Designing Learning Objects using Multimedia Resources

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UNESCO-Bangkok
Adapted from the 3-day Workshop on ICT Multimedia Integration for Teaching and Learning by UNESCO Resource Distribution Centres 2012

and

eSkwela Project’s Content Development Workshop by CICT, Philippines 2008
Santally, and Senteni (2). A Learning Object Approach to Personalized Web-based Instruction
http://www.eurodl.org/?article=166
Sample Learning Objects

- Video/ animation/ audio clip
- http://education.uoit.ca/lordec/ID_LORDEC/water_cycle/
Development Process
- Developers’ Perspective

Instructional Design → Storyboarding → Screen Design

Implement / Testing ← Multimedia Authoring ← Scriptwriting

Slide from: eSkwela Content Development Training, 2008
Instructional Design

What for?
The quality of your content begins with a good and grounded instructional design/plan that integrates the different elements of instruction into a cohesive whole.

- Diaz & DeClaro
Instructional design is more than just putting information in front of the learners.

The role of the instructional designer is to help the learners make sense of the new information they get.

Instructional Design

• has clear goals and gets learners focused on the right things
• provides context and perspective
• compresses the learning process and saves time
• engages learner with clear and meaningful content

Considerations

Value analysis

- Is there a “need”?  
- How is it going to be used?  
- For what purpose (contribution)?

Frame Conditions

- learning objectives and content  
- learners’ & teachers’ context  
- learning environment and conditions (access, support)  
- resources (funds, people, time)
LO Design

• Stick to the essential content, based on the topic and learning objective/s
  – Appropriateness of text, objects/media
  – Type of activity
  – Level of interactivity
  – Form of assessment and feedback
  – Tools to use
LO Design

• Content:
  – simplify, contextualize, localize
  – chunking and sequencing

• Interface / Object design and layout
  – layout of elements, background, colours, navigation, animation, etc.

• Reusability
Resource Selection

Traditional, non-electronic formats
- Text (textbooks, printouts, worksheets, manuals, pamphlets)
- Printed visuals (posters, photos, illustrations, comics, maps, graphs)
- Displayed visuals (chalkboards, bulletin boards)
- Real objects and models

Electronic/ICT media
- Projected visuals (overhead transparencies, presentation slides)
- Audio media (radio, podcasts, audiotapes, voice recordings)
- Video media (motion pictures)
- Multimedia and other computer-based media (programmes and applications)
- Internet media (online resources), including web tools

Feature Analysis Matrix
Resource Selection

Where will the content be sourced?

- Bought? Borrowed?
- Internet portals/sites?
- Teacher-generated? Learner-generated?
- Professional development team? In-house or outsourced?
- Shared across institutions?

Selection criteria

Extent of interactivity
The quality of your content begins with a good and grounded instructional design/plan that integrates the different elements of instruction into a cohesive whole.

While ICT has a positive impact, it is not the end-all and be-all of teaching and learning. Instruction is enhanced by ICT, but can still be effective even without it.

Avoid ICT Abuse!

- Diaz & DeClaro
To use or not to use ICT

Pair Activity: Lesson ICT Integration Plan

Possible Integration Points

- motivation and lesson intro
- presentation and information
- application
- drill and practice
- assessment
- synthesis and closing

Avoid ICT Abuse!

Development Process
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Slide from: eSkwela Content Development Training, 2008
# Decisions, decisions

<table>
<thead>
<tr>
<th>Item</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Text</strong></td>
<td>• Font color, <strong>size</strong>, <strong>type</strong>&lt;br&gt;• sentences or phrases&lt;br&gt;1. numbers or bullets&lt;br&gt;• Table or prose; table or graph (type)</td>
</tr>
<tr>
<td><strong>Visuals</strong></td>
<td>• Background&lt;br&gt;• Photo or illustrated&lt;br&gt;• static or moving&lt;br&gt;• combination and arrangement&lt;br&gt;• Others: timeline, diagrams</td>
</tr>
<tr>
<td><strong>Movement</strong></td>
<td>• Animation or video&lt;br&gt;• Sourced or developed&lt;br&gt;• Linear or interactive</td>
</tr>
</tbody>
</table>
## Decisions, decisions

<table>
<thead>
<tr>
<th>Item</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio</td>
<td>• Yes or no</td>
</tr>
<tr>
<td></td>
<td>• music or voice</td>
</tr>
<tr>
<td></td>
<td>• constant or highlights</td>
</tr>
<tr>
<td></td>
<td>• sound effects?</td>
</tr>
<tr>
<td>Links</td>
<td>• Yes or no</td>
</tr>
<tr>
<td>Interactivity</td>
<td>• Yes or no</td>
</tr>
<tr>
<td></td>
<td>• Navigation/menu design</td>
</tr>
<tr>
<td></td>
<td>• programming (e.g. games)</td>
</tr>
<tr>
<td>Others</td>
<td></td>
</tr>
</tbody>
</table>
PAIR ACTIVITY:
storyboarding

Avoid ICT Abuse!
RESOURCE SELECTION
Available Resources

- UNESCO’s CD collection – refer to list provided
- Phet (sample: Eating and Exercise)
- MIT OpenCourseware
- Hippocampus
- UP-DILC podcasts and learning objects
- MERLOT
- OpenLearn
- Khan Academy
- Physion
- UNU Open Course Ware
- Apple Learning Interchange
- Nobelprize.org (sample: Blood Typing)
- Edheads.org (sample: Simple Machines)
- Intel’s skool
- Youtube
- BrainPOP
- etc. etc. etc.
How We Became Green

http://www.youtube.com
MALARIA
Facts from the GOOD MOSQUITO!

Type your name in this box and click go!

I am the Female Anopheles Mosquito. I will show you how I cause and spread Malaria.

First, I bite a person with Malaria and I suck a little blood. Then I bite another person and I put some infected blood into his blood. Then I bite many more people and infect them with the Malaria Parasites. It takes 3 days for the infected person to fall ill with MALARIA.

You can also destroy breeding places of my wicked mosquito friends. They live in weedy grass areas around stagnant water. They can be controlled in your own area by spraying, cutting shrubs and grasses, cleaning gutters, and also keeping the environment clean and fresh.

Can you point to some places below that we can breed and hide?

http://www.eSchoolToday.com
http://www.hippocampus.org

(General Physics, Equations of Motion)
Capillaries are spread through body tissue so that substances such as dissolved food, oxygen, and waste substances can easily diffuse into and from the blood.

Intel’s skool site: [http://skool.net.ph](http://skool.net.ph) – [Sophomore, Biology, Breathing sim](http://skool.net.ph)
<table>
<thead>
<tr>
<th>Benefits</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Readily available pool of resources</td>
<td></td>
</tr>
<tr>
<td>• Affords flexibility</td>
<td>• Some: costly</td>
</tr>
<tr>
<td>• Can combine learning objects</td>
<td>• Must have sound evaluation mechanism</td>
</tr>
<tr>
<td></td>
<td>• Need to be customized/localized</td>
</tr>
<tr>
<td></td>
<td>• For most: editing and embedding functions</td>
</tr>
<tr>
<td></td>
<td>• IPR concerns</td>
</tr>
</tbody>
</table>
To use or not to use ICT

Activity: Revisit Lesson ICT Integration Plan

- Select media + ICT Integration Checklist *

Development Process
- Developers’ Perspective

Instructional Design ➔ Storyboarding ➔ Screen Design

Implement / Testing ➔ Multimedia Authoring ➔ Scriptwriting

Slide from: eSkwela Content Development Training, 2008
Teacher/ Learner-developed

- Word processor
- Spreadsheet
- Slide Presentation
- Video or audio recording
- Website
- Album
- Blog
- Wiki
- Forum
- eXe Learning
- Xerte
- CourseLab
- Adobe Authorware
- Etc.
# Teacher-developed

## Benefits
- Affords flexibility
- Customized to own set of learners
- Can combine learning objects

## Challenges
- Requires time and effort
- IPR concerns
Common Authoring Tools

• Slide Presentation software ([demo1](#), [demo2](#))
• Blogs and wikis (can embed files and widgets) ([demo](#))
• Learning Tools ([http://www.learningtools.arts.ubc.ca/](http://www.learningtools.arts.ubc.ca/))
  – Multimedia Learning Object Authoring Tool ([demo](#))
  – Timeline ([demo](#))
• eXe Learning ([http://exelearning.org/wiki](http://exelearning.org/wiki))
• Xerte ([http://www.nottingham.ac.uk/xerte/](http://www.nottingham.ac.uk/xerte/))
  – LO [demo](#)
## TIPS

<table>
<thead>
<tr>
<th>application</th>
<th>useful tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slide presentations</td>
<td>master slides, shapes, SmartArt, animation / motion path ((t1, t2)), hyperlinks, rehearse timings / record slide show</td>
</tr>
<tr>
<td></td>
<td>Site: <a href="http://www.articulate.com/rapid-elearning/">http://www.articulate.com/rapid-elearning/</a></td>
</tr>
<tr>
<td>Image editing</td>
<td>downloading, print screen, crop, brightness/contrast, resize, rotate/flip</td>
</tr>
<tr>
<td>Video production and editing</td>
<td>angles, lighting, sound, cut and fade</td>
</tr>
</tbody>
</table>

**Ask for permission, cite sources**
PAIR WORK:
resource exploration
authoring
(next workshop?)
Development Process
- Developers' Perspective

Enhance!

Instructional Design → Storyboarding → Screen Design

Implement / Testing → Multimedia Authoring → Scriptwriting

Slide from: eSkwela Content Development Training, 2008
THANK YOU!

mm.tan@unesco.org
http://www.unescobkk.org/education/ict/
Links used

• Kiwi demo: http://video.about.com/australianfood/Kiwis.htm
• DNA: http://www.brainpop.com/health/geneticsgrowthanddevelopment/dna/
• Water cycle: http://education.uoit.ca/lordec/ID_LORDEC/water_cycle/
• Fractions: http://phet.colorado.edu/en/simulation/fractions-intro
• Blood Typing: http://nobelprize.org/educational/medicine/landsteiner/landsteiner.html
Links used

• Speech Communication, Voice and Diction: Effective Speaking Voice:
  http://www.dilc.upd.edu.ph/media/lo/speechcom/LO_1version4.swf

• General Physics, Equations of Motion:
  http://www.hippocampus.org/Physics;jsessionid=9FAB9418BA17F0EA2B5798DE37A32B55

• Breathing simulation game:
  http://skoool.net.ph/files/SIMS/Biology/Humans%20As%20Organisms/breathing%20and%20respiration/index.html

• Moving Hand:
Links used

• Earthquake Scenario: http://articulate.www.resources.s3-website-us-east-1.amazonaws.com/community/blogdemo/remittance_branch/player.html

• Tutorials on Motion Paths in PPT:
  – http://www.screenr.com/yjd
  – http://www.screenr.com/noG

• Xerte demo: http://www.nottingham.ac.uk/xerte/media/loDemo/rloObject.htm