CENTER FOR TEXTUAL STUDIES AND
DIGITAL HUMANITIES

DIGH 402 - Instructional Design and e-Learning

Spring Semester 2014

Week 1 - Extra

An introduction to e-Learning

- training delivered on a computer, known as computer-based training (CBT)
- around for more than thirty years
- mainframe computers were primarily text on a screen with interspersed questions
- electronic versions of B.F. Skinner's teaching machine
- early e-lessons such as training in the use of mainframe computer systems
- evolution of technology has led to more elaborate use of media, graphics, audio, colour, animation...
- greater complexity of media does not necessarily ensure more or better learning
- 1947 US Army media comparison

An introduction to e-Learning

B. F. Skinner's Teaching Machine

An introduction to e-Learning

"Overwhelming evidence has shown that learning in an online environment can be as effective as that in traditional classrooms. Second, students' learning in the online environment is affected by the quality of online instruction. Not surprisingly, students in well-designed and well-implemented online courses learned significantly more, and more effectively, than those in online courses where teaching and learning activities were not carefully planned and where the delivery and accessibility were impeded by technology problems. "

Online learning review by Tallent-Runnels et al (2006) P.116

An introduction to e-Learning

What is e-Learning?

- generally perceived as instruction provided in digital medium such as
    - CD-ROM, Internet, Intranet, Mobile Application, Game, Virtual demo...
- digital medium options provide features such as
    - content relevant to the learning target and desired outcome
    - incorporates instructional methods such as examples, practice...
    - uses media such as words and pictures to deliver content and methods
    - may follow synchronous or asynchronous e-Learning patterns
    - develops new knowledge and skills linked to individual learning aims...

Definition includes consideration of several aspects concerned with the 'what, how, and why' of e-Learning

An introduction to e-Learning

The 'What, How, and Why' in e-Learning

What - provision of e-Learning includes both content and instructional methods designed to aid a person's learning and understanding of the content

How - e-Learning courses are delivered via a computer using words, often spoken or printed texts, images or video...

Why - courses are designed to aid attainment of personal learning objectives or group/organisation derived required goals

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Self Study or Virtual Classroom e-Learning

- asynchronous courses taken by individuals at their own time and pace
- synchronous courses, such as virtual classrooms, include instructor led learning
- virtual classrooms normally include features such as
    - virtual whiteboard for instructor slides
    - screen area with current session student participants
    - chat box for session messages, questions...
    - audio or video option to allow the instructor or student to speak
    - instructor and students will often have headphones, microphones, webcams...to allow easier collaborative learning

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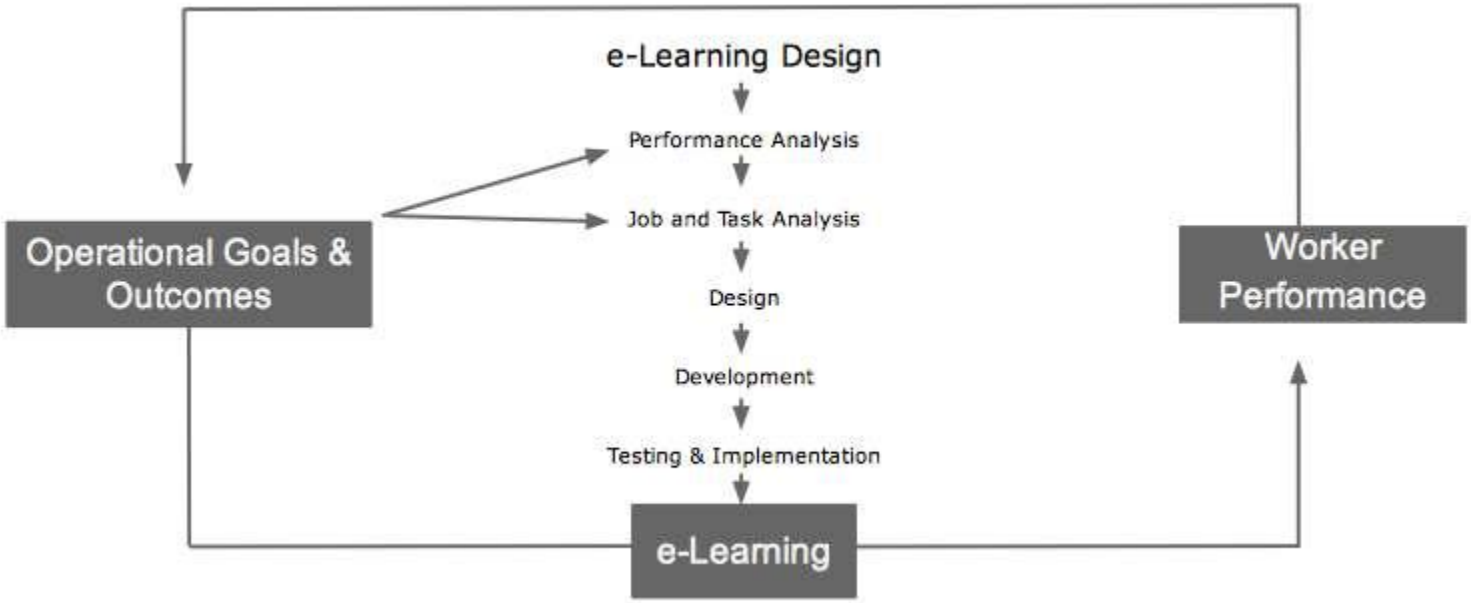
The development process

- predicated on analysis of required or expected operational goals and outcomes
- analysis and planning is needed to accompany development of e-Learning projects
- return from e-Learning requires such goals and outcomes to be clearly defined, simple or otherwise



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The development process - e-Learning Content

- following the performance analysis a team begins by defining content needed...
- e-learning development must start by defining the associated tasks
- also necessary to define the knowledge needed to perform such tasks
- development team should observe and interview people
- content analysis to define major topics for educational development
- development team categorises the content of an e-lesson into
    - facts, concepts, processes, procedures, strategic guidelines...

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The development process - e-Learning Content

Content Type	Definition	Example
Fact	Specific and unique data or instance	Elements for TEI Header
Concept	A category that includes multiple examples	TEI Header
Process	A flow of events or activities	How TEI works
Procedure	Task performed with step by step actions	How to add metadata to the TEI Header
Strategic Principles	Task performed by adapting guidelines	How to encode a poem with TEI

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The development process - instructional methods & media elements

- instructional methods provide support to the actual act of learning the content
- instructional methods include techniques such as
    - examples, exercises, feedback...
- demonstration is a common instructional method in both synchronous and asynchronous e-Learning
- media elements such as audio and visual techniques used to present words and illustrations
- media elements often include
    - text, narration, music, fixed graphics, photographs, animations...
- audio narration to present the words of the learning process
- animated graphics to illustrate the steps of the demonstration

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The development process - influence of platforms and software

- e-Learning delivered via CD-ROM, Internet, Intranet, Mobile Application, Game, Virtual demo...
- choice of platform and software can affect available instructional methods and media elements
- restrictions on network access, sound output and input, screen size and resolution, user input methods...
- lack of audio can be a major constraint on instructional quality of e-Learning courseware

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e-Learning goals - inform and perform

- e-Learning can be considered and designed to inform as well as improve
- 'inform programs' (briefings) are designed primarily to build awareness or provide information
- task or job relevant, but no specific expectations of acquired new skills
- primary goal of 'inform programs' is to transmit information
- 'perform programs' are designed to build specific skills
- many e-Learning courses contain both inform and perform learning objectives

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e-Learning goals - inform and perform

Goal	Definition	Example
Inform	communicate information	- a group's history or background - new software features
Perform Procedure	build procedural skills (also known as 'near transfer')	- how to login to an email system - how to complete an online form
Perform Principle	build strategic skills (also known as 'far transfer')	- how to analyse an application - complete a product sale

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e-Learning goals - near transfer vs far transfer

- two types of perform goals
    - near transfer (procedural)
    - far transfer (principle-based or strategic)
- procedural lesson designed to teach step-by-step tasks
    - near transfer because the steps leaned are identical or very similar to job's steps
    - transfer from training to application is 'near'
- principle-based lessons designed to teach task strategies
    - situations presented may not be exactly the same as the job's situations
    - worker is required to adapt strategies to various job situations
    - some element of problem solving is often involved
    - judgement is required in performing these tasks
    - transfer from training to job is 'far'

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The uniqueness of e-Learning

- unique traits and methods available with e-Learning
- four potentially valuable instructional methods unique to e-Learning include
    - practice with tailored automated feedback
    - integrated collaboration with self-study
    - dynamic adjustment of instruction to suit learning
    - use of games and simulation

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The uniqueness of e-Learning - practice & feedback

- practice required steps to successfully complete a given task
- asynchronous course will often include a simulation to help direct the learner
    - automated feedback to the learner providing response and hint
    - animated, narrated demonstration of the steps required for a correct solution
- similar methods also available in synchronous virtual classroom
    - instructor provides a demonstration by sharing example...
    - instructor assigns required problems using the shared application
- asynchronous e-Learning uses a program to evaluate the learner's actions...
- synchronous e-Learning uses an instructor to review student answers and provide feedback...

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The uniqueness of e-Learning - social and collaborative

- Internet has reduced limitations on interaction with others in e-Learning
- virtual classroom presents opportunities to collaborate using text, audio, and video
- virtual classrooms and asynchronous learning can use email, discussion boards...to collaborate
- social software setting the trend for e-Learning...

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The uniqueness of e-Learning - dynamic adjustment of learning...

- e-Learning well based to provide ongoing dynamic adjustments
    - path of instruction adjusted based on responses
- eg: complexity of problem can be adjusted or addition of increased instructional help
- 'adaptive instruction'
    - can be implemented in asynchronous e-Learning
    - tailor lessons to individual requirements

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The uniqueness of e-Learning - games and simulations

- a learner can repeatedly practice and test given scenarios and methods
- practice safely within a controlled virtual environment
- learner can experience in a short time a number of real-world situations
- realistic problems and scenarios can be compressed into a short time frame
- motivational appeal of online games
- both simulations and games need to provide effective learning environments

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The pitfalls of e-Learning

- two common perceived issues include lack of focus and media abuse
- lack of focus for a given job task within the e-Learning environment
    - designer must first define required skills
    - skills are job specific and knowledge base is different
    - detailed job and task analysis is a prerequisite
    - failure to address job analysis runs the risk of presenting knowledge and techniques out of context
    - 'transfer failure'
- media abuse can work in terms of both too much and too little media usage
    - too many media elements and options on the same screen
    - limited capacity to absorb information
    - too little media usage ignores media capabilities
    - 'page-turner' e-Learning
    - balanced use of media is key to design and development of e-Learning

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A few e-Learning considerations - what is good e-Learning and what does it look like?

- recommendations, suggestions, samples will need to be adapted based on a few considerations
    - the goal of training
    - prior knowledge of the learners
    - chosen environment for deployment of the learning and training
    - instructional architectures chosen for use in the e-Learning lesson and course

An introduction to e-Learning

A few e-Learning considerations - what is good e-Learning and what does it look like?

Architecture	View	Interactivity	Usage
Receptive	Information acquisition	Low	Inform training goals such as new staff orientation
Directive	Response strengthening	Medium	Perform procedure training goals such as software skills
Guided Discovery	Knowledge construction	High	Perform strategic training goals such as problem solving

An introduction to e-Learning

A few final thoughts...

- challenge is to build lessons compatible with human learning processes
- instructional methods must support these processes
- they must nurture and develop psychological events necessary for learning
- rapid development of technology for learning
- human learning itself not designed for such rapid change
- media usage important to avoid overload
- balance between technology understanding and human learning processes