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**Learning Objects: Draft Quality Criteria and Quality Assurance Approach  
for LearnAlberta.ca and  
the Society of Advancement of Excellence in Education**

submitted by  
**FuturEd Consulting Education Futurists**

## 1. Introduction

Alberta Education is engaged in the development and compilation of Learning Objects (LO) as instructional resources for teachers and students. This paper, intended to assist in evaluating the quality and impact of those LOs, is prepared at the request of Louise Bentley, Director of Online Development, Learn Alberta. It is prepared by Kathryn Chang Barker, PhD of FuturEd Consulting Education Futurists Inc., with the assistance of Susan Phillips, through a project managed by Helen Raham of the Society for Advancement of Excellence in Education.

In this project, and within the limitations of budget and time, we undertook to:

1. establish study parameters, terminology and key stakeholders;
2. conduct a targeted review and synthesis of the research on quality criteria for pedagogically sound Learning Objects using LearnAlberta.ca learning objects where appropriate;
3. develop draft quality criteria / standards for assessing LO and a set of examples for applying the standards; and
4. generate preliminary design for Phase Two research.

As per the project parameters, the paper presents **draft quality standards for pedagogically-sound LO** that can be used first by LearnAlberta.ca, and potentially by others, **together with a draft assessment tool** / process. They are “draft” standards in that we recommend that they be field-tested and approved by teachers and others using LO in Alberta. Both standards and the quality assessment tool are based on an environmental scan of quality criteria and quality assessment tools found in the online literature, synthesized and set out in latter part of this paper.

In terms of process, we first amalgamated all the quality criteria we found into one long list, ordered them according to systems theory, developed an assessment tools and piloted it with 30 LO provided to us by LearnAlberta.ca. This caused us to refine and reduce our criteria somewhat and slightly reframe our assessment process, and allowed us to provide both theoretical and actual examples of evidence of compliance with the quality standards. In summation, this paper

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sets out our proposed quality standards and assessment process for research and approval by LearnAlberta.ca.

The term Learning Object is defined in a variety of ways, and **most definitions imply a form of quality criteria or preferred value**. It is noteworthy that LO come in a wide range of form and format: mini case studies, simulations, descriptions, demonstrations, models, worked examples, cases and stories, papers and articles, decision aids, games, drill-and-practice exercises, review exercises, tests and learning assessments. And it is noteworthy that LO can be used for a wide range of pedagogical purposes, for example, to introduce new topics and skills, reinforce existing skills, extend learning by providing new curricular material, illustrate concepts less easily explained through traditional methods, support new types of learning, provide enrichment activities. Therefore, while specific **quality criteria may apply to specific types and applications** of LO, this project will focus on over-arching or comprehensive quality standards that can apply to most or all LO.

As well, quality criteria may vary according to **perspective and context**. Much of the work currently done around LO quality is in the context of post-secondary or higher education. While LearnAlberta.ca is focused at the K-12 level, and while some LO quality criteria have been developed for that level, this project aims for **general applicability** in all settings. This work is being performed for a Department of the Alberta Government; and LearnAlberta.ca states clearly that it represents the needs of learners, teachers and parents in that explicit order of priority. Hence the relevant **perspective** is one of creator / purchaser / provider of LO for learners, teachers and parents in Alberta and beyond, for use in both an online and conventional learning environments. Theoretically, LO quality is defined, then, by them for and for them in that order.

The term **quality** is used here to express values associated with effectiveness and efficiency. All those who create and use Learning Objects want them to be:

- Effective: achieving what they set out to achieve, i.e., learning (increased or changed skills and knowledge); and
- Efficient: making the best use of the input resources, learner and teacher time.

It is assumed that LearnAlberta.ca, additionally, seeks to achieve positive impact and Return on Investment in the expenditures associated with Learning Objects. Quality may be **measured** as “acceptable or unacceptable” or on a continuum from “extremely poor to excellent.” Excellence and/or acceptability may be (1) subjective, e.g., from the perspective of the purchaser/user or producer, or (2) objective, i.e., assessed against recognized, industry-based standards of excellence. It appears that, while some quality standards or standards of excellence have been posited by the education community, at various levels and from varied perspectives, they may not have applicability in all environments. Elements of quality may be (1) mandatory or (2) preferred and optional. Finally, there is continuous change in the understanding and use of digital learning resources, eLearning products and services, and related products, services and terms; hence, the need to do more than describe the present. FuturEd asserts that Quality Assurance must be **objective, professional, credible, recognized, iterative and continuous**; and this requires a team approach with both consumer and producer perspective and with expertise in evaluation, teaching and learning, and technology.

Following the presentation of our draft quality standards for Learning Objects, we step back to set out how we are using the terminology associated with Learning Objects, quality and quality assessment. This has been rather complex because, for example, there are Learning Objects and there are learning objects. The first meet with most or all of the elements within currently accepted definitions of LO, the second may be labeled “Learning Objects” but are missing key elements of LO. This impacts on not only how LO are assessed for quality but which learning objects are assessed for quality. This is but a sample of the complexities we examine.

## 2. Draft Quality Standards for Learning Objects with Assessment Process

Fundamentally, there are two quality questions when looking at a specific Learning Objects

- First, is it a Learning Object?
- Second, does it meet quality standards for effectiveness and efficiency? What is the evidence?

### 2.1. Is it a Learning Object?

Current understanding of a Learning Object, based on the composite literature in the field, is that it is a complete, standalone unit, i.e., it:

1. focuses on learning and the learner(s); it is instructional.
2. aims at clearly stated learning objectives.
3. targets to learners at stated levels of age/grade, content knowledge and process skills.
4. requires interaction on the part of the learner.
5. has content validity, having been created by qualified content experts.
6. has instructional validity, meeting standards for good instructional design.
7. is interoperable / sharable, meeting international ICT and technical standards.
8. is reusable in different learning contexts.
9. can be repurposed and used in a variety of learning environments.
10. contains all information and resources needed by learners to complete the unit.
11. has both a teaching component and a learning assessment component.
12. is very efficient; one can learn a lot in a short period of time.

These may be viewed as either selection criteria and/or the basic quality indicators. These comprise the first round of questions for quality assessment purposes.

### 2.2. Draft Quality Standards for Learning Objects

A quality LO will meet most or all of the following standards for effectiveness and efficiency in learning outcomes, learning processes and practices, teaching resources, and quality assurance.

#### 1. Quality Standards for Learning Outcomes

- 1.1. The learner acquires **content knowledge, with associated skills**, that is:
  - 1.1.1. consistent with established curriculum standards, learning objectives and/or completion requirements for the age, context, content and skill levels of the intended learner
  - 1.1.2. relevant to academic, citizenship and/or life-work preparation within the mandate of the teaching environment
  - 1.1.3. in addition to what s/he already knows, i.e., an increase and/or improvement in skills and knowledge
- 1.2. The learner acquires, if necessary, **the skills** required for:
  - 1.2.1. successfully navigating and completing the LO
  - 1.2.2. learning in a manner consistent with a stated pedagogical philosophy
  - 1.2.3. linking new knowledge with existing knowledge and future contexts
  - 1.2.4. demonstrating achievement of the learning objectives

## 2. Quality Standards for Learning Processes And Practices:

Given the age, skill, and knowledge level of the learner, s/he is successfully engaged:

### 2.1. **by appearance and functionality** that is:

- 2.1.1.appealing
- 2.1.2.easily navigated
- 2.1.3.reliable
- 2.1.4.well-organized
- 2.1.5.inclusive (able to accommodate diversity of learners, learning needs, learning context and modes of learning)
- 2.1.6.complemented by multimedia, rather than distracted by them
- 2.1.7.inclusive of “live” links to relevant and previewed sites subject to copyright law and learner security
- 2.1.8.secure to ensure the integrity and validity of information shared in the learning activities
- 2.1.9.free from errors

### 2.2. **with content** that is:

- 2.2.1.directly related to and appropriate to stated learning outcomes
- 2.2.2.credible, with sources identified
- 2.2.3.free of cultural, racial, class, age and gender bias
- 2.2.4.updated consistently and routinely (if applicable)
- 2.2.5.culturally sensitive
- 2.2.6.conscious of safe practices and safety protocols
- 2.2.7.copyright authorized

### 2.3. **through teaching processes** that include:

- 2.3.1.assessment of prior learning and building on prior knowledge and skills
- 2.3.2.language appropriate to the target audience
- 2.3.3.active learning and the active creation of knowledge
- 2.3.4.motivating features and individualization
- 2.3.5.prompt, constructive feedback and a sense of achievement
- 2.3.6.reasonable timeframes and achievable expectations (if applicable)
- 2.3.7.a degree of control over time, place and pace of instruction
- 2.3.8.access to immediate and appropriate skill or content assistance
- 2.3.9.an opportunity to communicate and collaborate (if applicable)

### 2.4. through **assessment of learning** that is:

- 2.4.1.authentic
- 2.4.2.valid
- 2.4.3.frequent and timely
- 2.4.4.for a purpose known to the learner
- 2.4.5.in forms appropriate to the subject area
- 2.4.6.competency-based
- 2.4.7.reliable

### 3. Quality Standards for Teaching Resources

- 3.1. **Clearly stated information for the intended users** includes:
  - 3.1.1.a description of intended learner age, knowledge and skill levels
  - 3.1.2.stated learning objectives and competence expectations
  - 3.1.3.very clear instructions
  - 3.1.4.assessment and completion requirements
  - 3.1.5.information about the creators
  - 3.1.6.access to additional learning resources (if applicable)
  - 3.1.7.information about the past use of the LO
  - 3.1.8.a framework for knowledge scaffolding
  - 3.1.9.a method of demonstrating achievement (portfolio development)
  - 3.1.10. supplemental parent notes
- 3.2. **The intended learning outcomes** are:
  - 3.2.1.relevant, i.e., useful and appropriate for the intended learners
  - 3.2.2.observable / demonstrable
  - 3.2.3.measurable
  - 3.2.4.achievable and realistic
  - 3.2.5.appropriate to the rigor and breadth of the learning objective
  - 3.2.6.consistent with the mandate of the provider
- 3.3. **The content** is:
  - 3.3.1.prepared by qualified content experts (author identified) working with qualified design experts (identified)
  - 3.3.2.readily available
  - 3.3.3.adaptable to learner needs and abilities (customizable)
  - 3.3.4.reusable and able to be repurposed
  - 3.3.5.complete, including both instruction and assessment of learning
  - 3.3.6.compliant with current technology and ICT standards
- 3.4. Learning **technologies are appropriate** to:
  - 3.4.1.the field of study or subject matter content and skills
  - 3.4.2.the relevant characteristics and circumstances of the learner
  - 3.4.3.cost and benefit for the learner
  - 3.4.4.provide multiple representations of content
  - 3.4.5.enable concept mapping within the learning environment
  - 3.4.6.make available real-world situations and simulations
  - 3.4.7.provide assistance, guidance and communications to the learner
  - 3.4.8.increase proficiency at accessing, evaluating and communicating information
  - 3.4.9.improve learner abilities to solve complex problems
  - 3.4.10. nurture artistic expression (if applicable)
  - 3.4.11. accommodate and promote individualization
  - 3.4.12. meet standards for learners with disabilities

#### 4. Standards for Quality Assurance and Improvement

- 4.1. The LO is **created/owned by an identified body** that warrants:
  - 4.1.1.compliance with design requirements
  - 4.1.2.compliance with delivery standards
  - 4.1.3.compliance with content validity standards
  
- 4.2. The LO is **owned/managed by an identified body** which maintains:
  - 4.2.1.relevance within changing learning environments
  - 4.2.2.cost-effectiveness and accessibility
  - 4.2.3.usage records and user feedback
  - 4.2.4.research and continuous improvement
  - 4.2.5.long-term accessibility and LO stability
  
- 4.3. The LO is **used by identified person(s)** who are able to report:
  - 4.3.1.learning achievement and outcomes
  - 4.3.2.learner satisfaction
  - 4.3.3.evidence of effectiveness vis-à-vis learning outcome

This list of general, user-based LO quality criteria is (1) a combination of all the values and propositions set out in the accumulated from this environmental scan with (2) redundancies removed and (3) concepts clarified and simplified, (4) order by priority for learners (the basics), then teachers (additional criteria). We welcome study and discussion of these proposed learning-focused quality standards.

### 1.3 Draft Quality Assessment Process

The draft quality standards form content of our associated draft quality assessment process and tool which is based on the following assumptions:

1. There are common characteristics that define Learning Objects and they cannot be presumed.
2. Some quality standards are critical, some are not.
3. Some are more important than others.
4. Not all criteria will apply in all cases; some may be rated “not applicable.”
5. Most important are learning outcomes. In the LO system, the order of priority is (1) learning outcomes, (2) teaching and learning processes, (3) teaching inputs and (4) feedback mechanisms.
6. There may be degrees of compliance, along a rating scale from excellence to absence.
7. Some quality indicators are highly or moderately subjective; others are very objective. Different parties may need to rate different aspects of an LO.
8. Some evidence of compliance with quality criteria is positive, and some may be negative, i.e., the absence of the requirement.
9. The purpose of Quality Assessment is for improvement of LO rather than judgement of the LO.

The draft LO Quality Assessment Tool is a standalone document, and the following is the beginning for illustration purposes. Our draft quality assessment process is a rating system (from excellent to unacceptable) with supporting evidence. It is intended to be completed in stages.

#### **Step One: Is it a learning object? Yes/no?**

A Learning Object is a complete, standalone unit.

| Is there evidence that the LO is a complete, standalone unit?                               | Yes | No |
|---|-----|----|
| 1. It is focused on learning and the learner(s); it is instructional.                       |     |    |
| 2. It is aimed at clearly stated learning objectives.                                       |     |    |
| 3. It targets learners at stated levels of age/grade, content knowledge and process skills. |     |    |
| 4. It requires interaction on the part of the learner.                                      |     |    |
| 5. It has content validity, having been created by qualified content experts.               |     |    |
| 6. It has instructional validity, meeting standards for good instructional design.          |     |    |
| 7. It is interoperable / sharable, meeting international ICT and technical standards.       |     |    |
| 8. It is reusable in different learning contexts.   |     |    |
| 9. It can be repurposed and used in a variety of learning environments.                     |     |    |
| 10. It contains all information and resources needed by learners to complete the unit.      |     |    |
| 11. It has both a teaching component and a learning assessment component.                   |     |    |
| 12. It is very efficient; one can learn a lot in a short period of time.                    |     |    |

**Step Two: Is it a quality learning object? What is the evidence?**

Using the following rating scale:

- 4 = complete / excellent
- 3 = almost complete / acceptable
- 2 = adequate but needs improvement
- 1 = inadequate
- 0 = completely missing

Rate each category on the basis of EVIDENCE, i.e., actual examples and references that can be attached to the rating sheet. The pivotal questions are:

- How would a learner or consumer know that....?
- **Based on that evidence**, how does the category rate?

**1. Quality Standards for Learning Outcomes**

| 1.1 The learner acquires <b>content knowledge, with associated skills</b> , that is:  | Rating | Sample evidence  |
|---|--------|--|
| 1.1.1 consistent with established curriculum standards, learning objectives and/or completion requirements for the age, context, content and skill levels of the intended learner |        | clear statement of relationship to a provincial curriculum in the context of age/grade and content area(s); hyperlink to course outlines |
| 1.1.2 relevant to academic, citizenship and/or life-work preparation within the mandate of the teaching environment   |        | clear statement of learning outcomes and their relevance to the learner  |
| 1.1.3 in addition to what s/he already knows, i.e., an increase and/or improvement in skills and knowledge  |        | pre-test and post-test   |
| 1.2 The learner acquires, if necessary, <b>the skills</b> required for:   | Rating | Sample evidence  |
| 1.2.1 successfully navigating and completing the LO   |        | explicit directions for navigation   |
| 1.2.2 learning in a manner consistent with a stated pedagogical philosophy  |        | stated reason for the underlying teaching approach   |
| 1.2.3 linking new knowledge with existing knowledge and future contexts   |        | prior learning assessment; pre-test  |
| 1.2.4 demonstrating achievement of the learning objectives  |        | directions for completing assessment tasks   |
| Score for Learning Outcomes must be (e.g.,) between 21 and 28   |        |  |

This rating system has a chicken-and-egg dilemma. Much of the required evidence would come from an evaluation of the LO by a teacher or teachers. Without it, there is an absence of evidence which does not necessarily mean that the standard is not met. Pragmatically speaking:

- The last set of quality criteria, for accountability and continuous improvement, need to be met first by the designers, owners and users – and evidence of compliance should be a signature, with the associated legal implications, attached to all LO before they are put into use.
- The criteria that teachers assess supplies the evidence for the quality criteria for learning outcomes and processes. An additional component would be learner assessment of appearance and functionality, together with elements of assessment.



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In our Learning Object Quality Assessment Guide, we provide both theoretical and actual samples of evidence based on a theoretical assessment of approximately 30 learning objects available from LearnAlberta.ca. We've created, as well, a list of additional exemplary practices drawn from those LO we've examined. The entire background paper will be available at a later date.

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