Designing an inspired curated learning experience using immersive and visual open access resources

AECT Convention 2019
Las Vegas, Nevada
Study conducted to examine Open Educational Resources

Identified ways to organize, categorize, and locate (curate)

Particularly interested in student-centered, constructivist-based learning experiences

Conceptual framework

Methodology to conduct the study

Findings

Conclusions
What is a curated learning experience?

Increasingly visual culture

21st century learning

Constructivist pedagogies
Student-centered cognitive, intra- and interpersonal skills

Inspired Content Curation
How could educators use multi-media and immersive resources to curate effective learning experiences?

To what extent may students learn cognitive, interpersonal, and intrapersonal skills using open-access educational resources from the Internet?
Theoretical Framework

Studio Thinking Framework (STF) (Hetland et al., 2013)

Learning Objects Metadata (LOM) Topology (Solomou, Pierrakeas, & Kameas, 2015)
• The foundation of the STF
  ▪ Naturalistic observation in studio classes with the goal to develop a work of art
  ▪ Discovery of a second covert or hidden curriculum arose allowing educators to teach critical cognitive and creative skills (Sheridan, 2011)

• Components
  ▪ Observe, Envision, Express, Engage/Persist, Stretch/Explore, and Reflect/Evaluate

• Aligns to visual education by employing virtual applications and solutions to stimulate new educational experiences
<table>
<thead>
<tr>
<th>Studio Thinking Framework Attributes</th>
<th>Synonyms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Observing</strong> is more than just looking, but rather a careful, analytical observation where details, contrasts, and similarities are important (Sheridan, 2011). Observation might be required as an aspect of the intrinsic context of VR educational applications.</td>
<td>Observe, look, details and contrasts, similarities, comparisons, looking, beholding, compare, visual context, inspection, inspect, examine, seeing, purposefully noticing, looking, gazing</td>
</tr>
<tr>
<td><strong>Envisioning</strong> is the capacity to conceptualize different paths to completion (Sheridan, 2011) and/or imagine what cannot be seen (OECD, 2013). Envisioning is closely related to abductive thinking where the key question is “what if” (Cross, 2006).</td>
<td>Envision, predict, visualize, generate mental image, think about (ahead), anticipate, conceptualizing different paths, forethought, afterthought, imagining, imagine, conceptualize, plan, questioning, constructing, imagination, visualizing, building, synthesize, premeditate, definite</td>
</tr>
<tr>
<td><strong>Expressing</strong> is developing a personal voice (OECD, 2013) speaking, acting, and creating, a response to the context or to the problem.</td>
<td>Expressing; speaking, acting, creating, deciding, vocalizing, personalizing a response to context, immerse, responding, interacting, apply, applying, applied</td>
</tr>
<tr>
<td><strong>Reflecting</strong> is thinking and judging the experience and the work developed during the experiences. An integral aspect of learning as defined by Dewey (1938), Kolb (1984), Langer (2006), and others. Reflecting may include questioning and explaining and/or evaluating (OECD, 2013).</td>
<td>Reflecting, analyzing, considering, contemplating, evaluating, assessing, questioning, explaining, phrasing, placing in personal context, judging</td>
</tr>
<tr>
<td><strong>Engage and Persist</strong> is engaging can have dimensions of emotion, intellect, and behavior (Parton, Newton, &amp; Newton, 2017) One behavior is developing “inner directedness” (OECD, 2013, p. 138). Engaging incorporates identifying meaning, developing a focus, and persisting in efforts directed towards that focus.</td>
<td>Engaging, collaborate, interacting, identify meaning, connecting, focus, persist, continue, involvement, engage, response (emotional, intellectual, physical) inner directiveness, persist, continue, participate, participating, becoming part of the context</td>
</tr>
<tr>
<td><strong>Stretch and Explore</strong> is reaching further, exploring, playing, (OECD, 2013).</td>
<td>Reaching, exploring, navigating, moving forward, examine, farther, and further, investigating, scrutinizing, playing, stretching, moving forward, pursue, fostering creative action</td>
</tr>
</tbody>
</table>
Resource Selection

Institute of Electrical and Electronics Engineers (IEEE) Learning Objects Metadata (LOM) Topology

Educational Metadata contains information about the resource’s learning type

<table>
<thead>
<tr>
<th>Learning resource type</th>
<th>Technology type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples – Exercise, Simulation, Questionnaire, Diagram, Narrative Text</td>
<td></td>
</tr>
</tbody>
</table>
Population and Sample

Population: educational resources considered open access and readily available for use by the public as found on the Internet

Purposive sampling: 46 contributed by the researchers

Sample criteria: subject matter, learning resource type, and technology type

Primary keywords - video-based technology, applications, multimedia, and educational levels
Curation Parameters

Preferred applications - visuals in the form of demonstrations, interactive videos, lectures, or narrative text

No purchase of any examined technologies, (freely available curated resources)

No claims in terms of any advertised distinction, subject matter, or age group appropriateness
## Data Collection via Spreadsheet

<table>
<thead>
<tr>
<th>contributor’s name</th>
<th>title of the application</th>
<th>retrieval date</th>
<th>URL of the open access technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>description of the technology</td>
<td>academic subject(s)</td>
<td>educational level(s)</td>
<td>LOM technology type</td>
</tr>
<tr>
<td>LOM technical data type</td>
<td>LOM learning resource type</td>
<td>presence of advertising</td>
<td>distinction</td>
</tr>
<tr>
<td>contributor’s initial comments following the assessment of the resource</td>
<td>six categories in the STF model</td>
<td>rating value for the STF model</td>
<td>additional comments after rater review</td>
</tr>
</tbody>
</table>
• Researchers completed the cross-functional matrix of their contributed resources

• STF Habits of Mind (Winner, Goldstein, & Vincent-Lancrin, 2013)
  ▪ Student-Centric, Instructor-Centric, or Not Present for each attribute
  ▪ Justification of their decision to label them as such within the corresponding cell in the spreadsheet
  ▪ The contributors added the Rating Value to the matrix later during the analysis phase

• Used Directed Content Analysis
  • Interpreted meaning from content of textual data
OER Curation-2

PDF view of Data Collection
Analysis

Microsoft Teams as the data and collaboration hub

Video sessions - reviewed each contributed resource; consensus on its fit for the curated collection

STF and LOM categorization as a means for identifying emerging themes and trends

• Student-centric attributes - green
• Teacher-centric attributes - yellow
• Attribute not present - red
• Ranking applied - Red attributes = 0, yellow = 1, and green = 2

Color legend for the STF model by assigning a specific color for each STF attribute
Collection of resources and their alignment with the STF model

Totaling each resource’s ranking provided a method to calculate an overall rating that represented the overall tendency for the technology to align to the STF model.

Resource designed to allow achievement of the attributes by students without guidance from the teacher.

Inclination as a student-centric or an instructor-centric resource.
14 of the reviewed resources had a high STF rating (12, 11, or 10) that suggests a student-centric application

7 had a medium STF rating, suggesting a mixture of student and instructor-centric STF attributes,

26 of those had a low STF rating, suggesting a more instructor-centric attributed resource
### Representation of STF/LOM Reviewed Resources

<table>
<thead>
<tr>
<th>Studio Arts Thinking Framework</th>
<th>Learning Objects Metadata Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student-centric, student construction of knowledge occurs independently</td>
<td>Visual, interaction, application-oriented objects</td>
</tr>
<tr>
<td>Mixed, with some student-centric activity and some instructor-centric activity</td>
<td>Mixture of interactive objects and consumption-based objects</td>
</tr>
<tr>
<td>Instructor-centric, requires instructor intervention for student construction of knowledge</td>
<td>Mostly consumption-based objects such as presentation, text, streaming</td>
</tr>
</tbody>
</table>
RQ1: How could educators use multi-media and immersive resources to curate effective learning experiences?

By evaluating multimedia and immersive resources using the STF and LOM frameworks, educators can identify and apply student-centered, constructivist-oriented learning experiences for their students thereby aiding in the learning process (Muir, Knezek, & Christensen, 2004)
RQ2: To what extent may cognitive, interpersonal, and intrapersonal skills be learned using open-access educational resources from the Internet?

Select multimedia and immersive resources supporting student-centered interaction

Higher propensity to develop into independent learners who use higher-order thinking skills to solve problems and navigate through knowledge sources (Kopzhassarova, Akbayeva, Eskazinova, Belgibayeva, & Tazhikeyeva, 2016)

OERs may provide

- synthesizing information experiences
- independent learning opportunities
- critical thinking and problem-solving skills
- offering more options for a versatile classroom learning experience (Wang & Wang, 2011).
Conclusion

• Because researchers apply their judgment about the efficacy and reusability of digital learning objects (DLOs), using a technique to evaluate technology via several measures aids in avoiding bias during the evaluation process of technology and could reduce the amount of time required to assess the technology (Basaran, 2016).

• Open access Internet resources are available for the student to interact and experience many of the STF attributes directly, and only require teacher involvement for reflection and assessment.

• Instructors inspired to select open educational resources which focus on independent learning and higher-ordering thinking provide students with outstanding opportunities to achieve learning objectives.