Learning Object Review Instrument (LORI)

User Manual

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Learning Object Review Instrument (LORI)
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What are learning objects?

Learning objects are online resources or interactive software used for learning. A single image, a page of text, an interactive simulation, or an entire course could all be examples of learning objects. When designed for reuse, learning objects can be shared and overall production costs can be reduced.

Why do we need a review instrument?

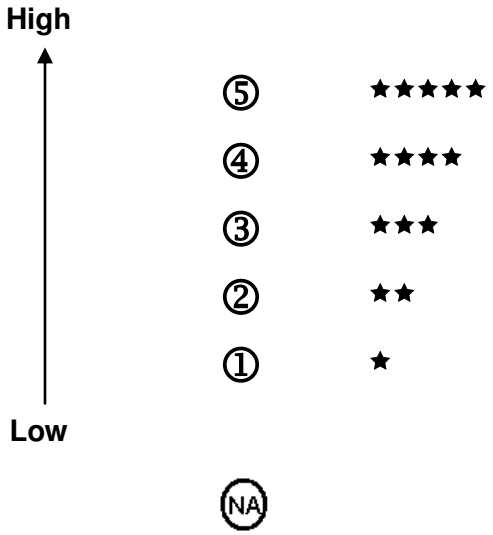
A search through a large web-based learning object repository can return thousands of objects. Reviews help users to select for quality and suitability. LORI facilitates comparison among objects by providing a common review format.

What is LORI?

In evaluating a learning object with LORI, reviewers can rate and comment with respect to eight items:

1. **Content Quality**: Accuracy, balanced presentation of ideas, appropriate level of detail, and reusability in varied contexts
2. **Learning Goal Alignment:** Alignment among learning goals, activities, assessments, and learner characteristics
3. **Feedback and Adaptation:** Adaptive content or feedback driven by differential learner input or learner modeling
4. **Motivation:** Ability to motivate and interest an identified population of learners
5. **Presentation Design:** Design of visual and auditory information for enhanced learning and efficient mental processing
6. **Interaction Usability:** Ease of navigation, predictability of the user interface, and quality of the interface help features
7. **Accessibility:** Design of controls and presentation formats to accommodate disabled and mobile learners
8. **Standards Compliance:** Adherence to international standards and operability on commonly used technical platforms

How are objects rated?



For each item, quality is evaluated on a five-level rating scale. If the item is judged not relevant to the learning object, or if the reviewer does not feel qualified to judge that criterion, then the reviewer may opt out of the item by selecting "not applicable" (NA).

How should LORI be used?

LORI may be used for individual or panel reviews. When used by a review panel, we recommend the convergent participation model for collaborative evaluation (Nesbit, Belfer, & Vargo, 2002). Results for each item should be presented as averaged ratings accompanied by reviewers' comments.

For further information on the theory and evidence supporting LORI, see Leacock and Nesbit (2007) and other published reports.

References

Leacock, T.L., & Nesbit, J.C. (2007). The quality of learning objects. *Educational Technology and Society, 10*(2), 44-59.

Nesbit, J. C., Belfer, K., & Vargo, J. (2002). A convergent participation model for evaluation of learning objects. *Canadian Journal of Learning and Technology, 28*(3), 105-120.

1. Content Quality

Accuracy, balanced presentation of ideas, appropriate level of detail, and reusability in varied contexts

⑤ ★★★★★

The content is free of error and presented without bias or omissions that could mislead learners. Claims are supported by evidence and reasoning. Presentations emphasize key points and significant ideas with an appropriate level of detail. Cultural and ethnic groups are represented in a balanced and sensitive manner. The content is applicable in a broad range of learning contexts and suitable for many types and levels of learners.

④ ★★★★

③ ★★★

Example
In an animation of the pumping action of the heart the content is accurate, but the omission of important and relevant information may mislead the learner. The animation correctly shows blood moving from the right atrium to the right ventricle and from the left atrium to the left ventricle. It fails to show blood moving from the right ventricle to the lungs and from the lungs to the left atrium. Some students may be misled to believe that the blood goes directly from the right ventricle to the left atrium without passing through the lungs. The animation is suitable for high school biology but assumes that learners already know some specialized terms such as artery and vein.

② ★★

① ★

One or more of the following characteristics renders the learning object unusable.

- The content is inaccurate.
- The content is presented with bias or significant omissions.
- The level of detail is not appropriate.
- The content is not suitable for re-use.
- Cultural or ethnic differences are not represented in a balanced manner.

2. Learning Goal Alignment

Alignment among learning goals, activities, assessments, and learner characteristics

⑤ ★★★★★

Learning goals are declared, either within content accessed by the learner or in available metadata. The learning goals are appropriate for the intended learners. The learning activities, content and assessments provided by the object align with the declared goals. The learning object is sufficient in and of itself to enable learners to achieve the learning goals.

④ ★★★★

③ ★★★

Example
In a learning object on heart function, seven out of ten questions on a post-test correspond to an animation showing the pumping action of the heart. The intended group of learners would be highly unlikely to infer the answer for three of the questions from information presented in the animation, even though the instructions imply that no additional resources are necessary.

② ★★

① ★

One of the following characteristics renders the learning object unusable.

- No learning goals are apparent.
- The assessments, learning activities and other content are substantially mismatched.
- The learning goals are not appropriate for the intended learners.

3. Feedback and Adaptation

Adaptive content or feedback driven by differential learner input or learner modeling

⑤ ★★★★★

The learning object has the ability (a) to tailor instructional messages or activities according to the specific needs or characteristics of the learner or (b) to simulate or construct phenomena under study in response to differential input from the learner. A model or profile of the learner is maintained that influences the behavior of the learning object.

④ ★★★★

③ ★★★

Example
A learning object on the pumping action of the heart presents feedback, but does not maintain a model of the learner. After each quiz question the learning object indicates whether the learner's response is right or wrong, and if wrong provides the right answer. After all the questions are completed it returns a total score. Although it does not use learner responses to adapt subsequent presentations, the learning object may still be useful.

② ★★

① ★

The learning object may support interactivity for navigation but:

- There is no feedback concerning the quality or correctness of a student's response.
- There is no maintenance of a response record or learner model that influences instructional presentations.
- There is no simulation or toolset that can vary its output according to learner input.

4. Motivation

Ability to motivate and interest an identified population of learners

⑤ ★★★★★

The learning object is highly motivating. Its content is relevant to the personal goals and interests of the intended learners. The object offers choice, true-to-life learning activities, interactivity, humor, drama, or game-like challenges. It provides realistic expectations and criteria for success. Feedback compares learner performance to the criteria, shows natural consequences of the performance, and explains how the performance can be improved. Learners are likely to report an increased interest in the topic after working with the learning object.

④ ★★★★

③ ★★★

Example
A multimedia animation on heart anatomy features a flatly delivered audio narration. The object includes a post-test of factual information, but there are no challenges embedded in the animation. The learner can not control or interact with the animation. Learners are likely to report neither increased nor decreased interest in the topic after working with the learning object. Despite its motivational shortcomings the object may still be helpful to learners.

② ★★

① ★

Because of one or more of the following characteristics the object is not useful.

- The content is not relevant to the goals of the intended learners.
- The activities are too easy or too difficult for the intended learners.
- Features that attract interest are distractions that interfere with learning.
- Learners have no opportunity to exercise choice.
- The feedback does not inform learners of their level of competence relative to learning goals.

5. Presentation Design

Design of visual and auditory information for enhanced learning and efficient mental processing

⑤ ★★★★★

The production values and information design enable the user to learn efficiently. The presentations minimize visual search. Text is legible. Graphs and charts are labeled and free of clutter. Animated or video recorded events are described by audio narration. Meaningful headings signal the content of text passages. Writing is clear, concise and free of errors. Color, music, and decorative features are aesthetically pleasing and do not interfere with learning goals.

④ ★★★★

③ ★★★

Example
The pumping action of the heart is clearly described in text beside the animation, but it is difficult for learners to connect specific events in the animation with the parts of the text that describe them. Despite this flaw, the learning object may still be useful.

② ★★

① ★

The information design, aesthetics or production values are poor. The learning object may be unusable for reasons such as the following.

- The selected font or font size noticeably reduces reading speed.
- Needed information is illegible.
- Video or audio quality is insufficient for learning.
- The choice of colors, images or sounds interferes with the learning goals.
- The information design produces unnecessary cognitive processing.
- There are not enough text headings or they are not meaningful to learners.

6. Interaction Usability

Ease of navigation, predictability of the user interface, and quality of the interface help features

⑤ ★★★★★

The user interface design implicitly informs learners how to interact with the object, or there are clear instructions guiding use. Navigation through the object is easy, intuitive and free from excessive delay. The behavior of the user interface is consistent and predictable.

④ ★★★★

③ ★★★

Example

The interface for an animation of heart function is usable but can be improved by better design or instructions. The animation has labels that only appear when the user rolls the cursor over a labeled part of the heart. It is difficult to judge which parts are labeled without rolling the cursor over each part of the animation. Despite this flaw, the learning object may still be useful.

② ★★

① ★

The user interface of the learning object is characterized by one or more of the following.

- Navigational features such as buttons and hyperlinks are absent.
- Several hyperlinks or buttons are not functioning.
- Navigation delays are excessive.
- The functioning of the interface is not intuitive, and instructions are not provided.
- The functioning of the interface is inconsistent and unpredictable.

7. Accessibility

Design of controls and presentation formats to accommodate disabled and mobile learners

⑤ ★★★★★

The learning object provides a high degree of accommodation for learners with sensory and motor disabilities, and can be accessed through assistive and highly portable devices. It follows the IMS Guidelines for Accessible Learning Applications and conforms to W3C Web Content Accessibility Guidelines at level 'AAA'.

④ ★★★★

③ ★★★

Example
A learning object consisting of an HTML page with an embedded animation provides captions for auditory narration and a supplementary auditory description of the visual action. However, the object fails to specify the expansion of several acronyms and uses the HTML FONT element instead of the CSS 'font' property to control font size. It conforms to W3C Web Content Accessibility Guidelines at level 'A'.

② ★★

① ★

The learning object is unusable for many disabled learners for reasons such as the following.

- No captioning is provided for video.
- No transcriptions are provided for audio files.
- Alt tags are not provided for images.
- Graphics require color perception to be understood.

8. Standards Compliance

Adherence to international standards and operability on commonly used technical platforms

⑤ ★★★★★

The learning object adheres to all relevant international standards and specifications. These include the IEEE Learning Object Metadata standards, and technical guidelines developed by IMS, IEEE, SCORM and W3C (accessibility guidelines not included). Sufficient standard metadata is provided in tagged code within the object and presented in a page available to users.

④ ★★★★

③ ★★★

Example

A web-based learning object is registered in a repository with six of the most commonly used metadata fields in the IEEE LOM standard. The object passes SCORM metadata tests and W3C HTML validation, but fails the SCORM compliance tests relating to interoperability and content packaging.

② ★★

① ★

The learning object is not compliant with any of the relevant international standards and specifications:

- Sufficient metadata is not provided or is not formatted according to international learning object metadata standards.
- The learning object fails all compliance tests for W3C and SCORM guidelines (accessibility guidelines not included).

Scoring Sheet

Learning Object _____ Reviewer _____

General Remarks	

Low → **High**

1. Content Quality: Accuracy, balanced presentation of ideas, appropriate level of detail, and reusability in varied contexts	1	2	3	4	5		NA
2. Learning Goal Alignment: Alignment among learning goals, activities, assessments, and learner characteristics	1	2	3	4	5		NA
3. Feedback and Adaptation: Adaptive content or feedback driven by differential learner input or learner modeling	1	2	3	4	5		NA
4. Motivation: Ability to motivate and interest an identified population of learners	1	2	3	4	5		NA
5. Presentation Design: Design of visual and auditory information for enhanced learning and efficient mental processing	1	2	3	4	5		NA
6. Interaction Usability: Ease of navigation, predictability of the user interface, and quality of the interface help features	1	2	3	4	5		NA
7. Accessibility: Design of controls and presentation formats to accommodate disabled and mobile learners	1	2	3	4	5		NA
8. Standards Compliance: Adherence to international standards and operability on commonly used technical platforms	1	2	3	4	5		NA