styles and preferences and ensure an inviting

FIGURE 3. Lesson 1: Apply component with six hypertext linked subdivisions to allow for easy navigation through lesson.
place for students to return to and learn. An expanded explanation of the I-CARE system is available in Appendix A.

Summary

The Technical Communications curriculum is appropriate for both face-to-face and online environments. Existing curriculum need not be changed for the face-to-face presentation of Technical Communications; however, instructional design must change significantly for online presentation. And although assignments may remain consistent between the face-to-face and online classes, methods of eliciting student participation and developing group camaraderie will vary significantly between the two types of presentation media. Careful attention to the needs of the intended audience remains crucial for the Technical Communications class to be successful. Technical questions, learning styles and preferences, relevancy to the student, contextual learning, organization of material, timely grading and return of assignments, and a friendly environment will contribute substantially to the success of the online Technical Communications class.
CHAPTER IV
CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Workplace organizations continue to flatten and expect greater productivity from their employees, as global competitiveness in the workplace becomes tougher. Entry level positions continue to rely, to a significant degree, on technical skill expertise. As workers strive for promotions and raises, it is their transferable communication skills that become critical to the process.

The Technical Communications curriculum has been designed to offer specific instruction in areas of communication deemed most relevant by community, students, and faculty. By offering the course in an online format, RCC addresses the issue of increasing numbers of students and limited classroom space. The alternate means of delivery provides additional avenues of access to students and does so at a price that is affordable.

Recommendations

Annual evaluations of Technical Communications curriculum by faculty and advisory committee members will allow input to make adjustments deemed necessary by industry and changes in technology. As technology evolves and becomes more affordable, advanced presentation skills may be incorporated into the course as suggested by businesspersons during the student informational interview process. Student feedback should also continue to be gathered and evaluated to ensure learner needs are being met.

Developing curriculum to address learner needs in an online format is time intensive and exacting. Once curriculum is approved, the presentation of material to meet the objectives set forth in the curriculum requires extensive planning and organization
before attempting to develop hypertext lessons. The software program used to cre
hypertext should be selected carefully. A program that is user friendly without sacrificing
efficiency is preferred. The syllabus for the online Technical Communications class is
shown in its entirety in Appendix D. This is an example of what a student would print out
using the Netscape browser. Appendix E provides screen captures of Lesson 1 using the
Netscape browser. Scrolling and hypertext links allow students seamless viewing of the
files using browser software. Viewing the lesson using a paper medium is difficult.
Please note that color adds significantly to hypertext pages. Instructional developers
should use color extensively and consistently where applicable.

Once the course is online, an instructor should strive to develop a non-threatening
atmosphere of camaraderie very quickly. Chat rooms and e-mail are typical avenues
communication between student and students or student and teacher. Appropriate class
behavior should be established early and standards enforced.

Cultivating a network of colleagues involved with developing online coursework
is invaluable. Unique challenges faced by the instructional developer or teacher may have
already been addressed by another site and can save a beginner a great deal of time.
Many instructional developers will agree that developing your own online course
provides insights just not available otherwise.
APPENDIX A

I-CARE System
I-CARE System

The I-CARE system is a product of San Diego State University (SDSU) Educational and Technology departments that is designed to facilitate course development for online courses. The system allows the course developer to address the needs of students by providing a template consisting of five components: Introduction, Connect, Apply, Reflect, and Extend, thus the acronym I-CARE. Individual components facilitate the implementation of courses based on the Instructional System Design (ISD). Originally developed by the U.S. armed services and implemented during the 1970s, the ISD consists of five phases: analyze, design, develop, implement, and control. The development phase addresses four general learning guidelines: 1) inform the learner of the objectives, 2) provide for active response, 3) provide for guidance and prompts, and 4) provide for feedback (Finch & Crunkilton, 1989). It is primarily these four general guidelines that the I-CARE system is designed to address. The following descriptions for introduction, connect, apply, reflect, extend and evaluate are taken directly from SDSU Education and Technology Center web page (1999).

Introduction

The introduction of your module should include two key elements, the context and the objectives:

• Context

The introduction initiates the module by explaining how this particular section fits within the context of the online course as a whole. Remind your students
about what they have already learned and how this new information will build on previous knowledge.

• Objectives

An example of an objective is: “At the end of this lesson you will be able to identify, and state the function of, the major organs of the respiratory system.” Including clearly stated objectives is critical to good instruction. First, objectives provide you with a sound basis for the selection or designing of instructional content and procedures. Second, are useful for evaluating or assessing the success of instruction. Third, objectives can be an advanced organizer which sets learner expectations. This allows learners to form a meaningful anchor upon which to attach the content which is about to be presented (Mager, 1984). For a tutorial on how to write instructional objectives: [http://www.seas.gwu.edu:80/student/sbraxton/ISD/tutorial.html](http://www.seas.gwu.edu:80/student/sbraxton/ISD/tutorial.html).

Connect

This area is where you present new information and concepts to your students. There are important guidelines to follow:

• Chunk Information

Short-term memory holds about seven chunks or bits of information. If you organize your material into chunks there is a better chance that your students will encode this information into long-term memory. Moreover, small chunks of text are easier to read on screen.
• Provide Context

Learning can be made more meaningful to your students by setting the new information within the context of real-world tasks. For example, if one of your course objectives is for students to learn how to collect and identify flowering plants, you may want to explain how this knowledge or skill will be useful to them in their future career as a botanist.

• Consider Prior Knowledge

Take into account the prior knowledge of your students. Provide ways for them to review your module so that they can skim the content and focus on what is relevant to their needs. For example, you can provide a table of contents, and label or highlight important features.

• Accommodate Learners

Provide students with multiple forms of representation to help them visualize concepts. There are several ways to do this: illustrations, visual analogies, demonstrations, graphs, diagrams, and tables to name a few. For instance, you can use a diagram to illustrate how bacteria reproduce, or a visual analogy to relate abstract ideas to a concrete example: Just as a juggler keeps all the balls in the air by keeping them moving, so the good designer keeps several motivational strategies going at once.

Apply

This is where students practice using the new information in an “authentic” context. Think back to the objectives that you have stated for your module. This will help
you select the activities and determine if the outcome is consistent with learning objectives. You will learn more about online learning activities in Module 3 of this workshop. For now, here are a few examples of online practice activities and assignments:

- A self test for Lesson One of the course “Internet English 155: Basic Composition” from Athabasca University
  http://www.athabascau.ca/html/courses/engl155/unit_1/lesson_1.htm#self_test_1
- An experiment about the imaging properties of a simple lens for a physics course from the University of Florida
  http://www.phys.ufl.edu/~deserio/simplens/simplens.htm
- A writing assignment for a course entitled "Current Issues and Problems in Educational Media and Computers" taught at Arizona State University

Reflect

The purpose of this section is to provide an opportunity for your students to articulate their newly acquired knowledge to themselves and others. This encourages learners to mentally process and organize thoughts and build schema. For example, you could ask your students to construct a concept map of the new content. A concept map is a visual representation of the relationship among concepts and can be an effective learning tool for some students (graphic not included). Another way to promote reflection is to have your students communicate their thoughts and ideas to you or others enrolled in
your course. In Module 4 you will learn more about how to build an online community for your students using strategies such as:

- Keeping a journal
- Exchanging email with peers or instructor
- Posting to a thread on a course forum
- Posting to a ListServ

**Extend**

Extending the module includes enrichment and/or evaluation activities.

- Enrichment and Remediation

  You can provide enrichment activities for students who have mastered the content. For those students who are less successful, you may include remediation exercises. This is also a good area to provide "if time" activities for students who may just desire additional practice with the same content.

**Evaluation**

There are two purposes for including evaluation in your module:

- Student Evaluation

  You will want to know whether or not your students have learned what you intended them to. You should base the evaluation on the original instructional objectives that you stated at the start of your module. You can have students self-evaluate their learning or you can construct a way for you to test their knowledge. This will help you determine grades and provide students with necessary feedback.
• Program Evaluation

Evaluation is an opportunity to determine the success of the design of your module. Ask yourself questions like: Do my students have difficulty navigating through the pages? Do parts of the content section require elaboration? How can I modify the activities so that my students are more apt to complete assignments and learn more deeply and easily? The answers to these and other questions can lead you to make necessary revisions to your module for the next “go round.”

In addition, you may be held accountable to sponsors and need to provide information about how well your students are receiving your online instruction.
APPENDIX B

Course Outline
RIVERSIDE COMMUNITY COLLEGE

COURSE OUTLINE

ELECTRONICS 27
(Same as Engineering 27)

COURSE DESCRIPTION

Technical Communications

3 Units

PREREQUISITE: None

Procedures for organizing and presenting data through informal and formal documents and presentations. Includes practice in writing memoranda, letter reports, and formal technical reports. Also includes discussion of personal resume and preparation of job applications. 54 hours lecture.

SHORT DESCRIPTION FOR CLASS SCHEDULE

Procedures for organizing and presenting technical data.

COURSE OBJECTIVES

Upon successful completion of the course, students should be able to:

1. define technical communications;
2. recognize and identify characteristics of technical communications;
3. identify the needs of a given audience;
4. collect and organize information;
5. create technical documents in accordance with conventional formats;
6. write descriptive and operational instructions for nontechnical users of technical information;
7. properly integrate graphs, tables, and references into technical reports;
8. conduct an informational interview;
9. assemble a personal data book; and
10. compose a personal resume with cover letter.

COURSE CONTENT

Lectures and/or laboratories follow the approximate schedule below:

TOPICS

1. Technical writing
2. Informal reports
3. Formal reports
4. Personal qualification data

In addition to the indicated hours, students are also assigned reading, writing and other outside assignments equivalent to two hours per one hour lecture, prorated for short-term courses.

METHODS OF INSTRUCTION

Methods of instruction may include, but are not limited to:

Class lectures/discussions/demonstrations
Assigned text readings
Pair and small group activities/discussion
Class exercises
Problem solving activities
Videos/films/slides/audio tapes
Cooperative learning tasks
Reports and papers
Handouts
Individual conferences
Guest lecturers
Drills and pattern practices
Online
METHODS OF EVALUATION

Students will be evaluated for mastery of learning objectives by methods of evaluation, which may include, but are not limited to:

- Written assignments
- Class and individual projects
- Participation and regular attendance
- Digital reports/presentations
- Oral reports/presentations/performance
- Quizzes/examinations
- Final examination

COURSE MATERIALS

All materials used in this course will be periodically reviewed to insure that they are appropriate for college level instruction. Possible texts include:

APPENDIX C

Detailed Lesson Plans 1-16
**I-CARE SYSTEM LESSON PLANS**

**ONLINE TECHNICAL COMMUNICATIONS**

<table>
<thead>
<tr>
<th>Lesson #1</th>
</tr>
</thead>
</table>

**Introduction: context and learning objectives**

**Memorandum**

- Most common form of communication in the workplace
- Used in-house
- Sample

**Lesson objectives**

- Meet classmates online
- Visit two other sites regarding learning styles
- Complete Processing/Learning Style (PLS) assessment
- Synthesize information – text, online, chat room, class discussion
- Post findings to class bulletin board
- Identify the parts of a memorandum
- Articulate where and why a memorandum is used
- Summarize findings of PLS in a memorandum (warm-up, not graded)
**Connect:** present new information and concepts

Who uses the memorandum?

Where is the memorandum used?

What are the types of memoranda?

How do you create a memorandum?

Example memorandum

Key points to remember

- Heading information
- Format
- Initials

**Apply:** practice using new information in context

Review: subjects, verbs in simple sentence construction

Online: PLS assessment, post results of PLS assessment to Class Discussion Board

Read: text regarding memoranda

Write: memorandum (memo) to instructor reporting personal results

Chat Room: question and answer regarding assignments, learning style assessment
## I-CARE SYSTEM LESSON PLANS

### ONLINE TECHNICAL COMMUNICATIONS

<table>
<thead>
<tr>
<th>Reflect: students articulate newly acquired knowledge to themselves and others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consider the given question and post your answer to the class discussion board.</td>
</tr>
<tr>
<td>• What would you attach to memorandums for managers/colleagues with visual preferences?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Extend / Evaluate: extension activities (URLs), student and program evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use private email to answer the following questions:</td>
</tr>
<tr>
<td>• What did you like about the lesson?</td>
</tr>
<tr>
<td>• What did you not like about the lesson?</td>
</tr>
<tr>
<td>• How can the lessons be better?</td>
</tr>
</tbody>
</table>
## I-CARE SYSTEM LESSON PLANS

### ONLINE TECHNICAL COMMUNICATIONS

<table>
<thead>
<tr>
<th>Lesson # 2</th>
</tr>
</thead>
</table>

### Introduction: context and learning objectives

Memorandum continued

- Sample

Lesson objectives

- Write memo #1 for grading
- Visit other sites
- Apply Processing/Learning style to defining the audience for written documents
- Review posted findings of PLS and implications for this class
- Define Informational Interview purpose and process

### Connect: present new information and concepts

Why is "knowing your audience" important?

How are audiences described?

How do you create a memorandum?

- Does knowing your audience have other implications in the workplace?
### Apply: practice using new information in context

**Review:** comma usage (beginning sentence phrases), outlining, opening paragraph construction, peer review

**Online:**
- Review summary of PLS assessment for class
- Web search - Are Technical Writing skills beneficial to people seeking promotions in electronics or engineering? Why or why not?
- Identify two sites (URLs) used in forming your opinion.
- Post your answer and URLs to the Class Discussion Board

**Read:** review memo information

**Write:** memo #1, graded assignment.
- In memo format to your instructor, state your opinion regarding the benefits (or lack of benefits) to those possessing technical writing skills seeking promotions. Be sure to include two URLs.

**Chat Room:** question and answers regarding peer review, memo #1, other
**I-CARE SYSTEM LESSON PLANS**

**ONLINE TECHNICAL COMMUNICATIONS**

<table>
<thead>
<tr>
<th>Reflect: students articulate newly acquired knowledge to themselves and others</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is not uncommon to hear students groan when writing assignments are given.</td>
</tr>
<tr>
<td>Unfortunately, present technology does not allow me the opportunity to immediately address writing obstacles. Would you please take a few moments and identify what is most difficult for you during the writing process in general or just in writing a memo.</td>
</tr>
<tr>
<td>Send me a short message using private email. I’ll post a summary of replies (no names) at a later date.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Extend / Evaluate: extension activities (URLs), student and program evaluation</th>
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<tbody>
<tr>
<td>Review the memo #1 grading criteria carefully. Use this as a guide, be tough on yourself and grade your own paper. If the grade you gave yourself and the grade entered into the grade book are “way off,” then review the comments carefully and start asking questions. We learn best through our mistakes and through discussions and through practice.</td>
</tr>
</tbody>
</table>
## I-CARE SYSTEM LESSON PLANS
### ONLINE TECHNICAL COMMUNICATIONS

### Lesson #3

<table>
<thead>
<tr>
<th>Introduction: context and learning objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Letter</strong></td>
</tr>
<tr>
<td>• Most common form of external communication in the workplace</td>
</tr>
<tr>
<td>• Sample</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lesson objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Identify the parts of a letter</td>
</tr>
<tr>
<td>• Articulate where and why a letter is used</td>
</tr>
<tr>
<td>• Determine company for informational interview</td>
</tr>
<tr>
<td>• Synthesize information – text, online, chat room, class discussion</td>
</tr>
<tr>
<td>• Submit rough draft of letter #1</td>
</tr>
<tr>
<td>• Peer review of letter #1</td>
</tr>
<tr>
<td>• Describe memory mapping as a learning tool</td>
</tr>
<tr>
<td>• Basics of the letter body</td>
</tr>
</tbody>
</table>
### Connect: present new information and concepts

- **Who uses the letter?**
- **Where is the letter used?**
- **What are the types of letter?**

**Example Letter**

**Key points to remember**
- Heading information
- Format
- Signature

### Apply: practice using new information in context

- **Review:** comma usage (middle of sentence phrases, dates, months, years), memory mapping, middle paragraph construction

**Online:**
- Determine company for informational interview (no virtual companies)
- Email a copy of letter #1 rough draft to two classmates for peer review

**Read:** text regarding letters

**Write:** rough draft of letter #1, request to conduct informational interview

**Chat Room:** question and answer regarding assignments, learning style assessment
<table>
<thead>
<tr>
<th>Reflect: students articulate newly acquired knowledge to themselves and others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is “knowing your audience” important when writing a letter?</td>
</tr>
<tr>
<td>• Why or why not?</td>
</tr>
<tr>
<td>• Post a short reply to class discussion page.</td>
</tr>
<tr>
<td>Chat room: be prepared to discuss your answers.</td>
</tr>
<tr>
<td>Extend / Evaluate: extension activities (URLs), student and program evaluation</td>
</tr>
<tr>
<td>You will be writing a cover letter for your resume latter in the term. As you explore different sites and employment avenues, begin to analyze the importance (or lack of) of the cover letter.</td>
</tr>
</tbody>
</table>
## Introduction: context and learning objectives

Letter continued

- Sample

### Lesson objectives

- Write letter #1 for grading
- Visit other sites
- Identify basics of brainstorming
- Synthesize information – text, online, chat room, class discussion
- Peer review of letter #1 (final draft)

## Connect: present new information and concepts

Who will benefit from the informational interview?

In what ways will each benefit?

Why is it important to document the names of individuals, dates and times as you gather information?
### I-CARE SYSTEM LESSON PLANS

#### ONLINE TECHNICAL COMMUNICATIONS

| **Apply:** practice using new information in context |
| Review: comma usage (joining sentences), brainstorming, closing paragraph construction |
| Online: final peer review of letter #1 |
| Read: review letter information |
| Write: letter #1, graded assignment |
| Chat Room: question and answer regarding assignments, other |

| **Reflect:** students articulate newly acquired knowledge to themselves and others |
| If you were the one being interviewed, what would you like the person to look and act like that is interviewing you in your business establishment? |
| Chat room: be prepared to discuss your answers. |

<p>| <strong>Extend / Evaluate:</strong> extension activities (URLs), student and program evaluation |
| Use private email to answer the following questions: |
| • What did you like about the lesson? |
| • What did you not like about the lesson? |
| • How can the lessons be better? |</p>
<table>
<thead>
<tr>
<th>Introduction: context and learning objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter Reports</td>
</tr>
<tr>
<td>• Sample</td>
</tr>
<tr>
<td>Lesson objectives</td>
</tr>
<tr>
<td>• Identify four types of letter reports</td>
</tr>
<tr>
<td>• Proper use of graphs, charts, tables, and figures</td>
</tr>
<tr>
<td>• Appropriate labeling of graphs, charts, tables, and figures</td>
</tr>
<tr>
<td>• Visit other sites</td>
</tr>
<tr>
<td>• Develop outline of letter report</td>
</tr>
<tr>
<td>• Synthesize information – text, online, chat room, class discussion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connect: present new information and concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teamwork is essential in today’s workplace.</td>
</tr>
<tr>
<td>• Identify team members</td>
</tr>
<tr>
<td>• Team develops outline of letter report</td>
</tr>
<tr>
<td>• Team decides how information will be analyzed and presented</td>
</tr>
</tbody>
</table>
Apply: practice using new information in context

Review: colon and semi-colon usage

Online: teams meet and discuss letter report assignment

- How will data be analyzed?
- What graphics will you use to represent the data and why?
- Outline letter report
- 1 team member emails letter report outline and graph ideas to instructor

Read: text sections regarding letter reports and graphics

Write:

- Outline letter report
- Set appointments and conduct informational interviews

Chat Room: question and answer regarding assignments, other

Reflect: students articulate newly acquired knowledge to themselves and others

Identify two pros and two cons regarding teamwork.

You may or may not have experienced them in this assignment.

Post your 4 points to the Class Discussion Board
**Extend / Evaluate:** extension activities (URLs), student and program evaluation

**Extra Credit Opportunity:** search out 2 sites.

- One site that is an excellent example of good technical writing.
- One site that is an excellent example of poor technical writing.

Provide the URLs and your reasoning behind your opinion. Post this to the Class Discussion Board – you must be brief.
**I-CARE SYSTEM LESSON PLANS**

**ONLINE TECHNICAL COMMUNICATIONS**

#6

### Introduction: context and learning objectives

Letter Reports continued

Lesson objectives

- Write letter #2 (letter report) for grading
- Use graphs for clarification of information
- Produce a team product
- Apply PLS to the development of the product
- Visit other sites
- Synthesize information – text, online, chat room, class discussion

### Connect: present new information and concepts

Teamwork continued

- Identify team member PLSs
- Incorporate into production of letter report
Apply: practice using new information in context
Review: adjectives, usage and that describe work (preparation for resume)
Online: teams finalize letter report
Read: text sections regarding letter reports and graphics
Write:
  • Letter #2, graded assignment
  • Set appointments and conduct informational interviews
Chat Room: question and answer regarding assignments, other

Reflect: students articulate newly acquired knowledge to themselves and others
Identify two pros and cons regarding teamwork.
You may or may not have experienced them in this assignment.
Post your 4 points to the Class Discussion Board

Extend / Evaluate: extension activities (URLs), student and program evaluation
Use private email to answer the following questions:
  • What did you like about the lesson?
  • What did you not like about the lesson?
How can the lessons be better?
## Introduction: context and learning objectives

Resumes

**Lesson objectives**

- Identify basics of hard-copy resumes
- Identify the purpose of a resume
- Collect personal information for personal data file
- Visit other sites
- Synthesize information – text, online, chat room, class discussion

## Connect: present new information and concepts

All resumes are not created equal. One resume is not appropriate for all jobs.

- Differentiate between common resume formats
- Develop a target resume for specific audience
### I-CARE SYSTEM LESSON PLANS

#### ONLINE TECHNICAL COMMUNICATIONS

**Lesson # 7**

<table>
<thead>
<tr>
<th><strong>Apply:</strong> practice using new information in context</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Review:</strong> nouns, usage and that describe work (preparation for resume)</td>
</tr>
</tbody>
</table>

**Online:**

- Search out two jobs that are of extreme interest to you (now or in the future) and keep track of the URLs
- Search out 1 good site regarding resume Dos and Don’ts and keep track of the URLs

**Read:** text sections regarding resumes and cover letters

**Write:**

- Post your pick of the resume sites to the Class Discussion Board. No redundancy allowed.
- Collect and organize personal information: family, work, education, other
- Set appointments and conduct informational interviews

**Chat Room:** question and answer regarding assignments, other
### Reflect: students articulate newly acquired knowledge to themselves and others

Using the Internet as a tool can be wonderful. Searches can also be very disappointing.

Post a personal tip for using the Internet successfully to the Class Discussion Board.

### Extend/Evaluate: extension activities (URLs), student and program evaluation

**Extra Credit Opportunity:** in a private email, answer the following questions.

- What do you consider the minimum amount of time required to develop a resume and cover letter?
- How did you determine/calculate this?
## Introduction: context and learning objectives

### Cover Letters

**Lesson objectives**

- Identify basics of hard-copy cover letters
- Identify the purpose of a cover letter
- Format personal data file
- Write resume
- Complete informational interview package
- Visit other sites
- Peer review rough draft of resume
- Synthesize information – text, online, chat room, class discussion

---

### Connect: present new information and concepts

The Informational Interview provides you an opportunity to discover what employers in your field are really looking for in their employees. Remember to write your resume and cover letter in terms of what you can do for the company. Listing all your talents does not accomplish this task. For example, if you have good organizational skills indicated on your resume, in your cover letter, explain how this will benefit the company with whom you seek employment.
### I-CARE SYSTEM LESSON PLANS

#### ONLINE TECHNICAL COMMUNICATIONS

<table>
<thead>
<tr>
<th>Apply: practice using new information in context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review: ten interview questions you should be prepared to answer</td>
</tr>
<tr>
<td>Online: search out 1 good site regarding interviewing Dos and Don’ts and keep track of the URLs</td>
</tr>
<tr>
<td>Read: text, review letters and resumes</td>
</tr>
<tr>
<td>Write:</td>
</tr>
<tr>
<td>- Post your pick of the interview sites to the Class Discussion Board. No redundancy allowed.</td>
</tr>
<tr>
<td>- Format personal data file (and book)</td>
</tr>
<tr>
<td>- Rough draft of resume</td>
</tr>
<tr>
<td>- Finish informational interviews</td>
</tr>
<tr>
<td>Chat Room: question and answer regarding assignments, other</td>
</tr>
</tbody>
</table>

### Reflect: students articulate newly acquired knowledge to themselves and others

Describe the drawback to telling “just a little lie” during an interview. Post this brief answer to the Class Discussion Board.
Extend / Evaluate: extension activities (URLs), student and program evaluation

Futurists now estimate you will have a minimum of 7 careers in your lifetime?

- Is there a difference between the terms career and job?
- If so, please explain in 1-3 sentences.
- Do you believe futurists’ estimate applies to you?

Please send a private email with answers to these questions.
Introduction: context and learning objectives

Resumes and Cover Letters continued

Lesson objectives

- Write final draft of resume
- Peer review of resume
- Submit informational interview package
- Visit other sites
- Synthesize information – text, online, chat room, class discussion

Connect: present new information and concepts

Typically, summary documentation accompanies a completed project in the workplace.

Your informational interview is a personal project that you must now bring to a close.

Use the grading criteria as a guide to insure success.
### I-CARE SYSTEM LESSON PLANS

#### ONLINE TECHNICAL COMMUNICATIONS

<table>
<thead>
<tr>
<th><strong>Lesson</strong> #9</th>
</tr>
</thead>
</table>

**Apply:** practice using new information in context

**Review:** tips and advise for interviewing questions

**Online:** peer review resume before final submission

**Read:** review as necessary

**Write:**
- Informational interview package
- Resume – final draft

**Chat Room:** question and answer regarding assignments, other

---

**Reflect:** students articulate newly acquired knowledge to themselves and others

We have covered quite a bit of material. Appraise what has been covered and identify one new piece of information that will be helpful either in your work or personal life.

Submit this in a private email with a brief explanation.

---

**Extend/Evaluate:** extension activities (URLs), student and program evaluation

Use private email to answer the following questions:

- What did you like about the lesson?
- What did you not like about the lesson?

How can the lessons be better?
**Introduction: context and learning objectives**

Resumes and Cover Letters continued

Lesson objectives

- Write final draft of cover letter
- Peer review of cover letter
- Visit other sites
- Synthesize information – text, online, chat room, class discussion

**Connect: present new information and concepts**

Someday you may be in the position of influencing the hiring of new employees. If it were your own business, what characteristics would you look for in your employees?

**Apply: practice using new information in context**

Review: interviewing tips from corporate executives

Online: peer review cover letter

Read: text sections regarding resumes and cover letters

Write: cover letter – final draft

Chat Room: question and answer regarding assignments, other
Lesson #10

Reflect: students articulate newly acquired knowledge to themselves and others

You will hear differing opinions regarding the inclusion of a cover letter. By now, you have done enough reading to have formed an opinion. Post your opinion to the Class Discussion Board. (No explanations are needed.)

Extend/Evaluate: extension activities (URLs), student and program evaluation

Extra Credit Opportunity: in a private email, convert your hard-copy resume to an online format; edit as necessary.
<table>
<thead>
<tr>
<th><strong>I-CARE SYSTEM LESSON PLANS</strong></th>
<th>Lesson # 11</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ONLINE TECHNICAL COMMUNICATIONS</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Introduction: context and learning objectives**

**Formal Reports**

**Lesson objectives**

- Identify types of formal reports
- Examine parts of a formal report
- Locate sites describing new technology
- Synthesize information – text, online, chat room, class discussion

**Connect: present new information and concepts**

Changing technology is affecting our daily lives and can significantly affect our future. If each of us will have several careers, it is to our personal advantage to be aware of what changes are on the horizon. Trends and predictions by futurists may influence what classes you enroll in, the degrees you earn, and which jobs you seek.

**Apply: practice using new information in context**

**Review:** body language and communication

**Online:** share information with classmates regarding areas of interest

**Read:** text sections regarding reports

**Write:** post private email, see reflect section

**Chat Room:** question and answer regarding assignments, other
<table>
<thead>
<tr>
<th>I-CARE SYSTEM LESSON PLANS</th>
<th>Lesson # 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONLINE TECHNICAL COMMUNICATIONS</td>
<td></td>
</tr>
</tbody>
</table>

**Reflect:** students articulate newly acquired knowledge to themselves and others

Imagine yourself working happily in your field of study. Develop a scenario in which you are required to create a formal report. In a private email, briefly describe what you imagined.

**Extend / Evaluate:** extension activities (URLs), student and program evaluation

Are your preferred processing and learning styles being addressed in this course?

- If so, how? Any suggestions for making it better?

- If not, please offer a suggestion that could be incorporated into these lessons.
**Introduction: context and learning objectives**

Formal Reports continued

Lesson objectives

- Identify formal report topic
- Determine formal report purpose
- Locate references for your report
- Synthesize information – text, online, chat room, class discussion

**Connect: present new information and concepts**

Who your audience is directly impacts the presentation of material and can influence what information is shared. Analyze your topic and audience carefully.

**Apply: practice using new information in context**

Review: presentation basics

Online: discuss with classmates the pros and cons of your audience choice and the presentation of your material for the formal report

Read: text sections regarding reports

Write: outline formal report

Chat Room: question and answer regarding assignments, other
**Reflect:** students articulate newly acquired knowledge to themselves and others

Selecting an audience that is familiar with technical terms of your field, may eliminate lengthy explanations and allow for greater depth of technical information. If your audience were changed to general, but the length of the report or speech must stay the same, what would you do? In a private email, briefly identify what you would change and why.

---

**Extend / Evaluate:** extension activities (URLs), student and program evaluation

Frequently, a formal report must be converted into a presentation. As you develop your formal report, update your outline. This can then serve as the basics for a presentation. (Hint: you will submit a presentation in a few weeks.)
**Lesson #13**

**Introduction: context and learning objectives**

Formal Reports continued

Lesson objectives

- Convert outline to formal document
- Appropriate usage of visuals in a formal report
- Synthesize information – text, online, chat room, class discussion

**Connect: present new information and concepts**

"A picture is worth a thousand words." This quote, from I don’t know where, is significant to technical writers. As a technical communicator, you must endeavor to get your message across as clearly as possible to the reader. You are striving to eliminate any possibilities of misunderstanding. Therefore, use visuals sparingly and judiciously.
Apply: practice using new information in context

Review: visual basics

Online: discuss with classmates the pros and cons of the visuals you plan to use in your formal report

Read: text sections regarding reports and visuals

Write: formal report

Chat Room: question and answer regarding assignments, other

Reflect: students articulate newly acquired knowledge to themselves and others

Select one of the visuals you are using in your formal report. Describe it briefly and explain how this visual helps the reader. Send this in a private email.

Extend / Evaluate: extension activities (URLs), student and program evaluation

Good and bad technical writing is all around us. As you read the newspaper, watch television, and read magazines, identify those pieces that worked or did not work for you and then analyze why. Expand your horizons and ask a friend what they think of the same piece. For those pieces that you both agree on, determine if they are actually representative of good technical communication. Sometimes, what you like is just good marketing!
**I-CARE SYSTEM LESSON PLANS**

**ONLINE TECHNICAL COMMUNICATIONS**

<table>
<thead>
<tr>
<th>Introduction: context and learning objectives</th>
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</thead>
<tbody>
<tr>
<td>Formal Reports continued</td>
</tr>
<tr>
<td>Lesson objectives</td>
</tr>
<tr>
<td>• Finalize formal report</td>
</tr>
<tr>
<td>• Synthesize information – text, online, chat room, class discussion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connect: present new information and concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention to detail can be very difficult for some of us. As you finalize your formal report, carefully review the requirements. Use the grading criteria form as your guide.</td>
</tr>
<tr>
<td>If you were creating a formal report in the workplace, what would you use as final checklist? Post your answer to the Class Discussion Board.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Apply: practice using new information in context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review: formal report format</td>
</tr>
<tr>
<td>Online: discuss with classmates the formal report in the workplace</td>
</tr>
<tr>
<td>Read: text sections regarding reports</td>
</tr>
<tr>
<td>Write: formal report, graded assignment</td>
</tr>
<tr>
<td>Chat Room: question and answer regarding assignments, other</td>
</tr>
</tbody>
</table>

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# Reflect:

Students articulate newly acquired knowledge to themselves and others.

What part of creating a formal report is the most difficult for you?

What did you learn about yourself during this process?

Send a private email that briefly answers both questions.

# Extend/Evaluate:

Extension activities (URLs), student and program evaluation.

If you were to repeat this assignment, what would you differently. Post your answer to the Class Discussion Board.
**Introduction: context and learning objectives**

Formal Presentation

Lesson objectives

- Create a formal presentation
- Synthesize information – text, online, chat room, class discussion

**Connect: present new information and concepts**

Formal presentations can be a pleasant experience. It is normal to be nervous, and if you are prepared, this nervousness can be channeled into a positive outlet. Your energy level will be up, your alertness heightened, and you will be able to “think on your feet.”

Where in the workplace have you seen formal presentations? What made them a success or failure? Post a brief answer to both questions on the Class Discussion Board.
### Apply: practice using new information in context
- Review: dos and don’ts of presentations
- Online: discuss with classmates the formal presentations in the workplace
- Read: text sections regarding presentations
- Write: presentation, graded assignment
- Chat Room: question and answer regarding assignments, other

### Reflect: students articulate newly acquired knowledge to themselves and others
- Your audience for the presentation may differ from that of the formal report. What adjustments must you make to your presentation to address the needs of your audience?

### Extend/Evaluate: extension activities (URLs), student and program evaluation
- Extra Credit Opportunity: search out a site that looks like they have at least one interesting workshop or seminar to offer.
  - Provide the URL
  - Briefly explain why you are interested in attending
  - Briefly explain why you believe the seminar presentation will be well done

Please send your response in a private email. Thanks.
**Introduction:** context and learning objectives

Final Exam

**Connect:** present new information and concepts

- The exam is all-inclusive.
- You have 1 hour to complete the exam.
- Once you start, you must finish. You will not be allowed a second access.

**Apply:** practice using new information in context

Evaluations and exams are common in the workplace. Their purposes vary, but generally your salary is at issue. A final exam may be compared to such measuring tools, only it is an academic grade that is at issue.

- Keep your text handy
- Be assured you will be free from interruptions
- Don’t leave the room for too long. If your carrier cuts you off, you won’t be able to log back in.
**Reflect:** students articulate newly acquired knowledge to themselves and others

Relax. Be confident that your assignments have prepared you for the exam.

**Extend/Evaluate:** extension activities (URLs), student and program evaluation

I’d like to thank each of you for your support and contributions to the success of this class. Any comments you have regarding the course, pros and cons with specifics, will be appreciated. Any suggestions and solutions will all be looked at carefully.
APPENDIX D

Syllabus
Welcome to Technical Communications for Electronics, Engineering, and Manufacturing. Since you've made it this far, it appears that you have an interest in technical communications. So do I, and it is my goal to provide you with relevant skills, knowledge, and experiences that will enable you gain an edge in the workplace, as well as enhance your personal life.

You will discover that this is a rigorous course. Leaders from electronics, engineering, and manufacturing industries have guided the development of this course over a twenty year period. The grading criteria/rubrics have been heavily influenced by industry standards. Keep in mind that this is a community college course, that you are expected to do college level work, and that high standards are maintained. (Note: procrastination is definitely your enemy in this class!)

Throughout the term, you will be asked to participate in web-based activities, read web-based and hard bound books, create several documents, and complete a major assignment pertaining to your major. If you have not already done so, you may want to review the
Topics and Grading sections to see what areas we will examine.

Each week, you will begin a new lesson. Each lesson is structured similarly, in that five distinct parts form one complete lesson. The five parts are: Introduction, Connect, Apply, Reflect, and Extend or as we call it, I-CARE. The system works like this:

- **Introduction** - provides a brief overview of the lesson, describes the topics and what you should be able to do when you've completed the lesson.
- **Connect** - provides content in a context relevant to students.
- **Apply** - asks you to use this information in activities, review of material is also included
- **Reflect** - you are asked to analyze the ideas presented and synthesize an answer to a question. Your answers are frequently posted to the Class Discussion Board for other students to consider.
- **Extend** - provides an opportunity to explore the lesson's topic in more detail. Course feedback is also solicited in this section.

Course Description

This course is designed to help you develop a wide range of skills, typically referred to as transferable skills. It is true that not all students will use all the information presented. However, students regularly return and express their appreciation for this class. As you climb the ladder of success, writing skills become increasingly important.

Informal and formal documents in the forms of memoranda, letters, reports, and resumes are examined and discussed. "Practice makes perfect" should probably be adopted as the course motto. You are also introduced to processing/learning styles which will help you to develop documents for a particular audience and help you to know yourself as a student a little better.
Class discussions occur weekly. Questions and comments regarding assignments are addressed during this time. This is also our opportunity to get to know each other better. Most of us are not speed demon typists, so don't be bashful. If you are fairly new to chat room environments, use this friendly chat time to "get your feet wet."

Course Objectives

Upon successful completion of this course, you should be able to:

1. define technical communications;
2. recognize and identify characteristics of technical communications;
3. identify the needs of a given audience;
4. collect and organize information;
5. create technical documents in accordance with conventional formats;
6. write descriptive and operational instructions for nontechnical users of technical information;
7. properly integrate graphs, tables, and references into technical reports;
8. conduct an informational interview;
9. assemble a personal data book; and
10. compose a personal resume with cover letter.

Topics

Primary memorandum, letters, reports, resumes, graphic usage, word choice, organization, audience needs
Secondary processing/learning styles, team work, Internet etiquette, sentence structure, brainstorming, peer review, outlining, interview tips
Grading

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Points (300 total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Style Assessment</td>
<td>10</td>
</tr>
<tr>
<td>Memo #1</td>
<td>25</td>
</tr>
<tr>
<td>Informational Interview</td>
<td>40</td>
</tr>
<tr>
<td>Letter #1</td>
<td>15</td>
</tr>
<tr>
<td>Letter #2</td>
<td>30</td>
</tr>
<tr>
<td>Resume Plus</td>
<td>45</td>
</tr>
<tr>
<td>Formal Report</td>
<td>75</td>
</tr>
<tr>
<td>Formal Presentation</td>
<td>15</td>
</tr>
<tr>
<td>Contributions to Class Discussion</td>
<td>30</td>
</tr>
<tr>
<td>Other Homework</td>
<td>15</td>
</tr>
</tbody>
</table>

Every effort is made to adhere to the schedule that follows; however, individual class needs vary and may result in slight alterations to the schedule. Assume you will have weekly homework assignments requiring postings to the class bulletin board for class discussion purposes. (*indicates graded)

Tentative Schedule of Homework
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Memo, PLS Assessment, review</td>
</tr>
<tr>
<td>2</td>
<td>Memo #1 dbncm*, web-search, review</td>
</tr>
<tr>
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Enrolled students should proceed to Lesson 1 after reading the syllabus. If you are not enrolled and would like to be, please return to the home page to access admissions.

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APPENDIX E

Netscape Capture
of
Lesson #1 Introduction
Perhaps one of the most common forms of communication within a company is the memorandum. The memorandum may be a simple phone message or a page with several attachments. In either case, a paper (or digital) trail is established within the company, and the originator of the document is responsible and accountable for what is written. Therefore, most administrators agree that it is in your best interest to say exactly what you mean and mean exactly what you say.

Please read the following example. Note the format and the memo's brevity.

**Memo**

**To:** Technical Communication Students  
**From:** Linda Guillen  
**Cc:** File  
**Date:** January 1, 2000  
**Re:** Lesson 1 Objectives

**Technical Writing Pros, Inc.**
Res: Lesson 1 Objectives

Our first lesson introduces us to conventional memorandum formats and provides an opportunity to practice the art of technical writing. As part of your first assignment, you will:

- meet classmates via e-mail,
- visit other sites,
- gather and synthesize information,
- post your findings at the class bulletin board, and
- summarize your findings in a memorandum to me.

The memorandum is a useful communication tool in the workplace. Strive to learn the standard format, get to the point, and keep the memo organized.

Go on to the Connect component of this lesson by clicking on the "FORWARD" button in the upper left corner or the "Connect" button in the left frame.

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APPENDIX F

Lesson #1

I-CARE Components
INTRODUCTION

The MEMORANDUM

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Top of page.
WHO uses the memorandum?

People wishing to convey information within a company frequently do so using a memorandum, abbreviated "memo." As your responsibilities increase at work, so will the necessity to document your discussions and ideas. Dale Carnevale states that "Only about 8.4 percent of the average employee's communicating time is spent writing, yet writing is most often used at critical junctures in the work process" (1991).

Who uses the memorandum? You, your boss, your peers, and your subordinates.

WHERE is a memorandum used?

A memorandum is used within a corporation or business. It is not designed to be sent to someone outside of the company.
WHY is a memorandum used?

Information must often be shared between departments and co-workers. Company policy changes, employee evaluations, project updates, or requests for reimbursements are topics frequently found in memos. The memo creates a paper trail and establishes a record of your efforts. Memos with your initials or signature are legally binding.

WHAT are the types of memos?

Memos may be formal or informal. The audience and topic will determine the arguments you make, the tone you adopt, and the words you choose. Format remains consistent between the two types. (More about format comes later.)

A memo usually covers one main point. Your target audience is usually very busy; telephone calls, reports, meetings, and other types of mail compete with your memo for attention. Make your message clear, concise, and precise - people just do not have an abundance of time and they will appreciate your technical expertise. Remember: readers generally prefer one-page memos that get right to the point.

HOW do you create a memorandum?

Take a look at the sample memorandum below. A conventional format is used to demonstrate. Although you will see many different versions, most will contain:
• From: your name followed by your initials
• Subject:

As we develop our technical writing skills, we will explore exceptions to the rules. But for now, assume this is the only format available for a memorandum.

Take a look at the memo sample below. Pay close attention to the memo's format and contents. Following the memo are explanations regarding points you should remember. You should also review the section in your text regarding memoranda where different formats are presented and expanded explanations are provided.

Remember, a memo is designed to provide necessary information in a clear, concise, and precise manner. Nothing in a memo should waste a reader's time. Please look at the example below and read the Key Points to Remember that follow.

Example
MEMORANDUM

Date: July 4, 1999
To: Ms. Patricia Program
From: Mr. Frank Waters
Subject: Memorandum format

Please use our standard memorandum format for in-house documentation. Using the new software to create new memoranda formats is actually causing productivity to drop by 5 percent. Jim Lovenumbers just completed a brief analysis and discovered employees take longer to write memos and also to read them.

If you have any questions or concerns, please leave me a message at x2341. If you are interested in the productivity numbers, call Jim at x1111, and he will provide you with the details of the study.
Key Points to Remember

• Heading Information
  o Memorandum - (Memo) should be centered across the top of page.
  o Date - Indicates the month, date, and year the memorandum was sent. Do not abbreviate. Military formats are acceptable; do not abbreviate months.
  o To - The name of the person to whom you are sending the memo is placed here. The formality of the document will help you decide when to include a title. When in doubt, play it safe and use the correct title. (Example: To: Ms. Patricia Program is formal, To: Patti Program is informal.)
  o From - Your name is placed here, and you follow the same degree of formality selected in the To section. (Example of formal - To: Ms. Patricia Program, From: Mr. Frank Waters; Example of informal - To: Patti Program, From: Frank Waters) Indicate your approval of the memo by signing your initials after your name on the From: line. There is no signature at the bottom of a memorandum.
  o Subject - This is an optional line. If your memo is only one or two short sentences, a subject line will become redundant. However, if you want to grab your reader's attention, use the subject line. Make sure you do not wander in your text - stick to what the stated subject.

• Format
  o Frame your memo with white space. Allow approximately one inch of white space for each margin. Do not worry if your memo is short; just be sure the memo gets your point across to the reader.
  o Use a colon, "::", after each of the following heading words - To, From, and Subject.
  o Two spaces should follow a colon, (even though many word processors only allow one). If a subject line is included, use this line as your guide for aligning date, to, and from information.

• Text
  o Justify to the left, single space lines, and leave a blank
line between paragraphs.
- Begin with the main idea; there are very few exceptions to this rule. Do not waste the reader's time by warming up to what you want.
- Follow the KISS method - Keep It Short and Simple.
- In your closing paragraph, be sure to include a sentence specifying how you can be reached if something is not clear (or if you expect an answer). This lends professionalism to your document by showing courtesy to your reader.

Go on to the Apply component of this lesson by clicking on the "FORWARD" button in the upper left corner or the "Apply" button in the left frame.
The MEMORANDUM

CONTENTS

Directions - Complete A through F.

- A. Review (click or scroll)
- B. Online Assignment (click or scroll)
- C. Reading Assignment (click or scroll)
- D. Writing Assignment (click or scroll)
- E. Chat Room (click or scroll)
- F. Last Step
We will begin the practice of technical writing by reviewing simple sentence structure. Sentence structure affects the clarity of your message and how you are perceived by others.

In a typical conversation, you have an opportunity to observe a person’s body language and to solicit questions to ensure your message is received as you intended. A written document does not have the same opportunities - you must get it right the first time. Choose the wrong word and the message is skewed. Place emphasis on the wrong phrase, and the tone becomes negative.

Our written words speak for us, so we must endeavor to select our words carefully and then to place them in sentences that support our message. The clarity of your written documents influences your perception by others and this translates into promotions and raises.

Let's go to Review #1 by clicking on the green "NEXT" icon.
Introduction:

Many of us have gone through school and have never been made aware of the different preferences related to processing and learning new information. How we learn in the workplace, at school, or at home is of significant interest to industry leaders and researchers.

Do you prefer to hear, see, touch or smell new information? Is it easier to grasp a new program if you know what the whole picture is first, and then put the pieces together? Or do you prefer the detail first and then the big picture? Does it "drive you nuts" if new material is presented in a haphazard manner?

This next task may "shed some light" on processing and learning information.

Task:

Synthesize the results of the Processing/Learning Style Assessment.

References:

Processing/Learning Style Assessment file.

Assignment:

Take this opportunity to access the Processing/Learning Style Assessment tool, print a hard copy, complete the assessment, and decide if you agree with the results.

Structure:

Use the following format and post your scores to the Class Discussion Board: LASTnameFIRSTinitial + space + D = total + V = total + A = total + K = total. Preference appears to be ____ . Agree or disagree.

Example posting: GuillenL D=18 V=20 A=22 K=22. Preference appears to be A or K. (I like K) Agree
Procedure:

1. Click on the green/pink "next" icon. This takes you to the Learning Style Assessment files.
2. Complete the assessment from the perspective of a college student.
3. Follow the scoring directions and determine your preferred learning style.
4. Keep your results handy. You will need them later.

Reading Assignment

Your reading assignment provides greater detail regarding memoranda and the workplace. Use your textbook index to locate the pages associated with memos (memoranda). Read the material. (You will often find cross-referenced listings - get used to it, since this is a very common method of locating information in technical fields.)

Note when and where the memo is used.

Identify and learn the required elements of a memo.
Writing Assignment

Task:

Draft a memo to your instructor reporting the results of your Learning Style Assessment.

References:

Textbook, Lesson Examples

Assignment:

Begin your memo with the results of your Learning Style Assessment. Indicate if you agree or disagree with the results. Briefly explain why and provide one example that supports your opinion.

Structure:

Your textbook and online lesson provide you with several memorandum formats. Make sure that you follow the proper format. You may design memo paper for yourself, but don't lose too much time to being creative and neglect the written part of the assignment.

The memo should have a formal tone; i.e., be conservative. Do not exceed one page. Rough guide - approximately 5-10 sentences.

Procedure:

When you have completed your assignment, send a copy of your file to me electronically. Use one of the following methods:

- Microsoft Word Users
  - Create and save your assignment as a Microsoft Word document. Use the following naming convention: LASTNAME + ASSIGNMENT
NUMBER + WORD PROCESSOR EXTENSION.
For example, if I were submitting a copy of my
first assignment I would name my file
GUILLEN1.DOC
• E-mail this as an attachment file.
• All Other Word Processor Users
  o Create and then save 3 copies of your
    assignment.
    ■ Save your original using the following
      naming convention: LASTNAME +
      ASSIGNMENT NUMBER + WORD
      PROCESSOR EXTENSION.
    ■ Save a second copy of your assignment as
      text file and send this as an email
      message. The subject line of the email
      must indicate the assignment number.
      using the format: LASTNAME +
      ASSIGNMENT NUMBER + .TXT
      EXTENSION. For example, if I were
      submitting a copy of my first assignment I
      would copy my original file using
      CTRL-All, open the message box, paste in
      the copy, and on the SUBJECT or RE line
      of the email message type in GUILLEN1.txt
      The .txt file will strip away most formatting
      - that's OK. Do not waste your valuable
      time trying to reformat the file. This file will
      be used by me for editing/grading
      purposes.
    ■ Save a third copy as a .gif file and email
      this as an attachment file. Use the
      following naming convention: LASTNAME
      + ASSIGNMENT NUMBER +.gif
      EXTENSION This file will retain your
      formatting for me to view for grading
      purposes.
  o E-mail this as an attachment by Sunday
    evening, midnight to the address posted on the
    class bulletin board.
Chat Room

Meet in the class chat room on Wednesday evening, 8-9pm pst. Here we will meet each other, answer questions regarding the memo, and answer questions regarding learning styles. If you have never been in a chat room before, do not be nervous. Many of us still use one and two finger typing AND you will begin to relax after a few minutes. I'll start the discussion if one has not already begun.

Procedure:

1. Write down any questions you may have.
2. Access the Class Chat Room.
3. Offer questions and watch for a similar question to be asked and answered.
4. Threads of conversation will usually develop.
5. When the session is over, I'll email you each a copy of the conversation.
6. REMEMBER - this is a classroom. Respect each other and remain professional.

Back to CONTENTS

Last Step
Go on to the Reflect component of this lesson by clicking on the "FORWARD" button in the upper left corner or the "Reflect" button in the left frame.
The memorandum is a very common tool used in the "real world" to convey information within an organization. A corporation may employ thousands of people and each person will have an individual processing or learning style. Review the purpose of writing a memo and consider the effect that processing/learning styles may have on the interpretation of your message. Please answer the following question and then post your answer to the "Class Discussion Board." After doing this, go the the Evaluate/Extend component of this lesson.

Scenario

- Assume you are the lead production manager for a manufacturing firm. The quality control manager just informed you that product returns have been increasing and are approaching the upper limit cut off point. You will not see your three production managers until next Monday, but you want to give them a "heads up" so they will be prepared for the meeting. All three of your managers have a preference for visual processing/learning.
Question

• What would you include with your memo to your managers to address their processing/learning preferences?

Procedure

• Access the "Class Discussion Board" and post a brief message with "Reflect" in the subject title. Answer the question and briefly justify your answer.

Go on to the Extend/Evaluate component of this lesson by clicking on the "FORWARD" button in the upper left corner or the "Evaluate" button in the left frame.

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Please help improve this lesson for future students by taking a moment to answer the following questions. Be brief and to the point (technical communication style) and use the "private e-mail."

- What did you like about this lesson? (remember there are five parts: I-CARE)
- What did not work for you?
- How can the lesson be made better?

and

Thank You

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REFERENCES


Balch, D. & Patino, D. (1998). Going on line and the “no problem” phenomenon (or “Murphy was and optimist”). Education at a Distance, January 12 (1), p. 4-7.


