ON THE DEVELOPMENT OF SHARIF VIRTUAL UNIVERSITY

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Sharif Virtual University

Agenda

- What is virtual University?
- What is Distance Learning?
- Why Distance Learning?
- From traditional to new Era …
- Sharif Virtual University
- Why Standards?

- What are the Standards?
- Architecture considerations
- Discussion
Definitions

Distance Learning (DE)
- Distance Education refers to teaching and learning situations in which the instructor and the learner are geographically separated, and therefore rely on electronic devices and print materials for instructional delivery.

E-Learning = Technology-based learning
- covers a wide set of applications and processes, including computer-based learning, Web-based learning, virtual classrooms, and cooperative learning.

Online Learning = Web-based learning
- constitutes just one part of technology-based learning and describes learning via Internet, intranet, and extranet.
Definitions

Virtual University (VU)

- VU is normally referred to as an online environment that models the process of education and research. Therefore, VU can be considered as a web-based DE system along with the required systems such as LMS, CMS, Digital Library, and E-Commerce to provide the required services to students, faculty and staff.

Learning Management System (LMS)

- A learning management system (LMS) is a software application or Web-based technology used to plan, implement, and assess a specific learning process.

Learning Object (LO)

- A Learning Object is a self standing, discrete piece of instructional multimedia content that meets a learning objective. LO consists of material, activities and assessment
Subsets of Virtual University

- Virtual University
  - Distance Learning
    - Online Learning
      - Computer-based Learning
Why Distance Learning

On-demand learning: instruction is available when and where the learner needs it, eliminating the need to wait for, or travel to, a scheduled class. In addition, distance learning increases access to learning for the disabled

Learner controlled: each learner is able to review topics or to skip the information they already know

Increased motivation: students frequently report that they find technology-based interactive learning more interesting and enjoyable than classroom lectures

Increased achievement: when corrective feedback or a learning strategy designed to help students achieve mastery in a certain area is provided, students often show better test results, retention, or job performance from technology-based interactive learning

Reduced learning time: typically 30–40 percent less time is required for learning to be achieved compared to classroom instruction (Dennis, 1994; Kearsley, 1990; Wilson, 1991)
Why Distance Learning

Better quality control: Learning experience in Distance Learning is more consistent and reliable than classroom instruction.

Greater flexibility: Fluctuations in the number of learners, or their backgrounds, can be accommodated more easily than classroom instruction.

Improved accountability: Automatic collection of data on learner performance can verify that learning has been accomplished and identify learning problems.

Faster revision: Learning experiences are delivered via a networked system, simplifying the process of making changes and updates to the curriculum.

Reduced delivery costs: Once developed, technology-based interactive learning is likely to cost less when compared to traditional, labor-intensive classroom instruction.
More benefits...

- Learner controlled
- Higher retention of content through personalized learning (Intelligent Tutoring Systems)
- Face-to-Face Instruction via VC
- Self-paced
- Uniformity of content
- Customizable content
- Managed Knowledge Bases
- Improved collaboration and interactivity between students (cooperative learning)
- Technology revolutionizes learning ...
Traditional Model of Instruction

Done separately for each class at each university

- Personal Lecture Material
  - Professors
  - Students

- Personal Lecture Material
  - Professors
  - Students

- Personal Lecture Material
  - Professors
  - Students

Common Shared Books and Resources

Variable Quality
Better Model of Instruction

Professors

Students

INTERNET

Professors

Common Shared Books
Plus e-Resources

Possible local
Students

Learner Controlled
High Quality by Selection

(with team of authoring specialists)
A New Era in Education

- E-learning
- Grid Computing
- Digital Libraries
- Administrative Computing
- Business Incubators
- Service Providers
- Global Collaborations
- Portals
Sharif Virtual University

• You Would not become a fast runner by buying good shoes!
• Toward Building Sharif Virtual University

• Workshops & Information Portal: Building the culture & Laws
• Training: To make the transition smooth
• Transforming the Courses: Multimedia Contents
• Building the standard courseware: Standard Content Generation
• The First Step: On–Line Courses
• The Second Step: Virtual Class Room
• Building the standard multilingual LMS: To Start VU Culture
• Toward Virtual University: Building the Digital Library
• Toward Deployment: Realizing the Complete E–Environment
Sharif VU Design Considerations

- Availability
- Scalability
- Portability
- Adaptability
- Reusability
- Accessibility
- Security
- Interoperability
- Quality

Therefore we need standards
E-Learning Building Blocks

- Courseware :: Learning Objects (LO)
- Learner Model (LM)
- Intelligent Tutoring System (ITS)
- Course Management System (CMS)
- Learning Management Systems (LMS)
- Knowledge Management System (KMS)
- Digital Library (DL)
Example:::Learning Objects

LO: A Learning Object is a self standing, discrete piece of instructional multimedia content that meets a learning objective. LO consists of material, activities and assessment. Each LO must be reusable across different platforms.

**EXAMPLE**

Core literacy concept = Critical evaluation of information  
Discipline = Biology  
Learning level = 1 (knowledge)

Instructional goal: Learn and recall steps in process of evaluating Web sites.

ASSOCIATED LEARNING OBJECTS (atoms)

Materials:  
1. Animation (VI)  
2. Tutorial (VE, VI, KI)

Activities:  
1. Construct a chart comparing two biology web sites (VI, KI)  
2. Write evaluative descriptions of two biology web sites (VE)

Assessments:  
1. Multiple-choice quiz  
2. Short answer quiz

**Learning Levels:**  
1. Knowledge  
2. Comprehension  
3. Application  
4. Analysis  
5. Synthesis

**Learning Styles:**  
1. Verbal (VE)  
2. Visual (VI)  
3. Kinesthetic (KI)
Emerging E-Learning Standards

- IMS – Instructional Management Systems
- SCORM – Shareable Courseware Object Reference Model
- SIF – School Interoperability Framework
- Important collaboration with MIT OKI, ADL Co-labs, and IMS
- AICC: Aviation Industry CBT (Computer-Based Training) Committee CSF (course structure format)
- Other standards (OpenVES, JASIG)
- And other standards such as: XML, UML, UI standards, ...
Standard Usage Possibilities

- Describing Content and People
  - IMS Learning Objects Metadata
  - IMS Learner Information Profile

- Packaging/Sharing Content
  - IMS Content Packaging

- Supporting Content/System Interoperability
  - AICC
IMS :: Content & Learners

Learning Objects Meta Data
Attributes to describe learning resources, education usage, technical requirement, contributor

Question & Test
Formats for constructing and exchanging assessment info

Content Packaging
Instructions for wrapping and exchanging learning content

Learner Information Package
Information about people/student progress
IMS :: Global Learning

Accepted as XML standard for e-Learning

Forum for collaboration

Consensus between partners and competitors

Protecting customers investment in content and technology

...
SCORM

Sharable Content Object Reference Model: Department of Defense reference implementation of IMS

Interrelated technical specifications
Unified online learning "content model"
For the re-use of web-based learning content
To work across multiple environments and platforms
One more thing!
Basic Multi-Tier architecture for Distance Learning

- Define Objects and properties / methods (backend) and define services (front–End)
- Objects (at “backend”) can be on client of course
An E-Learning Architecture

- Portal
- User Management
- Workflow
- Content Authoring
- Learning Management Services
- Integration Services
- User and Content Data Resources

Advanced Information & Communication Technology Center (AICTC) : February 2003
Any Devices
VU Project Activities

- Workshops & Information Portal: Building the culture & Required Laws
- Information Portal: vu.aictc.com
VU Project Activities

- Training: To make the transition smooth
  - On-Line Short Courses
VU Project Activities

- Transforming the Courses: Multimedia Contents
- Courseware Authoring

**Step One:**
- User: creates learner profile
- User: enters search terms to find learning resources

**Step Two:**
- Search Engine: matches terms to resources
- Search Engine: matches resources to learner’s profile
- Search Engine: produces customized results

**Step Three:**
- User completes learning molecule (see example)

**Step Four:**
- Data from assessments returned to update user profile

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VU Project Activities

- Building the standard courseware: Standard Content Generation
- E-Education Standards

SCORM

SECTION 2: Content Aggregation Model

- 2.2 Meta-data Dictionary (from IEEE)
- 2.3 Content Structure Format (derived from AICC)
- (External Ref) Meta-data XML Binding Best Practice (from IMS)

SECTION 3: Run-Time Environment

- 3.2 Launch, 3.3 Communication API (from AICC)
- 3.4 Data Model (from AICC)
VU Project Activities

- The First Step: On-Line Courses
- E-Courseware On-Line
VU Project Activities

- The Second Step: Virtual Class Room
- [http://www.sharifvu.com](http://www.sharifvu.com)
VU Project Activities

- Building the standard multilingual LMS: To Start VU Culture

`Spec Consortia` → `Labs, Test beds, Markets` → `Standards Bodies` → `de Facto Standards`

- **R&D Concepts**
  - CLEO Learning Federation
  - AICC IMS ARIADNE
  - JISC ADL ALIC
  - IEEE ISO CEN/ISS

- Specifications
- Reference Models
- Standards
VU Project Activities

- Toward Virtual University: Building the Digital Library & Integration

**Portal Services**

- User Management
- Entitlements Service

**Service Aggregation**

- Collaboration Services
- Calendar Services

**E-Commerce Services**

- Content Management System
- Learning Management System
- Assessment System

**Integration Services**

- User and Content Data Resources
VU Project Activities

- Toward Deployment: Realizing the Complete E-Environment
In Summary

• Virtual University with the help of e-learning standards, removes time and place barriers to support new, more effective models of learning, thereby enabling organizations to leverage knowledge to foster innovation and maintain a competitive edge.

• Virtual university can become a reality only if we have the required laws, infrastructure, effective learning models, and correct strategy.
It's Time To E-Learn!!

Thank you for taking the time to review this presentation.

Any Question? vu@aictc.com