Principles of Effective Learning Objects

Guidelines for Development and Use of Learning Objects for the SCORE Initiative of the Southern Regional Education Board

The purpose of the Principles of Effective Learning Objects is to define learning objects in the context of the SCORE (Sharable Content Objects Repository for Education) initiative, identify expectations for SCORE participants’ use of learning objects and provide evaluation criteria of effective learning objects. Each school, college, university or state education agency that seeks to provide digital resources to SCORE will be asked to ensure that they comply with these principles.

Learning Objects

Learning objects are digital content that can be used and reused for teaching and learning. They are modular, flexible, portable, transferable ( interoperable) and accessible. Learning objects may be used to teach a particular skill or concept, or to provide stimulating thinking and learning experiences for the teacher or student. A learning object, as defined by SCORE, includes digital content, practice activities and assessment tools that are linked to one or more educational objectives and classified in a plan that allows information about the content to be stored and retrieved (metadata schema).

For teaching and learning purposes, effective learning objects use documents, interactivity, graphics, simulations, video, sound and other media tools that go beyond static textbook presentations to engage students in real-world content.

Learning Objects Repository

A learning object repository (LOR) provides faculty, teachers, curriculum developers and students with easy access to a large storehouse of content/learning objects that can be shared and used within and across schools, colleges and universities, and state agencies. The goal of the SCORE project is to provide an accessible online location to store, search and locate accurate and high-quality digital resources.

Use of Principles

- to inform decision-makers, developers and users regarding learning objects;
- to guide the development of digital resources to ensure that characteristics of good teaching and learning materials are addressed;
Central Assumptions

- The digital resource is provided by or through a school, college or university that is accredited by a recognized accrediting body or by a state education agency that is a participating partner in SCORE.
- SCORE participation and submission of learning objects will be coordinated by the appropriate state education agency or agencies.
- In the absence of state education agency participation, a school, college or university may represent itself or participate within a consortium.
- These principles are generally applicable to all forms of digital content, including print, video and audio.
- Each state must establish procedures to ensure compliance with these principles and share them with the Southern Regional Education Board.
- To have access to the repository, teachers, faculty and others with academic responsibilities must be located in a SREB state and be affiliated with a participating partner that has signed the SCORE Memorandum of Agreement.
- Participating SREB states accept that the inclusion of a learning object in the repository verifies assurance that the learning object meets the Principles of Effective Learning Objects.

Criteria for Inclusion in SCORE

Learning objects will be accepted only from schools, colleges and universities, or states that are partners in the SCORE initiative. Partnership is defined as those schools, colleges, universities and state education agencies that have signed and submitted the SCORE Memorandum of Agreement.

SCORE reserves the right to remove any learning object from the repository if it contains errors or raises certain issues (e.g., questionable content, timeliness of the information or intellectual property concerns).

Learning object criteria for inclusion in SCORE are based on the “Learning Object Review Instrument (LORI) User Manual.” This manual has been created to effectively review learning

objects. Prior to submission to SCORE, each proposed learning object must be reviewed for quality and approved at the school, college and university or state level. The criteria from LORI, adapted here with permission of the author, follow:

- **Content Quality.** The content is free of error and presented without bias or omissions that could mislead learners. Claims are supported by evidence or logical argument. Presentations emphasize key points and significant ideas with an appropriate level of detail. Differences among cultural and ethnic groups are represented in a balanced and sensitive manner.

- **Learning Goal Alignment.** 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 teachers and learners to achieve the teaching and learning goals.

- **Feedback and Adaptation.** 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. Information about the learner is used to determine how the learning object is developed and shared.

- **Motivation.** The learning object is motivating. Its content is relevant to the interests of the intended learners. The object offers choice, true-to-life learning activities, multimedia, interactivity, humor, drama or game-like challenges. It provides realistic expectations and criteria for success. Feedback compares learner performance to the criteria, illustrates the results 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.

- **Presentation Design.** The structure and interactive 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.

- **Interaction Usability.** 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.

- **Accessibility.** The learning object provides a high degree of accommodation for learners with sensory and/or motor disabilities and can be accessed through assistive devices. It follows the “IMS Guidelines for Accessible Learning Applications” and conforms to “W3C Web Content Accessibility Guidelines.”
■ **Reusability.** The learning object is a stand-alone resource that can be readily transferred to different courses, learning designs and contexts without modification. It operates effectively with a broad range of learners by adapting content or providing additional content such as glossaries and summaries of prerequisite concepts.

■ **Standards Compliance.** 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 are provided in tagged code within the object and presented in a page available to users. The complete “Learning Object Review Instrument (LORI) User Manual” also will serve as a learning object evaluation and assessment instrument based on these criteria.

### Facilitating the Use of SCORE Learning Objects

SCORE will assign meta tags to learning objects that are placed into the repository. **Meta tags** are HTML tags that identify the contents of the learning object. Information commonly found in meta tags includes copyright information, searchable keywords, subjects and formatting descriptions.

**Metadata** is the information about the content that enables it to be stored and retrieved from a database. It is the information about the learning object itself — not the information in the learning object. In other words, metadata is data about the data. Repository metadata — or Learning Object Metadata (LOM) — provides descriptions of format and attributes of the learning object. It is essential for retrieval, management, maintaining rights and ownership, and interoperability. LOM includes information about the title, author, version number, creation date, technical requirements, and educational context and intent. Both meta tags and metadata are essential to control workflow and dissemination of information from the repository.

The “Users Guide for Entering Meta Data into LOM Fields,” which crosswalks LOM standards between Dublin Core and GEM (Gateway to Educational Materials), has been created especially for this K-20 SCORE initiative. To facilitate the development and use of learning objects at the K-12 level, it has been essential to include GEM subjects (keywords or controlled vocabulary). This guide will serve as a users’ guide for developers and the meta tag specialists.

### Elaboration of the Principles

These principles serve as guidelines for schools, colleges and universities, and state agencies to understand learning objects and the requirements for participation in the SCORE initiative. Additional documents will provide more detailed information to train teachers and faculty as they develop and use learning objects.

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