Instructional Design for Competency Based Learning
Agenda

Overview of Instructional Design
- What is instructional Design?
- ADDIE Instructional Design Model

Nature of competence & its implication for instructional design

Situate, sequence, scaffold & support Learning
- Authentic & Integrated acquisition of competence
- Cognitive Load Theory
What is instructional design?

• **What?** … systematic development of instructional specifications, and supporting learning materials

• **How?** … applying learning and instructional theories or research

• **Why?** … to ensure the quality of instruction

• **Process includes**…
  – analysis of learning needs and goals
  – design of instructional activities to meet those needs
  – development of instructional materials and delivery systems
  – Implementation of learning activities
  – evaluation of effectiveness of learning activities

**Pre-session Activity**

*Recall*... Which instructional design (ID) models do you know?

*Write*... List 2 to 3 ID models you know on a piece of paper. Write big enough for the class to see. You will be requested to show the class when the session starts.

Strategy: Entry Slip
Instructional Design Models – which do you know?

Pre-session Activity – cont’d

• *Recall*…Which instructional design (ID) models do you know?

• *Write*…List the ID models you know on a piece of paper. Write big enough for the class to see.

• *Show*….Upon signal from the facilitator, hold your paper up and show the class the ID models you know.
Instructional Design Models – some examples

- ADDIE (Analysis, Design, Develop, Implement, Evaluate)
- Hannifan and Peck
- Dick and Carey Model
- Knirk and Gustafson
- Kemp, Morrison, and Ross
- Rapid Prototyping
- Gerlach and Ely Design Model
- SAM (Successive Approximation Model)
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widely adopted

Popular as a quick, lower cost alternative to the traditional ID process
Instructional Design Model – ADDIE

**ANALYSIS**
- Analyse job/task/skills/knowledge/learner characteristics, leading to the specification of competencies and training objectives

**DESIGN**
- Determine training approach;
- Select instructional strategies, media, technology, leading to the specification of instructional activities

**DEVELOPMENT**
- Develop lesson plans, instructional materials, media, exercises and tests

**IMPLEMENTATION**
- Setup/prepare facilities,
- Conduct training

**EVALUATION**
- Assess learning
- Conduct Student Feedback
- Evaluate Outcomes/Student Feedback
- Improve programme and training

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Instructional Design Model – ADDIE

- Analyse
- Evaluate
- Design
- Develop
- Implement
Analyse - Where we are now and where do we want to go?

Key Questions for Analysis

- What are the “needs”?
- Can they be addressed by instructions?
- Who are the learners?
- How best can technology be leveraged?
- What are the competences? What are the knowledge?
Design - How to promote learning?

Key Questions for Design

- What are the learning outcomes?
- How can these be achieved?
- How can the learners be engaged?
-
Instructional Design Model – ADDIE

Develop - Translate the design into learning products

Key Questions for Development

• What learning materials and/or resources can support learning?
• What are effective design and development tools?
Implement - Prepare, deliver and manage

Key Questions for Implementation

- Is there buy-in from stakeholders?
- What are the infrastructure/facilities requirements?
- How best to organise the training?
- How to prepare trainers?
Evaluate - Determine effectiveness & outcomes of the training

Key Questions for Evaluation

• What is effective training?
• How do we find out the effectiveness of the training design, materials and delivery?
• What are the desired outcomes of the training?
• How can we find out whether the desired outcomes were attained?
Instructional Design for Competence-based learning

Key purpose

To facilitate learner acquisition of competence

Activity: What is a competence?

• Think… On your own think about
  – What is the definition of competence?
  – What are the elements of competence?

• Write… Write your views on a piece of paper

• Show… Upon signal from the facilitate, show your views to your group members

• Discuss and negotiate… Within your group, discuss and come to a consensus on the definition and elements of a competence

• Share… Present your group’s view on a flipchart. You can use any format, text, pictures, diagrams….
Nature of competence

Competence vs Professional Action Competence

- Knowledge
- Skills
- Attitude

Methodological competence
Technical competence
Social competence
Personal competence

Ability to perform workplace task
Ability to perform task at the workplace
Nature of competence - Important considerations for competence-based instructional design

1. Workplace context frames task
   -> Learning should be **authentic**

2. Workplace standards determines “Ability”
   -> Assessment should be **authentic**

3. T M S P are applied holistically in an integrated manner to perform the task at workplace
   -> Learning and Assessment should be holistic/integrated.

4. Integrated application of several Competence Elements is required
   -> Appropriate **sequence** of learning & **scaffolds** needed to promote systematic acquisition and integration
     - Learning materials should support development of mental model for integrated application
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**Situating Learning**

**Sequencing**

**Scaffolding**

**Support**

**Professional Action Competence**

Methodological competence

Technical competence

Social competence

Personal competence

Ability to perform task at the workplace

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SITUATE LEARNING
Situate Learning

Purpose

• Provide authentic context for learning in terms of task performed at workplace
• Set the stage for determining the
  – content (which Competence Units/Elements)
  – relationship between CU/CE hence nature of integrated application of CU/CE
  – M S P
  – relationship between T M S P hence the nature of integrated application of T M S P
• Guide the design of learning activities/contexts to promote systematic acquisition of competence and develop cognitive flexibility to handle varying workplace situations

An Example
Situate Learning

– Identifying authentic workplace task
– Determining content, M S P and the relationships
– Designing authentic contexts

Keep a look out for future sessions
Questions?
Design Learning Structure

IDENTIFY & SEQUENCE LEARNING CHUNKS
Structuring Learning – Sequence learning chunks

Guidelines:
- Logical sequence, and/or
- Simple to complex
- Provide students with varied exposures

How to:
- Identify learning chunks
- Sequence learning chunks

Keep a look out for future sessions
Design Learning Activities/ Develop Learning Materials

SCAFFOLD & SUPPORT
Scaffold & Support Learning

• Design learning activities to
  - facilitate learners' processing, organising & retention of content
  - encourage learners to take ownership of their own learning

• Design learning resources (e.g. instructional presentation, notes, activity sheets) that support learning

How? – 2 suggestions

Apply Cognitive Load Theory
Promote Assessment for/as Learning
Main ideas

• Working memory is limited while long term memory is not

• Learning is about changes in the schematic structures of long term memory or increased automation

• Well organised and highly connected schemas aids
  – retrieval of prior knowledge; and
  – processing of new information.

• For effective schema acquisition (or learning) to occur, instruction should be designed to reduce the working memory load.
What is cognitive load?

- Cognitive load is the load in the working memory needed to process and encode the new information to enhance the schematic structures in the long term memory.

- 3 types of cognitive load
  - Intrinsic
  - Extraneous
  - Germaine

Objectives of instructional design

- Reduce extraneous load
- Increase germaine load

More to be covered in future SIG sessions
Scaffold & Support Learning
– Applying Cognitive Load Theory

• On your own
  – Study the 2 examples assigned to your group

• In your group
  – Discuss
    • Which example better applied cognitive load theory? Why?

You may want to refer to the following articles:

http://www.instructionaldesign.org/theories/cognitive-load.html
http://www.southalabama.edu/oll/mobile/theory_workbook/cognitive_load_theory.htm

– Be prepared to share your group’s view with the class

Strategy: Groupwork
• Post session discussion
  – Share 1 instance you have applied cognitive load theory
    • Briefly describe the instance, and
    • How you have applied cognitive load theory?
  – Comment on others application
  – Share your views on the relevance of cognitive load theory in designing quality learning activities and/or learning materials
Questions?