Instruction Systems Development (ISD)

An Overview

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ISD

- A common process used in business, industry and government to design and develop training programs and courses.

- Uses the “systems approach” in planning.

System?

- A set of interrelated parts, all which work together toward a defined goal.

- The parts depend on each other for input and output and the entire system uses feedback to determine if its desired goal has been reached.
A good learning system . . .

- Components all interact effectively together to bring about the desired outcomes.
- No emphasis on any one component of the system
- An assessment of efficiency and effectiveness exists.

The 5 Phases of ISD

- Analysis
- Design
- Development
- Implementation
- Evaluation

Analysis Phase

- Collect enough accurate information to make informed decisions.
- By identifying real training needs and priorities . . . saves the organization money
- Expenditures of resources will be aimed at the right targets.
Design Phase

• The main planning stage
  – Write objectives
  – Develop test items
  – Determine the structure
  – Sequence the training

Development Phase

• Training materials
• Documentation materials
• Evaluation materials
  – are selected, written, or otherwise produced.

Implementation Phase

• The course is taught
• Participants’ learning is evaluated.
Evaluation Phase

- Course evaluation data is collected
- Feedback of information into the development cycle
- A course can evolve as the training population changes or new training needs emerge.

Front End Analysis

- Analysis Phase of ISD

Analysis Phase

- Needs Analysis
- Problem Analysis
- Goals Analysis
- Population Analysis
- Resource Analysis
- Constraints Analysis
- Job Analysis
- Task Analysis
Crisis-Management Simulations

- Is a Tactical-Decision Simulation
- Starts with a scenario that sketches an imminent crisis or disaster
- Typically runs in real-time for several days
  - but one can speed up the simulation during phases of exercise
• Focus is on interpretation of data and allocation of resources to avoid or minimize an impending threat or danger

• Reality function is established in several ways
  – Crisis must threaten the Decision-Maker
  – Incomplete information and accelerated time pressures for Decision Making
  – Should create impression that in the absence of key decisions, situation will end in disaster

Early Developments

• Granddaddy of first “crisis game” was “The Cold War Game” (Rand Corporation, Goldhammer)
  – Internationally Crisis - Threat of hostilities USA & USSR

• Followed by “POLEX” for Political Exercises (MIT, Bloomfield)
  – Regional or local event that threatens status quo of international relations

• Main goal of early exercises - Political Analysis
  – Prepare in simulation for potential actual crisis
  – Catalyst to develop policy - intellectual collaboration
  – Value - verbal or written discussion of political problems

• Computer networking now allows participants to be at different sites
Nature of Crisis Situation

- Must be a crisis not just a problem
- Characteristics or traits of crisis situation
- Typically open-structure exercises but can be closed-structure
- Participants should not just interact with computer

Decision-makers perceive impending danger accompanied by sense of limited time to ‘stop the runaway train’

Types of Crisis Situations

- May be local, regional, national or international
- Threat to business, social service, industry or a social economic or political system
  - As small as nuclear power plant, train loaded with poisonous gas losing brakes coming down a mountain with a town at the bottom, up to thermonuclear war

Major Design Issues

- Must have a clear goal — resource allocation to avert crisis
- Must Establish the Crisis Climate
  - select crisis: ‘ideal’ combination of characteristics
  - decision-makers: must have vested interest in outcome, no ‘sense of threat’ not a crisis-management simulation
• **Events in the Simulation**
  – Open-structured exercise
  – Control team not omnipresent (detracts from reality)
  – Management of time important to enhance threat
  – Incomplete or distorted information

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**Examples of Domains Used in Crisis Simulations**

- National Safety Agencies
  - FEMA
  - NTSB
- Industrial
  - Manufacturing
  - Mining
- **Power Generation**
  - Conventional
  - Nuclear

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**Other Examples**

- **Tactical Decision Making Under Stress (TADMUS)**
  - Tactical Teams (Navy)
  - Decision making under stress
- **Weapons Team Engagement Trainer (WTET)**
  - SWAT Trainer, Infantry Squad, Marine Trainer, Special Ops
  - Up to 9 person team in hostage situation
  - Close-quarter combat simulator
  - Video-based adversaries can shoot and kill trainees
Evaluating Crisis-Management

• Step 1: Analyze the crisis situation
  – Background information & opening scene convey sense of extreme urgency
  – Crisis specifically threaten the decision-makers
  – Scope of the crisis

• Step 2: Review the decision-makers roles
  – Decision-makers empowered to resolve crisis
  – Role assigned to each participant that is not a spectator role
  – Crisis high-threat situation to decision-makers

• Step 3: Evaluate the dynamics of the exercise
  – Participants experience effects of their decisions
  – Events evolve from nature of crisis not arbitrary decisions by the director
  – Participants experience increased time pressure
  – Incomplete or distorted information is a factor in the exercise
  – Events accelerate as the exercise progresses
Assignment

- **Readings 5 – Social System Simulations**
  [http://www.lions.odu.edu/~dnethert/Courses/oted750/text_readings/readings_5.doc](http://www.lions.odu.edu/~dnethert/Courses/oted750/text_readings/readings_5.doc)

- **Work on Sim Proposal**
  – Due March 3