



Curriculum Development  
Centers Program

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Awardee of The Office of the National Coordinator for  
Health Information Technology

# **Component 20: Training and Instructional Design**

## **Instructor Manual**

**Version 3.0/Spring 2012**

## Notes to Instructors

This Instructor Manual is a resource for instructors using this component. Each component is broken down into units, which include the following elements:

- Learning objectives
- Suggested student readings, texts, reference links to supplement the narrated PowerPoint slides
- Lectures (voiceover PowerPoint in Flash format); PowerPoint slides (Microsoft PowerPoint format), lecture transcripts (Microsoft Word format); and audio files (MP3 format) for each lecture
- Self-assessment questions reflecting Unit Objectives with answer keys and/or expected outcomes
- Application Activities (e.g., discussion questions, assignments, projects) with instructor guidelines, answer keys and/or expected outcomes

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## **Disclaimer**

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Likewise, the above also applies to the Curriculum Development Centers (including Columbia University, Duke University, Johns Hopkins University, Oregon Health & Science University, University of Alabama at Birmingham, and their affiliated entities).

## Component Overview

This component will provide an overview of learning management systems, instructional design software tools, teaching techniques and strategies, evaluation of learner competencies, maintenance of training records, and measurement of training program effectiveness. In addition, this component will discuss selecting and implementing Web 2.0 technologies as instructional technologies given a specific platform and training programs.

## Component Objectives

At the completion of this component, students will be able to:

1. Plan, design, develop (produce), deliver, and evaluate technology-based instruction according to sound instructional design models and principles.
2. Describe the training cycle by the Instructional Systems Design method and the phases of the ADDIE model of instruction design given a population of adult learners.
3. Plan and implement an instructional needs assessment given a specific population of users in a health care setting.
4. Construct a lesson plan using appropriate instructional methods and approaches, given a specific population of learners.
5. Construct an instructional product (simple online tutorial) using the appropriate media based instructional method, such as customized images, customized video (e.g., EHR screen captures).
6. Create a custom PowerPoint presentation using the principles of effective PowerPoint design given a particular training program.
7. Demonstrate effective public speaking skills and proper operation of computer and AV equipment for a multimedia presentation, given a set of user needs.
8. Plan and conduct student assessment and program evaluation given different population contexts.
9. Design a training program in LMS that adhere to the standards and open source initiatives in online learning.
10. Select and implement Web 2.0 technologies as instructional technologies given a specific platform and training program.

## **Component Authors**

### **Assigned Institution**

Columbia University, New York, NY

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Dr. Zimmerman manages the Health Sciences office of CCNMTL, working with a dedicated Health Sciences-CCNMTL staff and faculty at all of the Health Sciences Schools to develop course Web sites and major projects. Dr. Zimmerman coordinates the clinical, research, and educational informatics initiatives at the dental school and is director of the Dental Informatics Fellowship program. Dr. Zimmerman has experience designing online curricula through his prominent role at CCNMTL.

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## **Component 20/Unit 1**

### **Unit Title**

#### **Introduction to Training and Adult Learning**

### **Unit Description**

This unit will apply the Instructional Systems Design method and the phases of the ADDIE model of instruction design, to a given population of adult learners.

### **Unit Objectives**

By the end of this unit, the student will be able to:

1. Define the levels of learning per Bloom's Taxonomic Domains (Cognitive, Affective, Psychomotor)
2. Describe the characteristic of adult learners and factors that could impact training design and learning outcomes
3. Describe the recommended training cycle of the Instructional Systems Design method
4. Describe the five phases of ADDIE model of instructional design

### **Unit Topics / Lecture Titles**

1. Introduction to Training and Adult Learning
2. Principles of Adult Learning
3. Training Cycle

### **Unit References**

(All links accessible as of 1/1/2014)

### **Books & Journals**

1. Dale, E. (1946) Audio-visual methods in teaching. New York: The Dryden Press. American society for training and development, how to create a good learning environment (Info-Line, Stock number 506). Alexandria, VA: American Society for Training and Development; 1985.
2. Kidd J R. (1973). How Adults Learn. New York, NY: Association Press.
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9. Fleming M, Levie WH. *Instructional Message Design*. Englewood Cliffs, NJ: Educational Technology Publications, Inc.; 1978.
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11. Carkhuff RR, Fisher SG. (1984). *Instructional systems design: volumes I & II*. Amherst, MA: Human Resource Development Press.
12. Gagne RM, Wager WW, & Golas K. (2004) *Principles of Instructional Design* (5th ed.). California: Wadsworth Publishing.
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1. California HealthCare Foundation, *Training Strategies: EHR Deployment Techniques* Retrieved on June 10, 2010 from <http://www.chcf.org/publications/2010/06/training-strategies-ehr-deployment-techniques>
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7. Clark DR. (2004). *Instructional System Design* [monograph on the Internet]. Big Dog & Little Dog's Performance Juxtaposition; c2004

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<http://www.nwlink.com/~donclark/hrd/bloom.html>

## Lecture b Images

Slide 22:

- 1956 Benjamin Bloom. Description Blooms rose.svg SVG version of [http://commons.wikimedia.org/wiki/Image:Bloom%27s\\_Rose.png](http://commons.wikimedia.org/wiki/Image:Bloom%27s_Rose.png) by John M. Kennedy T. Date 05-05-2008
- Source Own work - Author K. Aainsqatsi. Permission (Reusing this file) Original was Multi-license with GFDL and Creative Commons CC-BY 2.5

Slide 26:

- Zimmerman, John. (2010). Dental patient (color-photo). Columbia University College of Dental Medicine, New York, NY.
- Retrieved on June 10, 2010 from picture in public domain  
<http://en.wikipedia.org/wiki/File:BloomsCognitiveDomain.svg>

## Suggested Readings

### Websites

1. [http://en.wikibooks.org/wiki/Learning\\_Theories/Adult\\_Learning\\_Theories](http://en.wikibooks.org/wiki/Learning_Theories/Adult_Learning_Theories)
2. Michigan State University EMR Training Resources [homepage on the Internet]. East Lansing MI: State University Board of Trustees; c2009 [cited 2010 Jun 28]. Available from:  
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3. E-LEarningGURU [homepage on the Internet]. e-LearningGuru,.com; c2002-2005 [cited 2010 Jun 26]. Available from:  
<http://www.elearningguru.com/knowledge.htm>\*
4. California Healthcare Foundation [newsletter on the Internet]. Oakland, CA: California Healthcare Foundation; c2010 [cited 2010 Jun 30]. Available from: <http://www.chcf.org/~media/Files/PDF/T/TrainingStrategiesEHRDeployment.pdf>\* Clark DR. Bloom's Taxonomy [monograph on the Internet]. Big Dog & Little Dog's
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2. Carkhuff RR, Fisher SG. Instructional systems design: volumes I & II. Amherst, MA: Human Resource Development Press; 1984.
3. Carliner S. Training Design. Danvers, MA: American Society for Training and Development; 2003.
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9. Randall JS. You and effective training. Training and Development Journal (six-part series); 1978.

## **Student Application Activities**

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comp20\_unit1\_discuss\_key.doc  
comp20\_unit1\_self-assess.doc  
comp20\_unit1\_self-assess\_key.doc

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## Component 20/Unit 2

### Unit Title Needs Analysis

#### Unit Description

This unit will discuss planning and implementing an instructional needs assessment, given a specific population of users in a health care setting.

#### Unit Objectives

By the end of this unit the student will be able to:

1. Identify an instructional design problem for a given group of learners and a training setting.
2. List a range of useful data collection methods for conducting needs assessments in healthcare settings.
3. Identify the principles of the planning and implementation process of an instructional needs assessment in a health organization setting.
4. Analyze learner, task, and situational characteristics.
5. Recognize the special training needs and constraints in a health care setting [such
6. as, time constraints and work pressures, resistance to change, impact of system on work flow and patient care, security requirements for EHRs, etc.]
7. Project instruction plans based on data gathered from a needs assessment.

#### Unit Topics / Lecture Titles

1. Need Analysis
2. Need Analysis/ADDIE

#### Unit References

(All links accessible as of 1/1/2014)

#### Books & Journals

1. Clark DR. Bloom's Taxonomy [monograph on the Internet]. Big Dog & Little Dog's Performance Juxtaposition; c2004 [cited 2010 Jun 21]. Available from: <http://www.nwlink.com/~donclark/hrd/sat.html>
2. Molenda, M. (2003). In search of the elusive Addie model. Performance improvement, 42(5), 34. Retrieved from <http://ed.isu.edu/addie/>\*

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4. Carliner S. Training Design. (2003). Danvers, MA: American Society for Training and Development.
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6. Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956).
7. Taxonomy of educational objectives: the classification of educational goals; Handbook I: Cognitive Domain New York, Longmans, Green, 1956.
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9. Gagne RM, Wager WW, & Golas K. (2004) Principles of Instructional Design (5th ed.). California: Wadsworth Publishing.
10. Reigeluth CM. (1999). Instructional-design Theories and Models: A new paradigm of instructional theory. New Jersey: Lawrence Erlbaum Associates, Inc.

## Suggested Readings

### Websites

1. Michigan State University EMR Training Resources [homepage on the Internet]. East Lansing MI: State University Board of Trustees; c2009 [cited 2010 Jun 28]. Available from: <http://www.emr.msu.edu/TrainingResources/Menu.htm>
2. E-LEarningGURU [homepage on the Internet]. e-LearningGuru,. com; c2002-2005 [cited 2010 Jun 26]. Available from: <http://www.e-learningguru.com/knowledge.htm>\*
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5. Clark DR. Instructional System Design [monograph on the Internet]. Big Dog & Little Dog's Performance Juxtaposition; c2004 [cited 2010 Jun 21]. Available from: <http://www.nwlink.com/~donclark/hrd/bloom.html>

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## Books

1. American society for training and development, how to create a good learning environment (Info-Line, Stock number 506). Alexandria, VA: American Society for Training and Development; 1985.
2. Chatterji, M. (2003). Designing and Using Tools for Educational Assessment. Massachusetts: Allyn & Bacon
3. Clark, D. R. (2004), Instructional System Design (ISD). Retrieved July 4, 2010 from <http://nwlink.com/~donclark/hrd/ahold/isd.html>
4. Carkhuff RR, Fisher SG. Instructional systems design: volumes I & II. Amherst, MA: Human Resource Development Press; 1984.
5. Carliner S. Training Design. Danvers, MA: American Society for Training and Development; 2003.
6. Dunn R, Dunn K. Teaching students through their individual learning styles: a practical approach. Reston, VA: Reston Publishing Company; 1978.
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10. Knowles M. The adult learner: A neglected species 3rd ed. Houston, TX: Gulf Publishing Company; 1984
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12. Randall JS. You and effective training. Training and Development Journal (six-part series); 1978.
13. Reigeluth, C. M., (1999). Instructional-design Theories and Models: A new paradigm of instructional theory. New Jersey: Lawrence Erlbaum Associates, Inc

## Student Application Activities

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comp20\_unit2\_self-assess.doc  
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## **Component 20/ Unit 3**

### **Unit Title**

#### **Creating a Lesson Plan**

### **Unit Description**

This unit will demonstrate how to construct a lesson plan using appropriate instructional methods and approaches, given a specific population of learners.

### **Unit Objectives**

By the end of this unit the student will be able to:

1. Write measurable goals and learning objectives for a training program which meet the SMART criteria (Specific, Measurable, Attainable, Relevant, and Time-bound)
2. Write specific learning objectives based on Bloom's Taxonomy, classifying learning from the simplest to the most complex levels.
3. Write learning objectives that are tied to needs analysis and outcomes
4. Select appropriate activities for training objectives
5. Identify the appropriate instructional approaches tied to a needs analysis, situational characteristics, and subject matter domain when designing a lesson plan.

### **Unit Topics / Lecture Titles**

1. Creating a Lesson Plan
2. Writing a Lesson Plan & Objectives
3. Blooms Taxonomy
4. Objectives Tied to Need Analysis
5. EHR Intake Learning Objectives
6. Instructional Materials

### **Unit References**

(All links accessible as of 1/1/2014)

### **Books& Journals**

1. Clark DR. Bloom's Taxonomy [monograph on the Internet]. Big Dog & Little Dog's Performance Juxtaposition; c2004 [cited 2010 Jun 21]. Available from: <http://www.nwlink.com/~donclark/hrd/sat.html>

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9. Reigeluth CM. (1999). Instructional-design Theories and Models: A new paradigm of instructional theory. New Jersey: Lawrence Erlbaum Associates, Inc.

## Suggested Readings

### Websites

1. Michigan State University EMR Training Resources [homepage on the Internet]. East Lansing MI: State University Board of Trustees; c2009 [cited 2010 Jun 28]. Available from: <http://www.emr.msu.edu/TrainingResources/Menu.htm>
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3. California Healthcare Foundation [newsletter on the Internet]. Oakland, CA: California Healthcare Foundation; c2010 [cited 2010 Jun 30]. Available from: <http://www.chcf.org/~media/Files/PDF/T/TrainingStrategiesEHRDeployment.pdf>\*
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5. Clark DR. Instructional System Design [monograph on the Internet]. Big Dog & Little Dog's Performance Juxtaposition; c2004 [cited

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<http://www.nwlink.com/~donclark/hrd/bloom.html>

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1. American society for training and development, how to create a good learning environment (Info-Line, Stock number 506). Alexandria, VA: American Society for Training and Development; 1985
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## Student Application Activities

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## **Component 20/ Unit 4**

### **Unit Title**

#### **Selecting and Working with Media**

### **Unit Description**

This unit will show how to construct an instructional product (simple online tutorial) using appropriate media, such as customized images, customized video (e.g., EHR screen captures).

### **Unit Objectives**

By the end of this unit the student will be able to:

1. Select appropriate instructional media for a given lesson plan and objectives/goals.
2. Select and customize images to embed in training materials
3. Select and customize video (e.g., EHR screen captures) to embed in training materials
4. Design simple online tutorials using screen capture software

### **Unit Topics / Lecture Titles**

- A. Text – desktop publishing, creating handouts and web content
- B. Images – working with graphics and photographs to enhance learning
- C. Video and Audio – use simple editing programs and publish content to online environment
- D. Interactive Media – create simple online tutorials using screen capture software

### **Unit References**

(All links accessible as of 1/1/2014)

### **Books & Journals**

1. American society for training and development, how to create a good learning environment (Info-Line, Stock number 506). Alexandria, VA: American Society for Training and Development; 1985.
2. Carkhuff RR, Fisher SG. Instructional systems design: volumes I & II. Amherst, MA: Human Resource Development Press; 1984.
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4. Fleming M, Levie WH. Instructional Message Design. Englewood Cliffs, NJ: Educational Technology Publications, Inc.; 1978.

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5. Randall JS. You and effective training. Training and Development Journal (six-part series); 1978.7. Carkhuff RR, Fisher SG. (1984). Instructional systems design: volumes I & II. Amherst, MA: Human Resource Development Press.

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2. E-LEarningGURU [homepage on the Internet]. e-LearningGuru,.com; c2002-2005 [cited 2010 Jun 26]. Available from: <http://www.e-learningguru.com/knowledge.htm>\*
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### Books

1. American society for training and development, how to create a good learning environment (Info-Line, Stock number 506). Alexandria, VA: American Society for Training and Development; 1985
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10. Knowles M. The adult learner: A neglected species 3rd ed. Houston, TX: Gulf Publishing Company; 1984
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### **Student Application Activities**

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## **Component 20/ Unit 5**

### **Unit Title**

#### **Building & Delivering Effective PowerPoint Presentation**

### **Unit Description**

This unit will describe how to create a custom PowerPoint presentation using the principles of effective PowerPoint design, given a particular training program and learner population.

### **Unit Objectives**

By the end of this unit the student will be able to:

1. Construct a script or storyboard for a presentation
2. Design a custom slide background for a training program
3. Demonstrate the appropriate use of color and text in a presentation
4. Embed graphics and video in a presentation
5. Demonstrate the appropriate use of 'builds' and 'actions'.
6. Use the PowerPoint graph and chart functions for designing instructional materials.
7. Assess the training environment
8. Modify a presentation to compensate for presentation constraints
9. Demonstrate effective public speaking skills
10. Operate necessary computer and AV equipment to make an effective multimedia presentation

### **Unit Topics / Lecture Titles**

- A. Design guidelines for PowerPoint stacks
- B. Scripting and Storyboarding
- C. The Utilization of Color and Text in PowerPoint Presentations
- D. The Utilization of Text in PowerPoint Presentations
- E. The Appropriate Utilization of Multimedia in PowerPoint Presentations
- F. Slide Frame Layout, Format Design, Color, Text Styles and Size
- G. Graphs and Charts
- H. Embedding Media and Actions

### **Unit References**

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## Component 20/ Unit 6

### Unit Title

### Assessments

### Unit Description

This unit will discuss how to conduct student outcome assessments and program evaluations in given training contexts.

### Unit Objectives

By the end of this unit the student will be able to:

1. Design appropriate assessment/testing instruments and procedures aligned with instructional goals/objectives.
2. Administer assessments as a component of training/instructional design.
3. Conduct formative evaluations in one-on-one and group contexts
4. Specify revisions to instruction resulting from the formative evaluations

### Unit Topics / Lecture Titles

- A. Developing Appropriate Assessments
- B. Creating a Program Evaluation Plan

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## Component 20/ Unit 7

### Unit Title

### Learning Management Systems

### Unit Description

Design a training program in Learning Management Systems (LMS) that adhere to the standards and open source initiatives in online learning.

### Unit Objectives

By the end of this unit the student will be able to:

1. Describe the basic functions and technologies in Learning Management Systems (LMS), Content Management Systems (CMS), Reusable Learning Objectives (RLO), and Learning Content Management Systems (LCMS)
2. Identify the role of standards and open source initiatives in online learning
3. Describe why an instructional designer would SCORM
4. Give two approaches to modify e-learning content to meet Section 508 Compliance guidelines
5. Build a training program in an LMS using appropriate standards for online learning

### Unit Topics / Lecture Titles

- A. The Basic Functions and Technologies in LMS and CMS Systems
- B. How to Build a Training Program in an LMS
- C. The Role and Application of Standards and Open Source Initiatives in Online Learning: SCORM, Sakai, Moodle

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## Component 20/ Unit 8

### Unit Title

#### Web 2.0 and Social Networking Tools

### Unit Description

This unit will focus on how to select and implement Web 2.0 technologies as instructional technologies given a specific platform and training program.

### Unit Objectives

By the end of this unit the student will be able to:

1. Distinguish between synchronous and asynchronous learning
2. Use basic functions of an LMS or CMS
3. Utilize different tools within the design and delivery of online training
4. Select an appropriate platform for a particular training program

### Unit Topics / Lecture Titles

This module will cover the use of electronic social networking tools, and informatics knowledge exchange to foster learning in a corporate environment. These tools include:

- A. Wikis
- B. Blogs

### Unit References

(All links accessible as of 1/1/2014)

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### **Student Application Activities**

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## **Component Acronym Glossary**

A/V- Audio Visual

ADDIE- Analysis, Design, Development and Implementation

ASTD- American Society for Training and Development

BMP- Windows bitmap format

CD-ROM- Compact Disc read only memory

CMS- Content Management Systems

DPI- Dots per Inch

DVD- Digital Video Disk

EoHR- Electronic Oral Health Records

FAQ- Frequently Asked Question

GIF- Graphics Interchange Format

HR- Human Resource

I4cp- Institute for Corporate Productivity

ITRAIN- International Association of Information Technology Trainers

JPEG- Joint photographic experts group

KSA- Knowledge, Skill, Attitude

KSAs- Knowledge, skills and attributes

LCMS- Learning Content Management Systems

LMS- Learning Management Systems

MERLOT- Multimedia Educational Resource for Learning and Online Teaching

MPEG- Moving picture experts group

OJT- On the Job Training

PNG- Portable Network Graphics

PPI- Pixels Per Inch

RLO- Reusable Learning Objectives

RSS- Really Simple Syndication

SCORM- Sharable Content Object Reference Model

SD model- Instructional systems development models

SMBI- Social Media Benefit Index

SME- Subject Matter Experts

TIFF- Tagged image file format

VUE- Visual Understanding Environment

WTCS- Wisconsin Technical College System



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