Next Generation Learning Environment

Next Generation Learner

iFest 2011 – 3 August 2011

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Goals:

• Enable learning experiences...
  – Rich, engaging, integrated, effective
  – Flexible with different pedagogies
  – Interoperable, Repurpose-able, Flexible, Accessible

• Enable the Personal Learning Associate
A Little History - SCORM®

- Initiated in 1997
- De facto global learning standard
- Packaging Content
- Describing Content w/ Metadata
- Run-Time Environment
- Sequencing & Navigation
Monolithic Systems
Enterprise Architecture

Legacy LMS

- User Management
- Course Management
- Run-Time
- Player
- Preferences
- Authentication
- Repository
- Sequencing
- Individual Reports
- Scheduling
- Authorization
- Search
- Delivery
- Group Reports
- etc...

HR Systems
Profile Systems
Repositories
Reporting Systems
Web 2.0 and the Cloud

Enterprise Architecture Approach
Community Driven

Requirements from:
• Community Outreach
• Help Desk
• Project TinCan
  – UserVoice Site
  – 1-on-1 Interviews

Identified consistent issues
ADL’s Role

- Research existing technologies and methods
- **Develop prototypes**
- Provide lessons learned
- Raise awareness
External Organizations

• LETSI
• IEEE
• AICC... and many others

• Aligning efforts and working groups
• Working together for the greater goal

To enable effective and efficient learning
Enabling Learning

...to enable effective and efficient learning

– Know who the learners are
– Know what types of outcomes are desired
– Choose technologies that support those outcomes
Today’s Learners

**Characteristics**
- Digital (growing up in constant contact with digital media)
- Connected
- Action-oriented
- Experiential
- Immediate
- Social

**Learning Preferences**
- Teams, peer-to-peer
- Engagement & experience
- Visual & kinesthetic
- Things that matter

_Educating the Net Generation (2005)_
_http://www.educause.edu/educatingthenetgen_
21st Century Learner - 2011

- Born after 1982
- Multi-tasking – multi-modal
- Internet centered
- Group oriented/Social
- Diverse
- Inductive discovery/exploratory
- Fast response times/Instant access
- Knowledge should have personal meaning – matters
- Desire to reach own conclusions and results

http://depd.wisc.edu/series/06_4168.pdf
Instructional Tech Lens

- Inductive vs. Deductive
- Social vs. Individual
- Situated vs. Detached
- Networked vs. Unplugged
- Customized vs. Standardized
- Immediate vs. Delayed Results
## Learning Implications

<table>
<thead>
<tr>
<th>Psychological learning theories</th>
<th>Social theories</th>
<th>Connectivism/LoaN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key concepts</strong></td>
<td><strong>Constructivism</strong></td>
<td><strong>Social constructivism</strong></td>
</tr>
<tr>
<td><strong>Mind as a “black box”</strong></td>
<td>Mental structures, personal interpretation, prior experiences</td>
<td>Social negotiation, zone of proximal development</td>
</tr>
<tr>
<td><strong>Schema, sensory, register, short-term memory (STM), long-term memory (LTM)</strong></td>
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</tr>
<tr>
<td><strong>How does learning occur?</strong></td>
<td>Adjusting our mental models to accommodate new experience</td>
<td>Moving from the level of actual development to the level of potential development</td>
</tr>
<tr>
<td><strong>Transformation in internal cognitive structures</strong></td>
<td></td>
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<tr>
<td><strong>Focus</strong></td>
<td>Learners build their own mental structures (intrinsic)</td>
<td>Reaching the level of potential development (intrinsic)</td>
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<tr>
<td><strong>Behavioural modification (intrinsic)</strong></td>
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<tr>
<td><strong>Core activity</strong></td>
<td>Self-directed tasks</td>
<td>Travelling through ZPD</td>
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<tr>
<td><strong>Stimulus-response, selective reinforcement</strong></td>
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<tr>
<td><strong>Process and store information, reorganisation of cognitive structures</strong></td>
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<tr>
<td><strong>Learner’s role</strong></td>
<td>Knowledge construction</td>
<td>Knowledge co-construction</td>
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<tr>
<td><strong>Knowledge acquisition</strong></td>
<td>Knowledge internalisation</td>
<td></td>
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<tr>
<td><strong>Underlying social entity and its characteristics</strong></td>
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</table>

Strategies

- Authentic problem-based designs
- Situated learning
- Metacognitive awareness
- Social negotiation
- Cultural mediation
- Guided participation
- Collaboration
- Changing role of instructor
- Personal learning networks
- SCANS five competencies for workplace success*
  1. Identifies, organizes, plans and allocates resources
  2. Works with others
  3. Acquires and evaluates information
  4. Understands complex interrelationships
  5. Works with a variety of technologies

Competencies and Needs - 2

• Foundational skills include thinking skills*
  – Creativity, decision making, problem solving, visualizing, knowing how to learn, and reasoning

• Distilled to workforce needs
  – Problem Solvers
  – Disciplinary Thinkers
  – Cognitively Adaptable
  – All require metacognition

H/O Learning Outcomes

The New Taxonomy of Educational Objectives by Robert Marzano

Three Systems and Knowledge

<table>
<thead>
<tr>
<th>Self System</th>
<th>Metacognitive System</th>
<th>Cognitive System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beliefs about the importance of the knowledge</td>
<td>Specifying learning goal</td>
<td>Retrieval</td>
</tr>
<tr>
<td>Belief about the Efficacy (ability to learn)</td>
<td>Monitoring for execution of knowledge</td>
<td>Comprehension</td>
</tr>
<tr>
<td>Emotion associated with knowledge</td>
<td>Monitoring for clarity</td>
<td>Analysis</td>
</tr>
<tr>
<td>Overall Motivation to Learn</td>
<td>Monitoring for accuracy</td>
<td>Knowledge Utilization</td>
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<td>Retrieval</td>
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<td>Analysis</td>
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<td></td>
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<td>Knowledge Utilization</td>
</tr>
</tbody>
</table>

Knowledge Domain

<table>
<thead>
<tr>
<th>Information Conceptual and Factual</th>
<th>Mental Procedures</th>
<th>Physical Procedures</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Decision Making</th>
<th>Problem Solving</th>
<th>Experimental Inquiry</th>
<th>Investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalizing</td>
<td>Specifying</td>
<td></td>
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</tr>
<tr>
<td>Classifying</td>
<td>Error Analysis</td>
<td></td>
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</tr>
<tr>
<td>Matching</td>
<td>Classifying</td>
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<tr>
<td>Recall</td>
<td>Execution</td>
<td></td>
<td></td>
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<tr>
<td>Synthesis</td>
<td>Representation</td>
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<tr>
<td>Retrieval</td>
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Technology Needs

• Assess and track higher order learning outcomes
• Support inductive thinking
• Facilitate exploratory learning
• Allow for “situatedness” or context – simulated authentic environments
• Support collaborative learning models – many-to-many tracking, communication modes, interaction capture
• Allow social negotiation
• Support metacognitive activities
• Facilitate generative learning and problem-based learning models
• Combine technologies to support any or all of the above – i.e. services
Questions

Turning Point Technologies

Instructions
Question #1

Do you have the need to design instruction that requires the learner to have a deeper understanding of the content than memorization or recognition (i.e. Bloom’s level 1)?
Question #1

1. Yes
2. No
3. I don’t understand the question
As an ISD, is the tracking of learner actions taken to complete learning activities something you care about (i.e. other than an assessment score)?
Question #2

1. Yes
2. No
3. I don’t understand the question
Question #3

Would you benefit from being able to capture learner performance characteristics that are richer in scope and depth than tests involving score thresholds?
Question #3

1. Yes
2. No
3. I don’t understand the question
Question #4

Would you benefit from being able to track, aggregate, and interpret learner interactions across many types of platforms – i.e. VWs, social media, LMSs, etc.?
1. Yes
2. No
3. I don’t understand the question
Question #5

Would you benefit from incorporating and tracking collaborative activities in your course designs?
Question #5

1. Yes
2. No
3. I don’t understand the question
Have you tried to create custom reports or query data not supplied in your LMS reporting features?

Or...

Have you tried to access learner data to perform assessment or statistical analysis?
1. Yes
2. No
3. I don’t understand the question

- Yes: 58%
- No: 33%
- I don’t understand the question: 9%
Question #7

Have you ever experienced a content lifecycle issue due to several versions of a course hosted by several LMSs?
1. Yes
2. No
3. I don’t understand the question
Have you ever wanted to integrate and track content that is not displayed in a browser?

This includes out-of-browser games, virtual worlds, simulations, etc.
Question #8

1. Yes
2. No
3. I don’t understand the question
Question #9

Have you ever wanted to track learner information that is not included in the SCORM or other data models?
Question #9

1. Yes
2. No
3. I don’t understand the question
SCORM Gaps

- Static data model
- Single learner tracking
- No concurrent functionality
- Discrete content definitions
- Optimized for single learner, self-directed learning
- Optimized for L/O learning outcomes
- I can’t get to my data
- Local content only
- In-browser content only
Tech Demos

- Learning Record Store (LRS)
- Android Tablet Application
- Mobile Content as a Service (CaaS) Course
- Unity Game
- Legacy Content/LMS
- Microsoft Kinect Simulation
- Virtual World Learning Experience
Learning Record Store

- LRS ≈ LMSs of today
- Administration of demo components
- User management
- Content management
- Learning record storage

Does not provide sequencing or navigation
Android Tablet Application

• Native Android tablet application
• External interface to LRS data
• “Learning dashboard”
• Out-of-browser administration
Mobile CaaS Course

• Illustrates ‘hosted’ content
• Smart rendering per device
• Cross-domain content
• Tracking performance to LRS
Unity Game

• “Serious” game demonstration
• Open source Unity game
• Out-of-browser content
• Tracking performance to LRS
Existing SCORM Content

• Integration via a “wrapper”
• Legacy content tracking in a service-based system
• Uses legacy systems for import, sequencing, etc.
Microsoft Kinect Simulation

- Motion and speech control “simulation”
- Microsoft SDK sample
- Out-of-browser content
- Tracking to LRS via voice command
- Speed of integration
Virtual World

• Multiple Users
• Tracking to LRS
• Integration of content within the virtual world
  – Learning dashboard
  – Autotutor Lite
  – Google Docs
  – Yammer
  – Legacy Content
Learning Demo

- Contextualizing the technology
- Integrating tech and ID
- Design for H/O outcomes
  - Cognitive Adaptability
  - Requires Metacognitive Awareness
- Cost effectiveness and efficiency
Learning Demo Design

- Problem-based learning
- Metacognitive activities
- Situated or authentic problem
- Coaching
- Authentic assessment
- Extended tracking
- Collaborative
- Generative
- Cohorts – learning communities – CoP
- No instructor – AI coach
Learning Demo Tech

• Virtual Environment - Microworld
• Extensible data model
• Content Coverage Analysis (Auto Tutor Light)
• Learning Record Store
• External tracking and assessment model
• External content accessibility
• Mobile accessibility
• Social media
• Content Area: Information Assurance (IA)

• Goals/Objectives
  – Self Outcome/Goal: Relate IA issues to the workplace, performance, and overall security
  – Cognitive Outcome/Goal: Understand ethical issues that relate to computers and networks specifically in regards to security and privacy including personally identifiable information
– **Cognitive Objectives:**
  - Decide which issues are important regarding ICT security and privacy
  - Devise mitigation strategies to security and privacy issues occurring within your workplace
  - Define appropriate and inappropriate social networking behaviors as it applies to your workplace

– **Metacognitive Outcome/Goal:**
  - Understand your thinking processes in terms of clarity and accuracy

– **Metacognitive Objective:**
  - Formulate and broadcast on-the-spot opinions about the importance of what is being learned and how it impacts you and your interests
Learning Demo

Information Assurance Learning Experience
Welcome to DoD Organization ABC. Here are your onboarding training requirements. Please complete these requirements within 90 days.

<table>
<thead>
<tr>
<th>Course name</th>
<th>Started date</th>
<th>Completed date</th>
<th>Pass/Fail</th>
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<tbody>
<tr>
<td>DoD Information Assurance (IA) Awareness</td>
<td>6/02/11</td>
<td>6/02/11</td>
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<td>DoD Information Assurance (IA) for Managers/Supervisors</td>
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<tr>
<td>Ethics for Managers/Supervisors</td>
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<tr>
<td>EEOC for Managers/Supervisors</td>
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</table>
Course Description (1 of 2)

- The course takes place in a virtual world.
- You will complete course activities in a team with other students.
- This course is only required once in your career at DoD, however, you will be required to subscribe to a community of practice (CoP) on the portal that focuses on Information Assurance in DoD (more details on this will be supplied at the conclusion of the course). Also, there may be updates to information assurance policy that require you to take short sessions to update his training.
- The course will take approximately two and a quarter hours total to complete.
- There will be an assessment at the end of the course that you must pass.
- There are three Sessions in the course. They are each scheduled to be taken at a specific date and time, with about one week’s time between the first and second. The second and third sessions are a day apart.
Hello, my name is Yuan. I'm the Facilitator for this DoD Information Assurance for Managers and Supervisors course. We'll start after all of you touch the registration iPad. In the meantime, please get to know each other.
# Learning Dashboard for Kevin Smith

**DoD Information Assurance for Managers/ Supervisors course**

<table>
<thead>
<tr>
<th>Items accessed/attended</th>
<th>Duration (minutes)</th>
<th>Relevance</th>
<th>Comments and Additional References</th>
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<tbody>
<tr>
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<td>Less</td>
<td>More</td>
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## Session 1

- **Orientation**
  - [Add comment](#)  
  - [Add reference](#)
Learning Dashboard for Kevin Smith

DoD Information Assurance for Managers/Supervisors course

<table>
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<tr>
<td>Session 1</td>
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<tr>
<td>Orientation</td>
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<td>Add comment Add reference</td>
</tr>
<tr>
<td>Amy</td>
<td></td>
<td></td>
<td>Add comment Add reference</td>
</tr>
</tbody>
</table>

Click here to chat.
Hi, glad you stopped by. I brought some home photos on a CD and uploaded them to my computer. Now, my computer is running painfully slowly. I have an anti-virus program at home, I think, but something is not right. Maybe I've infected my computer?
Information Assurance (IA)
Employee Manual

- Secure and Appropriate Computer Usage
- Protecting Personal Information
- Secure Communication

Handling Sensitive and Classified Information
'Spillage' occurs when information is 'spilled' from a higher classification level to a network at a lower classification level. Follow these security procedures to avoid spillage:
- Check all documents you handle for their classification level. Do not handle documents above your classification level.
- Be aware of when to use the NIPR/SCI Net and be conscious of which one you are on at all times.
- Ensure that all files, removable media, and subject headers are labeled with the appropriate security classification level.

Secure and Appropriate Use of Mobile Computing Devices
NOTICE

It is a course requirement to post an in-world message to Yammer every 15 minutes. The Yammer application can be accessed via this link or on the wall in your Team Room. Please now answer any of these questions:

• What is the most important thing you learned just now?
• How might what you learned impact your job, career, or non-work life in a general sense?
• What topics are you interested in exploring further about what you learned?
# Learning Dashboard for Kevin Smith

**DoD Information Assurance for Managers/Supervisors course**

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<td>Amy</td>
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<td>Martin</td>
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<tr>
<td>Miguel</td>
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<tr>
<td>OSD DTM-026</td>
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</table>

Defense in Depth: A practical strategy for Information Assurance in today's highly networked environments

Add comment
Add reference

Add comment
Add reference

Add comment
Miguel should...
Add reference

Add comment
Add reference
MEMORANDUM FOR: SEE DISTRIBUTION

SUBJECT: Directive-Type Memorandum (DTM) 09-026 - Responsible and Effective Use of Internet-based Capabilities

References: See Attachment 1

Purpose. This memorandum establishes DoD policy and assigns responsibilities for responsible and effective use of Internet-based capabilities, including social networking services (SNS). This policy recognizes that Internet-based capabilities are integral to operations across the Department of Defense. This DTM is effective immediately; it will be converted to a new DoD issuance within 180 days.

Applicability. This DTM applies to:

- OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the Department of Defense (hereafter referred to collectively as the “DoD Components”).
- All authorized users of the Non-Classified Internet Protocol Router Network (NIPRNET).

Definitions. Unless otherwise stated, these terms and their definitions are for the purpose of this DTM.

- Internet-based capabilities. All publicly accessible information capabilities and applications available across the Internet in locations not owned, operated, or controlled by the Department of Defense or the Federal Government. Internet-based capabilities include collaborative tools such as SNS, social media, user-generated content, social software, e-mail, instant messaging, and discussion forums (e.g., YouTube, Facebook, MySpace, Twitter, Google Apps).
- External official presence. Official public affairs activities conducted on non-DoD sites on the Internet (e.g., Combatant Commands on Facebook, Chairman of the Joint Chiefs of Staff on Twitter).
Not really. He talked about configuring our email to always allow executable files. But this doesn’t apply to us in DoD, because the firewalls block these files.
MEMORANDUM FOR: SEE DISTRIBUTION

SUBJECT: Directive-Type Memorandum (DTM) 09-026 - Responsible and Effective Use of Internet-based Capabilities

Reference: See Attachment 1

Purpose. This memorandum establishes DoD policy and assigns responsibilities for responsible and effective use of Internet-based capabilities, including social networking services.
Welcome to the Information Assurance Awareness course. This lesson is unclassified and meets all FISMA and OMB requirements for baseline annual information systems security and information assurance awareness training. This course is designed to help you understand the importance of information assurance, or IA, its guiding principles, and what it means for DoD. This course will identify potential risks and vulnerabilities associated with information systems, review your role in protecting these systems, and provide guidelines to follow at work and at home to protect against attacks on information systems, and to protect your personally.
Well done. Most of the major points are included in your draft of this topic (“Handling of Sensitive and Classified Information”). However, Miguel made some important points that you didn’t include. Please go back and review what Miguel has to say about this topic.
Your document scored higher than 90 percent. Congratulations, you passed the course! To get credit for the course, however, you must attend the Session 3 debrief.
I want you to now sign up for the Information Assurance Training Community of Practice. The link is on the information page for this course on the portal. This community of practice, or CoP [pronounced like it sounds-“cop”], provides notifications of new information and policies about information assurance, as well as new emerging threats. It contains a library of resources that is constantly updated, and a forum that allows you to communicate with other students that have taken this course and the larger community of DoD employees. You are now registered as a Journeyman Information Assurance Practitioner on the CoP. Other people in DoD may contact you for information about IA, based on your new status. To maintain membership on the CoP and your status as a Journeyman IA Practitioner, you’re required to post at least one forum entry every three months. Every year, if there are significant new added policies or policy changes, you may need to take update training.

IA Training Community of Practice (CoP)

- Features
  - Notifications of new info and policies
  - New emerging threats
  - Library of references
  - Forum
- You now registered as Journeyman IA Practitioner
- Post one forum entry every three months
- May need to take periodic update training
Questions?