

# Developing Learning Objects with the eXe software

3 December 2007

Asia OSS Trainers' Workshop

Singapore

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# Lesson Outline - 1

|                        |  |
|------------------------|--|
| Getting attention      | Video clip on “Learning Objects”       |
| Learning objectives    | Listed 4 learning objectives           |
| Introduction           | Problems LOs are addressing            |
|                        | How did learning objects started?      |
|                        | What is a learning object              |
|                        | Characteristics of a learning object   |
|                        | Industry learning object templates     |
|                        | Principles used in a learning object   |
|                        | Learning objects as building blocks    |
| Using the eXe software | What is the purpose of the eXe?        |
|                        | Editor for creating learning objects   |
|                        | Gagne’s Nine Events of Instruction     |
|                        | Installing & Starting the eXe software |
|                        | Overview of the eXe software           |

# Lesson Outline - 2

|                        |                                       |
|------------------------|---------------------------------------|
| Using the eXe software | Creating a Lesson Outline             |
| (cont'd)               | Creating the content                  |
|                        | Embedding multimedia                  |
|                        | Learning activities                   |
|                        | Creating a True / False question      |
|                        | Creating a Summary                    |
| Summary                | Summary for the whole learning object |

# Getting Attention

- Play a video clip  
(learningobjects.mov) – 3 minutes 27  
seconds

# Learning Objectives

- Identify the problems learning objects will be addressing
- Familiarize with the term, purpose and characteristics of a learning object
- Identify some learning theories & principles that learning objects are based on
- Use the eXe software to create simple learning objects

# Problems that Learning Objects are addressing

- Too much content is dished out to learners leading to information overload
- Not enough well thought-out learning activities for the learners
- Exercises are normally at the knowledge recall or comprehension level. Very few engage the higher-order thinking skills
- Content is tied to the LMS – difficult to separate the content from the system
- Content is normally tied to a proprietary system
- Content cannot interoperate on another system
- Content difficult to be reused or repurposed

# How did Learning Objects started?

- Probably originated from the works of Wayne Hodgins in 1994
- It was later adopted by the Learning Technology Standards Committee of the IEEE
- M. D. Merrill uses the term “knowledge object” in 1991
- David A. Wiley is another researcher who has done much work on “learning objects”.
- “The Instructional Use of Learning Objects” is one of the most informative books on “learning objects”. It is edited by David Wiley.

# What is a Learning Object? - 1

- There are many definitions for a learning object.
- There is no single standard definition for a learning object.
- Here are some examples:
  - *Co-operative Learning Object Exchange (CLOE)*:
    - A learning object is "any digital entity designed to meet a specific learning outcome that can be reused to support learning".



# What is a Learning Object? - 2

- *CISCO:*
  - "The RLO Strategy [Reusable Learning Object] is built upon the Reusable Information Object (RIO). An RIO is granular, reusable chunk of information that is media independent. An RIO can be developed once, and delivered in multiple delivery mediums. Each RIO can stand alone as a collection of content items, practice items and assessment items that are combined based on a single learning objective. Individual RIOs are then combined to form a larger structure called a Reusable Learning Object (RLO)"

# What is a Learning Object? - 3

- *CISCO:*
  - "A Reusable Learning Object is created by combining an Overview, Summary, Assessment and five to nine (7 +/- 2) RLOs. An RLO is based on a single objective, derived from a specific job task. Each RLO is built upon an objective that supports the RLO's objective"
- *David Wiley:*
  - "Learning Object: Any digital resource that can be reused to support learning."

# What is a Learning Object? - 4

- Researchers were much influenced by the popularity of the object-oriented programming paradigm.
- They are also influenced by the e-learning standards movement, prevalent during the late 90's, e.g. AICC, IMS, SCORM.
- The learning object economy was another popular concept prevalent during the late 90's. Many learning object repositories were set up to manage learning objects. E.g.. MERLOT, NEEDS, CAREO, POOL

# Characteristics of a “Learning Object”

It is better to look at the general characteristics for a “learning object” rather than trying to define the learning object. Some general characteristics of a learning object are:

- Has a learning objective
- Small unit of learning (2 – 20 minutes)
- Self contained (i.e. with no links to other LOs)
- Reusable
- Can be aggregated (i.e. combine with other LOs)
- Can be tagged with metadata

## Useful websites:

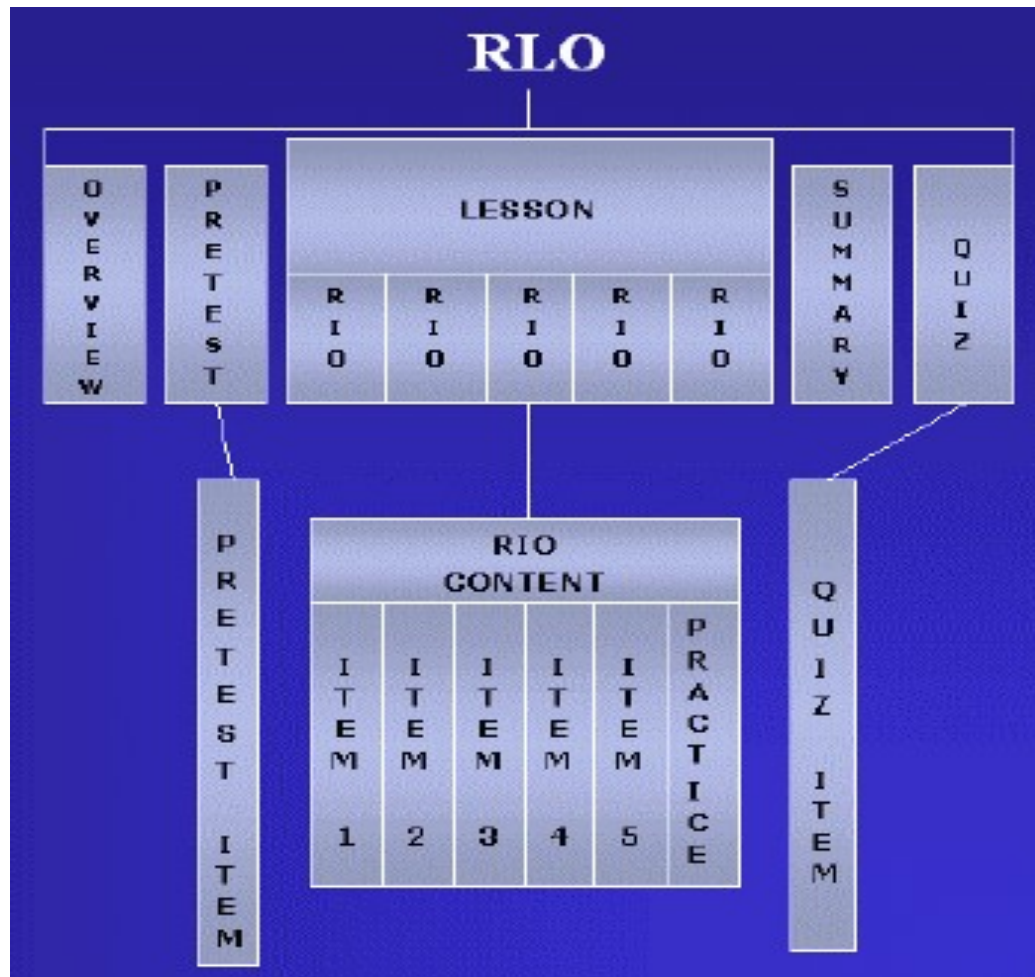
<http://www.cognitivedesignsolutions.com/Instruction/LearningObjects.htm>

<http://ilearn.senecac.on.ca/lop/>

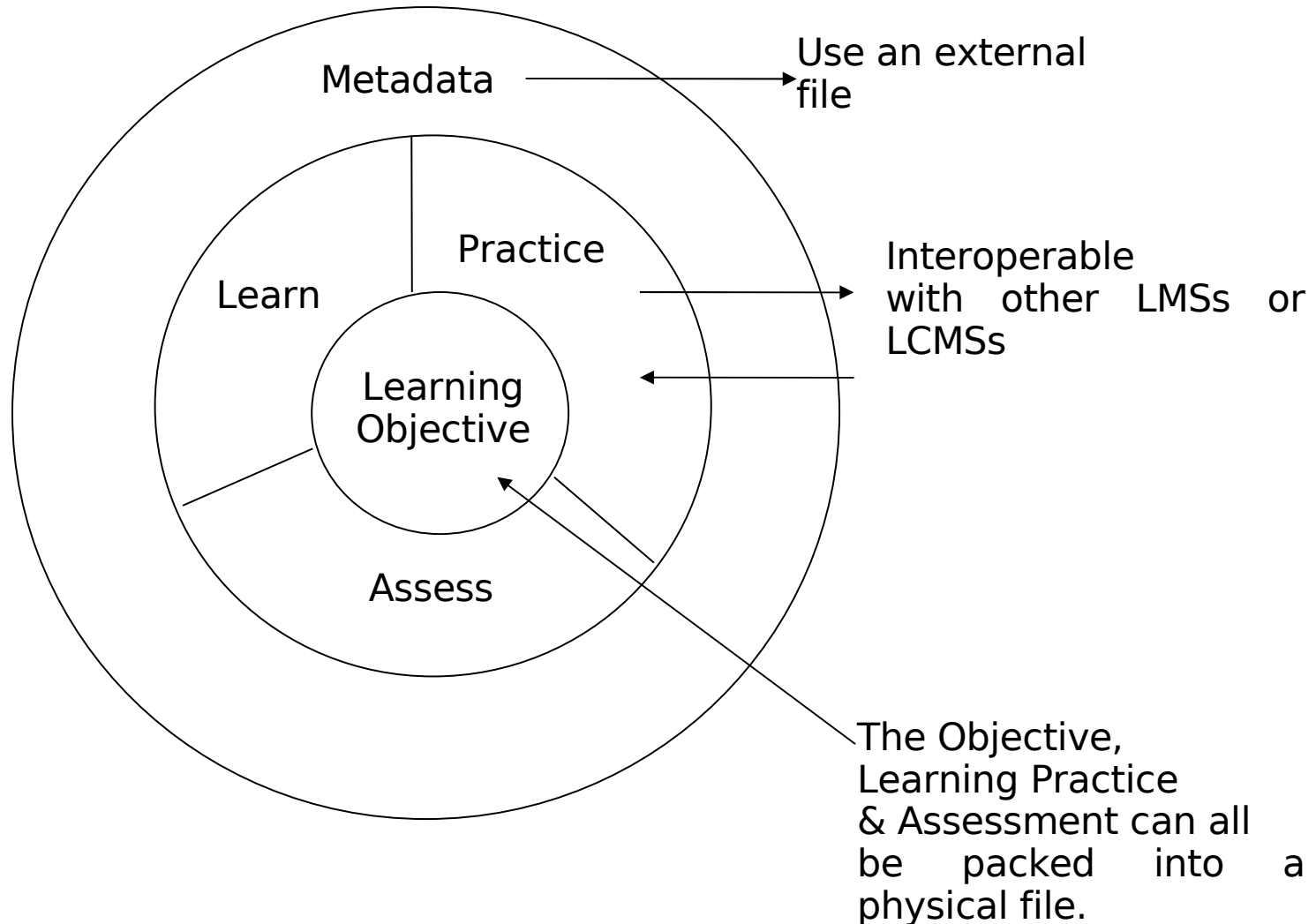
# Industry Learning Object Templates

- Here are three well-known learning object templates:
  - CISCO's RLO/RIO Strategy
  - Adobe's Learning Object Approach
  - NETg's Learning Object Model

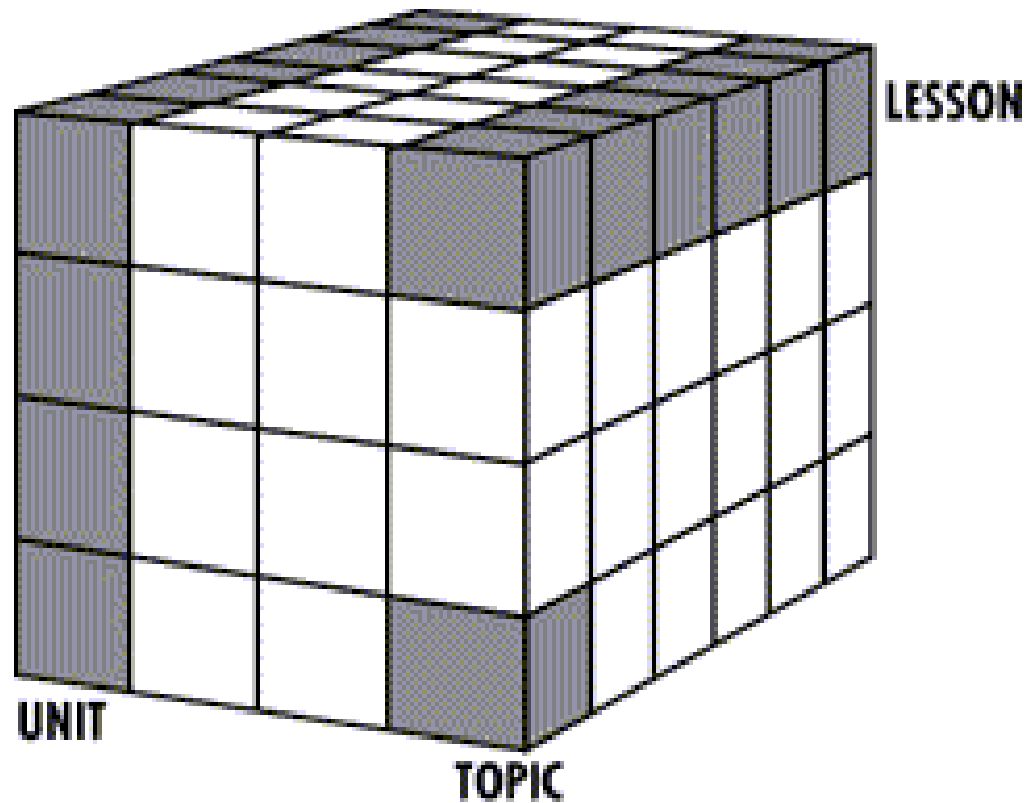
# CISCO's RLO/RIO Strategy



# Adobe's Learning Object Approach

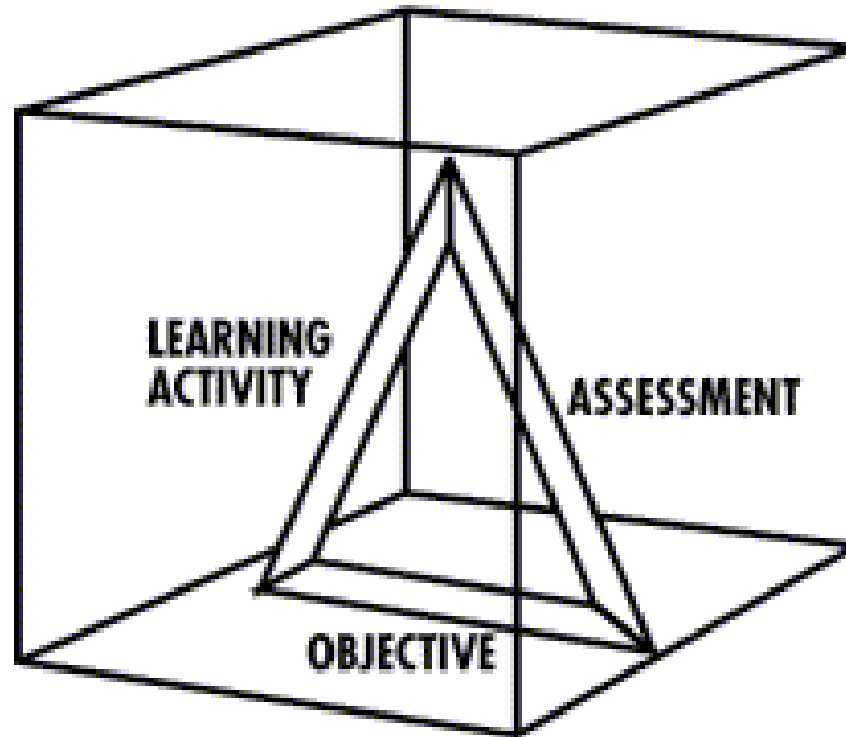


# NETg's Learning Object Model - 1





# NETg's Learning Object Model - 2

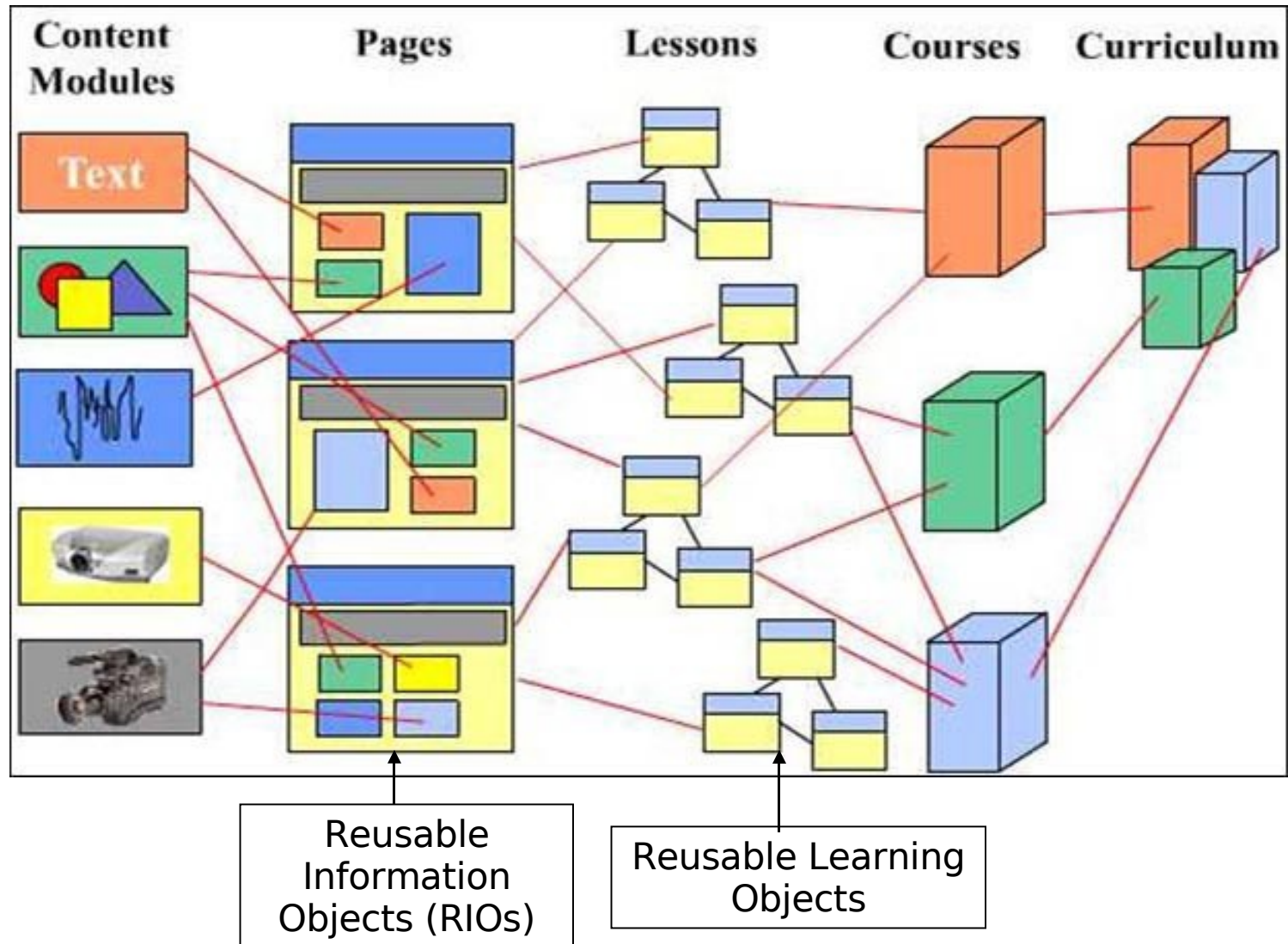


3 components in a NETg's Learning Object

# Principles used in a learning object

- Miller's seven  $\pm$  two rule – to avoid information overload (E.g. Most of us can remember 9 things at the best.)
- Every learning object must have
  - A well defined learning objective
  - Some meaningful content
  - Sufficient learning activities
  - Summary
  - Assessment
- Learning time is recommended to be 20 minutes
- Gagne's Nine Events of Instruction

# Learning objects as building blocks

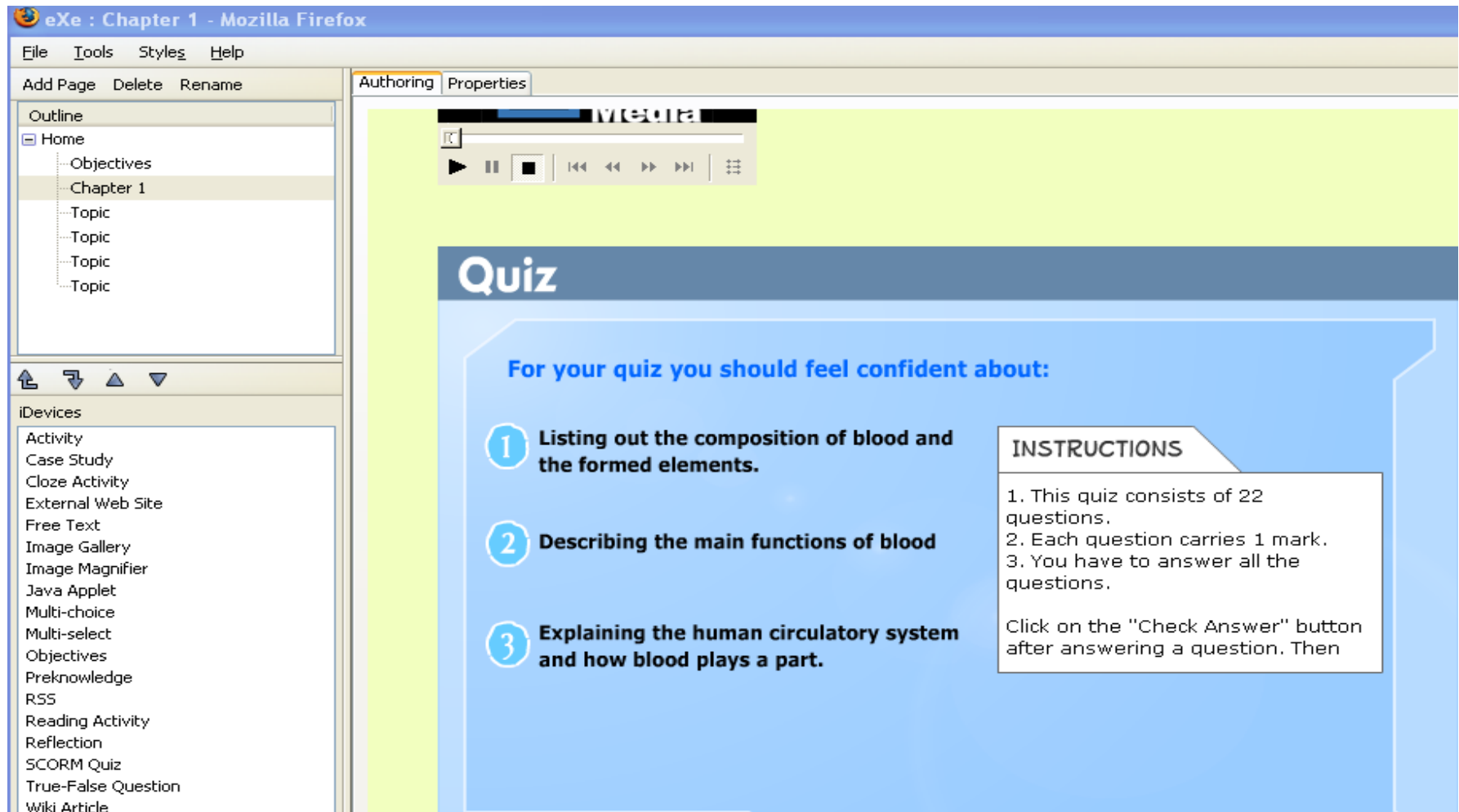


# What is the purpose of the eXe Software?

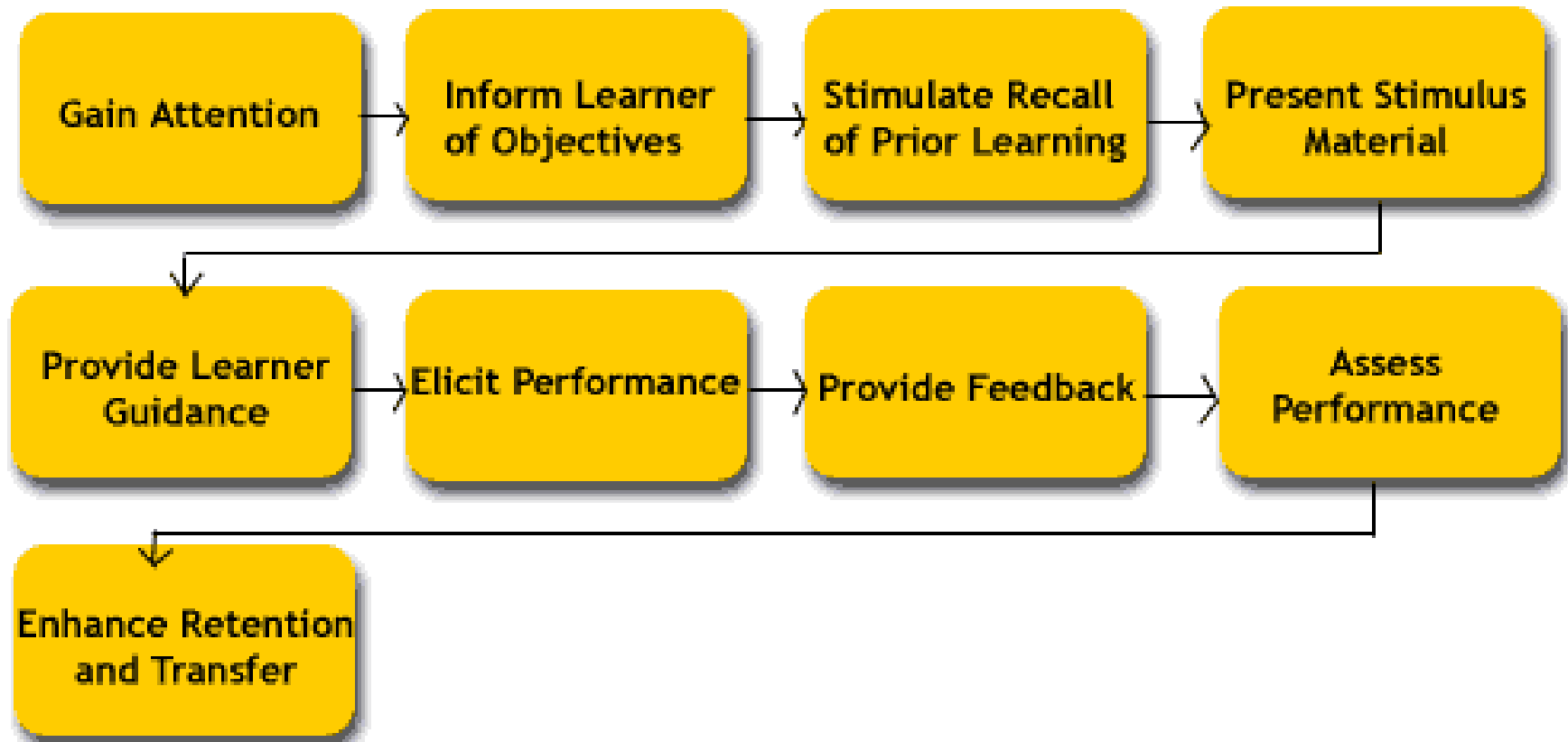
- One can use the eXe software to create learning objects.
- eXe stands for “eLearning XHTML editor”.
- The eXe software has been developed for teachers to create standards-based learning objects.
- Users of this software do not need to know anything about the technology used.
- This editing software has three parts:
  - Creating the content structure
  - Choosing the instructional device (e.g. Free text, SCORM quiz, Activity)
  - Workspace

# Editor for Creating Learning Objects

eXe - eLearning XHTML editor (<http://exelearning.org>)



# Gagne's Nine Events of Instruction

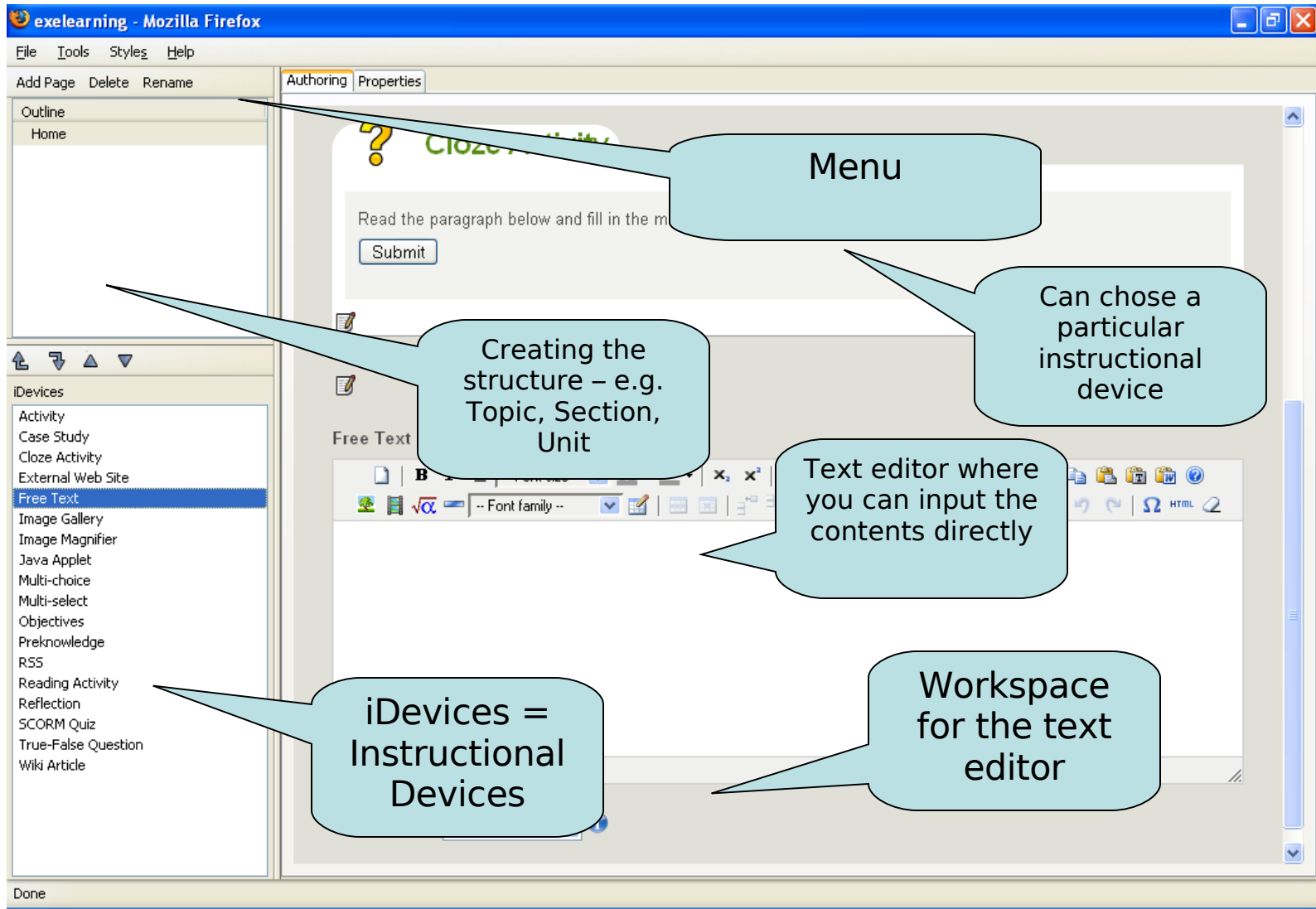


Gagne's 9 events of instruction can be used to plan for the development of learning objects.

# Installing and Starting the eXe Software

- The eXe software can be obtained from <http://exelearning.org>
- It is available for the Windows, Linux and the Mac platforms.
- A particular useful version is the “ready2run” version which can be executed from a CD-ROM in a Windows XP environment.

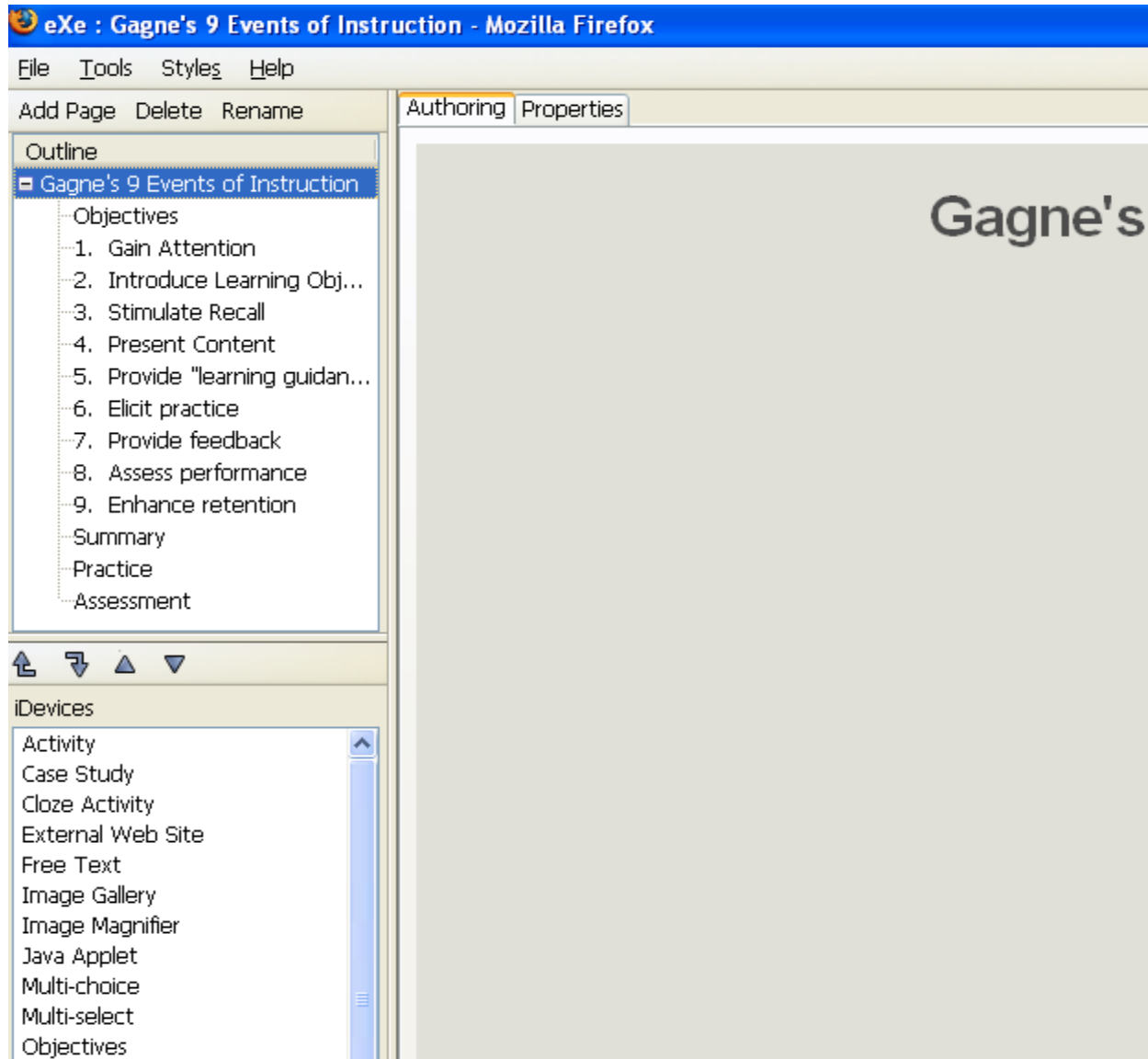
# Overview of the eXe Software



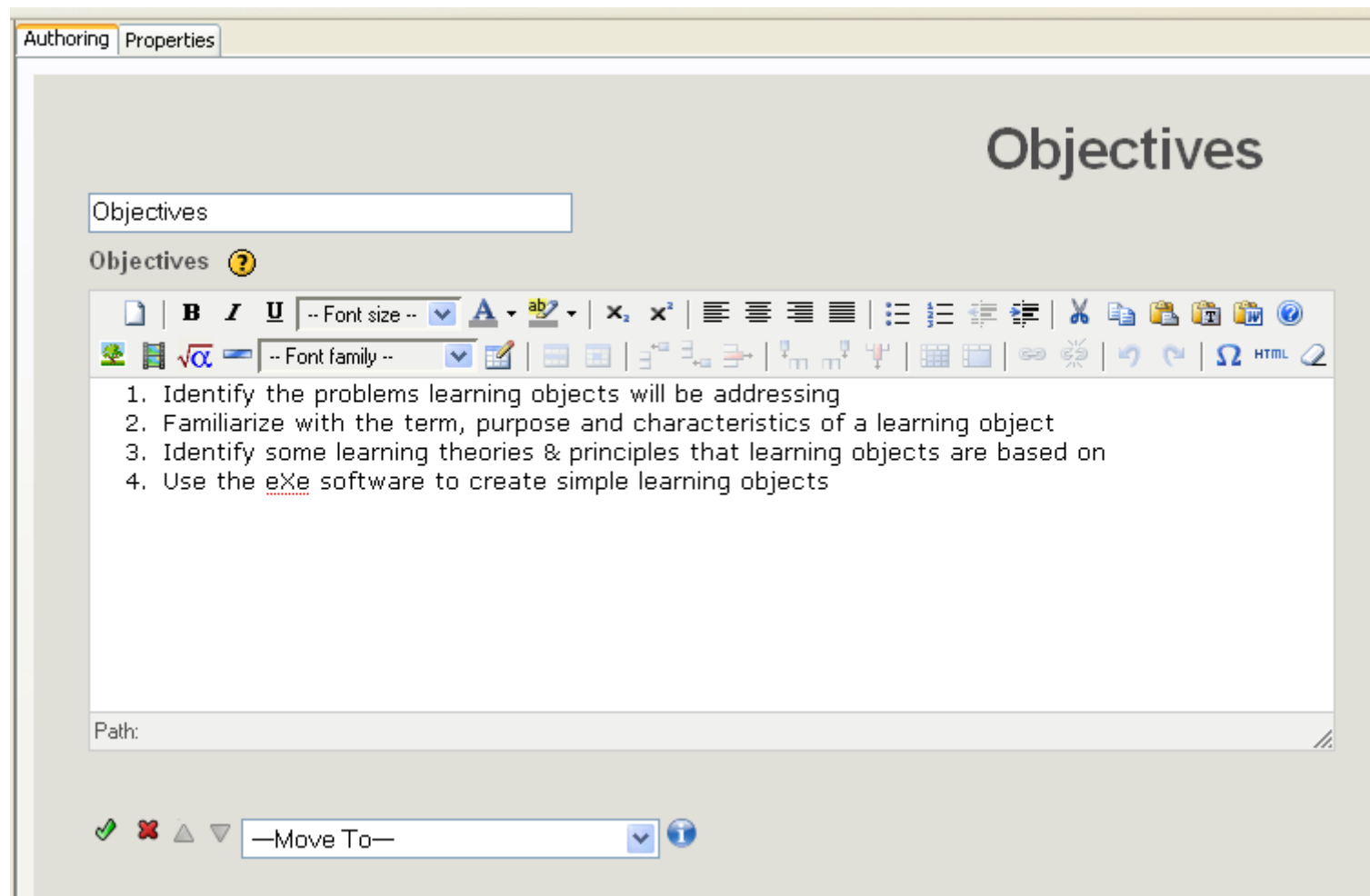


# Creating a Lesson Outline

Structure  
of a  
lesson on  
the  
Gagne's 9  
Events of  
Instruction



# Creating the Content

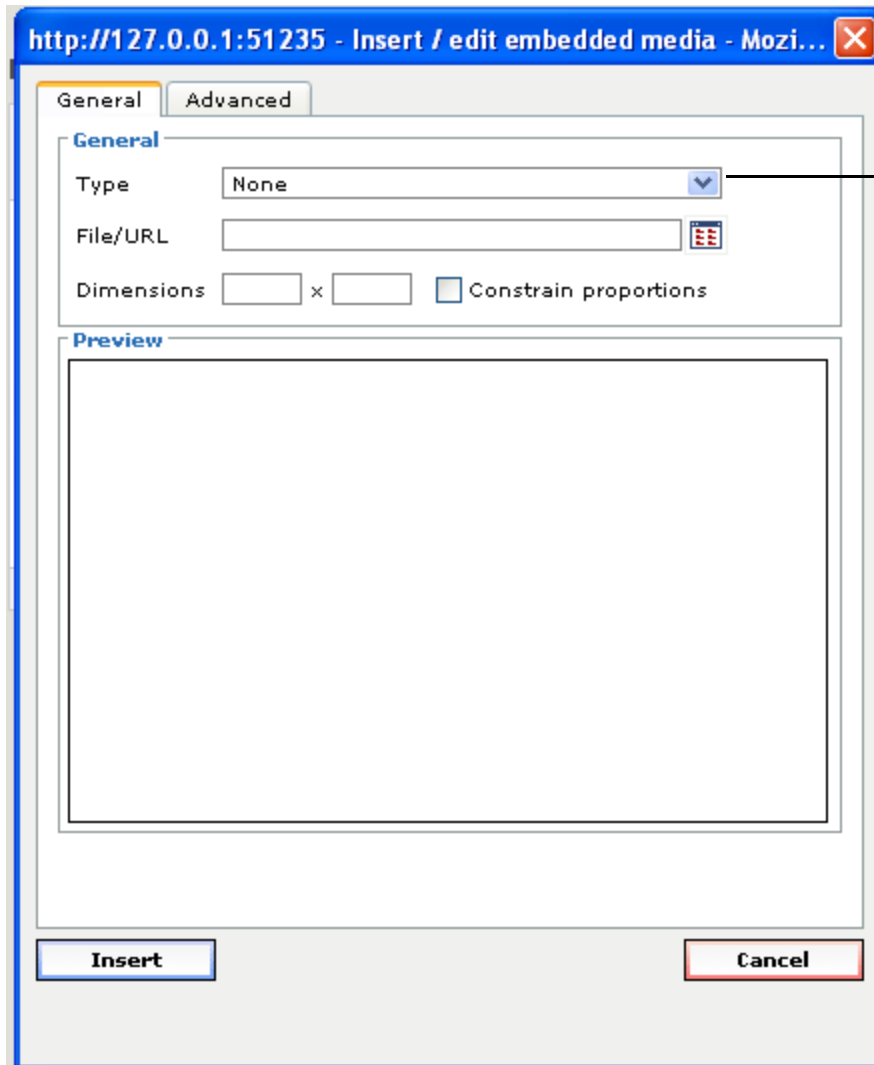


Inputting the content to the eXe software is just like typing text content using any word-processing software.

# Embedding Multimedia - 1

- Embedding multimedia clips like audio or video clips is very straightforward in the eXe software.
- First select either the topic, section or unit where you want the multimedia clip to be placed.
- Next, select Free Text as the iDevice
- Next, choose the Type, e.g. Windows Media

# Embedded Multimedia - 2



None  
Shock Wave Flash  
(SWF)  
QuickTime  
Windows Media  
Real Media (audio)  
MP3 (with embedded  
XSPF Player)  
FLV (with embedded  
Flow Player)

# Embedded Multimedia - 3



This is a video clip which makes use of the Windows Media Player to play back the video and the sound. You can control the playback by either pausing or stopping the playback. The panel shows the typical VCR play buttons.

# Learning Activities

- For reinforcing learning, the following iDevices are available in the eXe software:
  - Activity
  - Case Study
  - Cloze Activity
  - Multi-Choice
  - Multi-Select
  - Reading Activity
  - SCORM Activity
  - True-False Question

# Creating a True / False Question

iDevice

Instructions  
to the  
learner

The question  
itself

Indicate  
whether the  
question is  
true or  
false

Feedback  
is optional

True-False Question

**Instructions** ?

Please answer all questions.

Path:

**Question:** ?

The eXe software allows teachers to develop e-learning content without having to know anything about HTML.

Path:

True ☒ False ☐

**Feedback** ?

Path:

# Creating a Summary

- There should be a summary at the end of every learning object.
- This will itemize the various items that have been covered in the learning object content.
- If the summary is too long, it may mean that the learning object has not been chunked properly.
- Chunking the contents effectively can allow for better learning. One rule of thumb to use when chunking content is to use the Miller's  $7 \pm 2$  principle.
- Chunking helps to avoid overloading of the learner's short-term memory.



# Summary - 1

- This learning object is all about the topic on “learning object”.
- We started with the problems that “learning objects” are developed in order to provide some solutions to the problems.
- There is no standard definition for a learning object.
- It is better to look at the characteristics of a learning object rather than to try to define it.

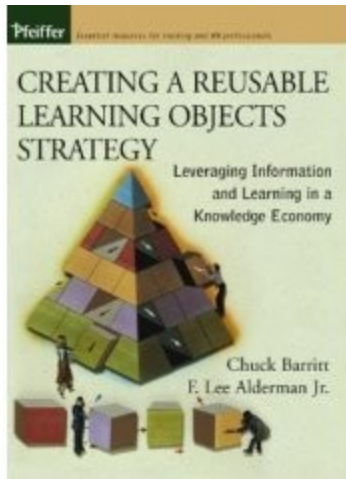
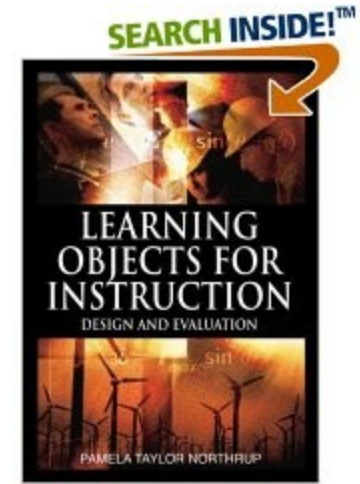
# Summary - 2

- There are some well known learning object templates like those from CISCO, Adobe and NETg. All templates will have the learning object, the content, the learning activities and the assessment part.
- We can use some principles like the Miller's  $7 \pm 2$  rule and Gagne's 9 Events of Instruction in order to design and develop good learning objects.
- The eXe software is an easy-to-use editor for designing and developing learning objects.
- Learning objects are useful if you want to:
  - reuse them
  - use them in another different LMS
  - combine with other learning objects in order to form a larger learning object
  - put them in a repository and allow other people to discover
  - Make sure the learners learn more effectively

# Reference Books



**Online Education  
Using Learning  
Objects (Open &  
Flexible Learning)  
(Paperback)**  
by MCGREAL (Author &  
Editor)



**Creating a Reusable  
Learning Objects  
Strategy: Leveraging  
Information and  
Learning in a Knowledge  
Economy (Hardcover)**  
by Chuck Barritt (Author), F.  
Lee, Jr. Alderman (Author)

**Learning Objects for  
Instruction: Design  
and Evaluation  
(Hardcover)**  
by Pamela Taylor  
Northrup (Editor)

# Resource Websites - 1

| <b>S/No</b><br>. | <b>Name</b>                                | <b>Website address</b>  |
|------------------|--|---|
| 1                | Wisconsin Online Resource                  | <a href="http://www.wisc-online.com">http://www.wisc-online.com</a>   |
| 2                | Learning Object Tutorial                   | <a href="http://www.eduworks.com/LOTT/Tutorial/">http://www.eduworks.com/LOTT/Tutorial/</a>                                 |
| 3                | The Objects of Learning                    | <a href="http://adlcolab.uwsa.edu/lo/index.htm">http://adlcolab.uwsa.edu/lo/index.htm</a>                                   |
| 4                | Preparing Teachers to use Learning Objects | <a href="http://www.itdl.org/Journal/Mar_07/article03.htm">http://www.itdl.org/Journal/Mar_07/article03.htm</a>             |
| 5                | Storyboard for Learning Objects            | <a href="http://www.alivetek.com/learningobjects/storyboard.pdf">http://www.alivetek.com/learningobjects/storyboard.pdf</a> |

# Resource Websites - 2

| <b>S/No.</b> | <b>Name</b>                                      | <b>Website address</b>  |
|--------------|--|---|
| 6            | Learning Object Analysis Sheet                   | <a href="http://www.alivetek.com/learningobjects/analysis.pdf">http://www.alivetek.com/learningobjects/analysis.pdf</a>                 |
| 7            | Oregon Network Education – Learning Objects      | <a href="http://www.oregonone.org/showcase.htm">http://www.oregonone.org/showcase.htm</a>   |
| 8            | Constructing Learning Objects                    | <a href="http://student.ccbcmd.edu/~gkaiser/LO_05.html">http://student.ccbcmd.edu/~gkaiser/LO_05.html</a>                               |
| 9            | Learning Objects                                 | <a href="http://www.learnactivity.com/lo/index.htm">http://www.learnactivity.com/lo/index.htm</a>                                       |
| 10           | Exploring Adaptive Learning Objects: A Prototype | <a href="http://pre2005.flexiblelearning.net.au/innovations/vic65.htm">http://pre2005.flexiblelearning.net.au/innovations/vic65.htm</a> |

# Quiz - 1

1. Developing e-learning courses using learning objects means that your courses will be of high quality. (True / false)
2. Who are some of the pioneers in learning objects? (Albert Einstein, Stephen Hawking, John Wayne, Wayne Hodgins, David Wiley)
3. Metadata means the data on the learning object are not real. (True / false)

# Quiz - 2

- The eXe software is the only editor which allows one to create learning objects. (True / false)
- The eXe software has been developed using the Python programming language. (True / false)
- The eXe software has the l18n & the l10n support. This means that, e.g. When it is used on a PC with a Thai-localised Linux system, it will display its menu in Thai. (True / false)
- You can only use Windows software to play back multimedia clips from any learning object. (True / false)
- You can use the eXe software to design and develop a learning object. (True / false)

# End of Presentation

Thank you!

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