

Every individual entering the medical field must learn, understand, and apply terms that are specific to the medical field. This course was designed to teach basic medical terminology, cardiology-specific medical terminology and respiratory-specific medical terminology. In the medical field, it is not only important that a medical employee understand medical terminology but they must be able to apply it in the appropriate situations.

One of our first goals was to identify the learner and develop the course to meet their learning needs. The learner's for this course range in age, demographic and gender. The two things that they all have in common is a minimum of a high school degree, or equivalent, and a plan to pursue a career in the medical field. The learner's experience with technology varies. This had to be taken into consideration when developing course materials. A *Start Here* web page was created as a reference for the learner. It contains contact information for various campus resources that the student may need. Each web page contains a link back to the *Course Overview* web page, which acts as a landing page for the course.

When developing the content for the course the Constructivist Learning Model was used. The course was designed to be learner centric. The instructional objective was defined for the course and each of the learning modules. These objectives were stated clearly for the student. Content Clustering was used to divide the content into three lesson modules. Content presentation is consistent between each lesson module to provide a familiar learning situation for the student and minimize objective confusion. To aid the learner sound bites have been added to not only let the learner hear how a term should be pronounced but to also provide the student with a verbal connection with the instructor. Instructions for completing the PDF assignments are included to keep the learners focus on the course material, not the technology. Students are motivated through feedback from other members of the course through discussion groups. Instructors work to ensure that students are kept on task and that expectations are clear through verbal and written feedback, graded tests, and rubrics. Rubrics have been designed to provide the student with a clear idea of what is expected for any assignments that are not graded tests. The final assessment has been designed as a group project to give the learner more exposure to collaborative situations.

To ensure that the learner could identify and apply medical terminology correctly, different exercises were developed that utilized a defined glossary of terms. On the lesson module web page the first item listed is the glossary of terms specific to that lesson module. Beside each term is speaker icon, which links to a sound bite of the correct pronunciation for the term. A Case Study was supplied, which includes all of the terms from the glossary so that the learner could see how each of the terms is properly applied in a medical situation. PowerPoint's were also created to help reinforce the learning and application of the terms. Learners are assessed on how accurately they complete a Match Terminology and Match Pathology exercise. They are also assessed on how accurately they answer questions on each section assessment.

A final assessment is given as a group project. The two-person group must create their own glossary of terms based on applicable Case Studies that they are required to find. This assignment increases the learner's medical vocabulary and enforces how to apply the medical terminology in the appropriate situations.

In compliance with the ISTE TF-VII Procedures, Policies, Planning and Budgeting for Technology Environments, item B6: Use distance and online learning facilities, this course was designed to be web based only and utilizes appropriate technology resources to deliver lesson content and engage the learner.

The materials for this course were developed to be learner centric. The goal was to gain the student's interest and keep their interest by presenting the material in various ways. In the BCOE Conceptual Framework R1A, teachers apply knowledge of how students think and learn to instructional design and delivery. Our course does this by applying John Keller's ARCS model. The Introduction to the course gains the user's Attention by explaining the importance of the material being taught. The course becomes Relevant to the learner through the use of multiple case studies that show the learner how the terms they are being taught are going to be applied in their career. Confidence is instilled in the learner through the use of exercises that utilize the glossary of terminology. The learner will always be able to go back to reference the glossary of terms, Case Studies and PowerPoints while they are completing the exercises. Learner Satisfaction will be

achieved when they create their final project and are able to build their glossary and apply it appropriately.

In the BCOE Conceptual Framework R5A, teachers create learning situations in which students work independently, collaboratively and/or as a whole class. Assignments are clearly defined for students to facilitate independent learning. A few examples are that the students will study the glossary of terms, read the case studies, view the PowerPoints, and complete the PDF exercises, Filamentality exercises. Students will also work collaboratively on their final assignment with a group of two individuals. Collaboration is also fostered with the use of discussion threads.

In the BCOE Conceptual Framework R6A, teachers take responsibility for engaging in continuous, purposeful professional development. At the completion of the course, students are asked to complete a course evaluation. Student's final grades in the course and their course evaluations will be used to evaluate the effectiveness of the course and the course materials, including the technology being used.

R7A: Candidates effectively and appropriately integrate various technologies into their work as teachers, counselors, and administrators to maximize the interactivity and delivery of content to the learner.

PDF exercises are directly relevant to the objectives and give the learner an opportunity to practice what they have learned.

Using examples helps to facilitate learning. In this course, case studies provide examples of how the given terminology is applied in a real world situation.

Content standards are a very important aspect of the educational process. The content standards chosen for the medical terminology educational unit influence the methods and strategies of the learning system because of the way they are delivered to the learner. The content standards were chosen for this unit deal with technology and learning. These standards directly affected the strategies we used for the unit. Medical terminology is a large influence in our society and is changing our lives significantly every day. Without medical terminology, we would not understand the process of many diseases.

The technology standards we chose determined the type of media we included in the unit. The standards deal with technology in society, applying technology to a practical setting, and creating appropriate presentations for specific audiences. We used a variety of PowerPoint presentations, videos, and websites to support the technology standards. These standards made it easier to create a unit that was well-rounded and organized for students who are not in a traditional classroom. The variety also allows for more information to be covered throughout the unit.

Students who are being educated through a distance learning situation may be considered to be at a disadvantage by some individuals, but that is not the case. While many students in a traditional classroom do not have the access to computers and the wonderful resources that are online, distance learning students have access to teachers and web-based material that stretches far beyond the constraints of the classroom. Our distance learning material has been sequenced just like most traditional classrooms, focusing on the basic information first, practicing or using the material next, and finally applying the material to real life situations. Students communicate through the use of discussion boards and email, which creates a sense of community just like a traditional classroom. Online-based classrooms allow the students to freely communicate and work together. The AECT educational standards provide guidance for online educational lessons. The AECT standards supply a framework for technology usage and delivery strategies. The AECT standards prominent in our project are listed at the end of this document.

Traditional classrooms are moving away from textbooks, so our distance learning students are at an advantage because they have access to the latest materials found online. In the first lesson module, our students learn the basics of medical terminology by utilizing a Filamentality assignment, textbook exercises, and PowerPoint. Our second lesson module our students learn the medical terminology associated with the cardiovascular system and its importance in healthcare in our society. Our third lesson module revolves around the importance of respiratory medical terminology in a society full of smokers and air pollution. If students are not forced to examine the necessity of the material, they are far more likely to dismiss what they have studied. Through our assessment, the students will research articles in medical journals that relate to the two body systems cover in the lesson

modules. They will compare them to their everyday lives. Distance learning students have more freedom to explore their personal interests in how medical terminology and how it relates to society than students would in the traditional classroom. Distance learning students have the opportunity to scan through the submissions, read, and converse with classmates specifically about the societal uses that interest them.

Distance learning can be a quality experience or a poor one. Educators must be able to realize the importance of how the methods and strategies used to disseminate the information will affect the learning of the students. Not being face to face puts the teacher at a disadvantage because you cannot see by the students' actions if they need help with a concept or review of the material. When the curriculum is planned carefully, both the students and the educator will have a positive educational experience.

Educational Standards

Introduction

The AECT (Association for Educational Communications and Technology) provides five (5) domains and their sub domains. We utilized four (4) of the five (5) domains. They are listed below:

Design
Instructional Systems Design
Message Design
Instructional Strategies
Learner Characteristics

Development
Print Technologies
Audiovisual Technologies

Computer-Based Technologies	
Integrated Technologies	
Utilization	
Media Utilization	
Diffusion of Innovations	
Implementation and Institutionalization	
Policies and Regulations	
Evaluation	
Problem Analysis	
Criterion-Referenced Measurement	
Formative Evaluation	
Summative Evaluation	
Standard 1: DESIGN	
Demonstrate the knowledge, skills, and dispositions to design conditions for learning by applying principles of instructional systems design, message design, instructional strategies, and learner characteristics.	
Supporting Explanations:	
“Design is the process of specifying conditions for learning” (Seels & Richey, 1994, p. 30). The domain of design includes four sub domains of theory and practice: Instructional Systems Design (ISD), Message Design, Instructional Strategies, and Learner Characteristics.	
1.1 Instructional Systems Design (ISD) “Instructional Systems Design (ISD) is an organized procedure that includes the steps of analyzing, designing, developing, implementing, and evaluating instruction”(Seels & Richey, 1994, p. 31). Within the application of this definition, ‘design’ is interpreted at both a macro- and micro-level in that it describes the systems approach and is a step within the systems approach. The importance of process, as opposed to product, is emphasized in ISD.	
1.1.1 Analyzing: process of defining what is to be learned and the context in which it is to be learned.	

1.1.2 Designing: process of specifying how it is to be learned.

1.1.3 Developing: process of authoring and producing the instructional materials.

1.1.4 Implementing: actually using the materials and strategies in context.

1.1.5 Evaluating: process of determining the adequacy of the instruction.

1.3 Instructional Strategies

“Instructional strategies are specifications for selecting and sequencing events and activities within a lesson” (Seels & Richey, 1994, p. 31). In practice, instructional strategies interact with learning situations. The results of these interactions are often described by instructional models. The appropriate selection of instructional strategies and instructional models depends upon the learning situation (including learner characteristics), the nature of the content, and the type of learner objective.

1.4 Learner Characteristics

“Learner characteristics are those facets of the learner’s experiential background that impact the effectiveness of a learning process” (Seels & Richey, 1994, p. 32). Learner characteristics impact specific components of instruction during the selection and implementation of instructional strategies. For example, motivation research influences the selection and implementation of instructional strategies based upon identified learner characteristics. Learner characteristics interact with instructional strategies, the learning situation, and the nature of the content.

Performances Indicative of the Design Standard

1.1.1 Analyzing

1.1.1.a Write appropriate objectives for specific content and outcome levels.

1.1.1. b Analyze instructional tasks, content, and context.

1.1.2 Designing

1.1.2.a Create a plan for a topic of a content area (e.g., a thematic unit, a text chapter, an interdisciplinary unit) to demonstrate application of the principles of macro-level design.

1.1.2.b Create instructional plans (micro-level design) that address the needs of all learners, including appropriate accommodations for learners with special needs.

1.1.2.d Incorporate contemporary instructional technology processes in the development of interactive lessons that promote student learning.

1.1.3 Developing

1.1.3.a Produce instructional materials which require the use of multiple media (e.g., computers, video, and projection).

1.1.3.b Demonstrate personal skill development with at least one: computer authoring application, video tool, or electronic communication application.

1.1.4 Implementing

1.1.4.a Use instructional plans and materials which they have produced in contextualized instructional settings (e.g., practice, field experiences, and training) that address the needs of all learners, including appropriate accommodations for learners with special needs.

1.1.5 Evaluating

1.1.5.a Utilize a variety of assessment measures to determine the adequacy of learning and instruction.

1.1.5.b Demonstrate the use of formative and summative evaluation within practice and contextualized field experiences.

1.4 Learner Characteristics

1.4.a Identify a broad range of observed and hypothetical learner characteristics for their particular area(s) of preparation.

1.4.c Describe and/or document specific learner characteristics which influence the implementation of instructional strategies.

Standard 2: DEVELOPMENT

Demonstrate the knowledge, skills, and dispositions to develop instructional materials and experiences using print, audiovisual, computer-based, and integrated technologies.

Supporting Explanation:

“Development is the process of translating the design specifications into physical form” (Seels & Richey, 1994, p. 35). The domain of development includes four sub domains: Print Technologies, Audiovisual Technologies, Computer-Based Technologies, and Integrated Technologies. Development is tied to other areas of theory, research, design, evaluation, utilization, and management.

2.1 Print Technologies

“Print technologies are ways to produce or deliver materials, such as books and static visual materials, primarily through mechanical or photographic printing processes” (Seels & Richey, 1994, p. 37). Print technologies include verbal text materials and visual materials; namely, text, graphic and photographic representation and reproduction. Print and visual materials provide a foundation for the development and utilization of the majority of other instructional materials.

2.2 Audiovisual Technologies

“Audiovisual technologies are ways to produce or deliver materials by using mechanical devices or electronic machines to present auditory and visual messages” (Seels & Richey, 1994, p. 38). Audiovisual technologies are generally linear in nature, represent real and abstract ideas, and allow for learner interactivity dependent on teacher application.

2.3 Computer-Based Technologies

“Computer-based technologies are ways to produce or deliver materials using microprocessor-based resources” (Seels & Richey, 1994, p. 39). Computer-based technologies represent electronically stored information in the form of digital data. Examples include computer-based instruction (CBI), computer-assisted instruction (CAI), computer-managed instruction (CMI), telecommunications, electronic communications, and global resource/reference access.

2.4 Integrated Technologies

“Integrated technologies are ways to produce and deliver materials which encompass several forms of media under the control of a computer” (Seels & Richey, 1994, p. 40). Integrated technologies are typically hypermedia environments which allow for: (a) various levels of learner control, (b) high levels of interactivity, and (c) the creation of integrated audio, video, and graphic environments. Examples include hypermedia authoring and telecommunications tools such as electronic mail and the World Wide Web.

Performances Indicative of the Development Standard.

2.0.1 Select appropriate media to produce effective learning environments using technology resources.

2.0.2 Use appropriate analog and digital productivity tools to develop instructional and professional products.

2.0.3 Apply instructional design principles to select appropriate technological tools for the development of instructional and professional products.

2.0.5 Apply appropriate evaluation strategies and techniques for assessing effectiveness of instructional and professional products.

2.0.6 Use the results of evaluation methods and techniques to revise and update instructional and professional products.

2.1 Print Technologies

2.1.1 Develop instructional and professional products using a variety of technological tools to produce text for communicating information.

2.1.2 Produce print communications (e.g., flyers, posters, brochures, newsletters) combining words and images/graphics using desktop publishing software.

2.1.3 Use presentation application software to produce presentations and supplementary materials for instructional and professional purposes.

2.1.4 Produce instructional and professional products using various aspects of integrated application programs.

2.2 Audiovisual Technologies

2.2.1 Apply principles of visual and media literacy for the development and production of instructional and professional materials and products.

2.2.2 Apply development techniques such as storyboarding and or scriptwriting to plan for the development of audio/video technologies.

2.2.3 Use appropriate video equipment (e.g., camcorders, video editing) to prepare effective instructional and professional products.

2.2.4 Use a variety of projection devices with appropriate technology tools to facilitate presentations and instruction.

2.3 Computer-Based Technologies

2.3.1 Design and produce audio/video instructional materials which use computer-based technologies.

2.3.2 Design, produce, and use digital information with computer-based technologies.

2.3.3 Use imaging devices (e.g., digital cameras, video cameras, scanners) to produce computer-based instructional materials.

2.3.4* Incorporate the use of the Internet, library online catalogs, and electronic databases to meet the reference and learning needs of students and teachers.

2.4 Integrated Technologies

2.4.1 Use authoring tools to create effective hypermedia/multimedia instructional materials or products.

2.4.2 Develop and prepare instructional materials and products for various distance education delivery technologies.

2.4.4 Use telecommunications tools such as electronic mail and browsing tools for the World Wide Web to develop instructional and professional products.

2.4.5 Develop effective Web pages with appropriate links using various technological tools (e.g., print technologies, imaging technologies, and video).

2.4.7 Use appropriate software for capturing Web pages, audio wave files, and video files for developing off-line presentations.

Standard 5: EVALUATION

Demonstrate knowledge, skills, and dispositions to evaluate the adequacy of instruction and learning by applying principles of problem analysis, criterion-referenced measurement, formative and summative evaluation, and long-range planning.

Supporting Explanations:

“Evaluation is the process of determining the adequacy of instruction and learning” (Seels & Richey, 1994, p. 54).

5.1 Problem Analysis

“Problem analysis involves determining the nature and parameters of the problem by using information-gathering and decision-making strategies” (Seels & Richey, 1994, p. 56).

5.2 Criterion-Referenced Measurement

“Criterion-referenced measurement involves techniques for determining learner mastery of pre-specified content” (Seels & Richey, 1994, p. 56).

5.3 Formative and Summative Evaluation

“Formative evaluation involves gathering information on adequacy and using this information as a basis for further development. Summative evaluation involves gathering information on adequacy and using this information to make decisions about utilization” (Seels & Richey, 1994, p. 57).

5.4 Long-Range Planning

Long-range planning that focuses on the organization as a whole is strategic planning....Long-range is usually defined as a future period of about three to five years or longer. During strategic planning, managers are trying to decide in the present what must be done to ensure organizational success in the future.” (Certo, et al, 1990, p. 168).

Performances Indicative of the Evaluation Standard

5.1 Problem Analysis

5.1.1 Identify and apply problem analysis skills in appropriate educational communications and instructional technology (ECIT) contexts (e.g., conduct needs assessments, identify and define problems, identify constraints, identify resources, define learner characteristics, define goals and objectives in instructional systems design, media development and utilization, program management, and evaluation).

5.2 Criterion-Referenced Measurement

5.3 Formative and Summative Evaluation

5.3.1 Develop and apply formative and summative evaluation strategies.

5.4 Long-Range Planning

5.4.1 Develop a long-range strategic plan related to any of the domains or sub domains.