

# Learning Object Evaluation

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## INTRODUCTION

One of the biggest challenges to knowledge management systems (KMS) is the great importance that many organizations have given to obtaining information rather than to its retrieval. As a result, users face the problem of having large quantities of information and many difficulties retrieving the information they really need. Through an e-learning repository we can find a myriad of content from academic research and contributions, but how to guarantee and manage their content's quality?

As consequence of Semantic Web, information management for e-learning systems is changing. No doubt, an important contribution from computer science to knowledge management and e-learning systems is the learning object (LO) concept. This element has characteristics of independent units, which are able to be reused for other educational situations and platforms.

Each one of the LOs has metadata (data about data) for their description and administration. In this way it is possible to know what kind of LO we are trying. According to this, knowledge management for e-learning based on reusable units of learning means the possibility to access specific content according to the learners' needs. This stage is possible due to standards, which were established as an attempt to avoid interoperability platform problems, but they don't guarantee the LOs content quality.

A great quantity of criteria exists about digital learning sources evaluation. Nevertheless, for LO content evaluation there are just a few proposals that are interesting in order to consider their characteristics about how to evaluate LOs to structure quality courses. So it is necessary for a knowledge management system to frequently re-feed the content for an e-learning repository

together with the teacher's expert knowledge and the student's learning experience.

On this basis our proposal consists of a system to manage quality LOs. To achieve this, the second section suggests a knowledge management system, which considers different kinds of LOs evaluation. The section also explains general issues about our LOs system. It is an introduction about what and how to manage. The next section presents a context LOs evaluation. It emphasizes the things that are needed to consider for a possible LOs reuse. Next, we suggest an input evaluation where it is necessary to value LOs characteristics taking into account pedagogical, usability and metadata issues. We also explain our LOs instrument to value LOs according to quality criteria. To ensure LOs quality evaluation and reliability we suggest combining instrument application together with a collaborative strategy, which is explained in this section.

We then present a "process LOs evaluation" where learners can make comments about LOs through a platform. Finally, the article suggests LOs evaluation as a product. This means the possibility of users to make a LOs evaluation after their use. To achieve this, students have to answer questions about their content quality and their self-satisfaction. All information obtained from the evaluation may be given to experts and teachers to advance contents design and to guarantee a continuous quality contents re-feed.

## KNOWLEDGE MANAGEMENT FOR LEARNING OBJECTS

The first thing to take into account for knowledge management is to identify what kind of information to manage. According to this we define a LO "as a unit

with a learning objective, together with digital and independent capabilities, accessible through metadata to be reused in different contexts and platforms” (Morales et al., 2006b).

There are new organization models, which need to be encouraged (Cunha et al., 2006). One of the most important is the virtual organization model (Putnik et al., 2006). According to this there are new ways for working and organizational dimensions (Cortés et al., 2006). However, knowledge is the principal factor that supports innovation and change, and has a strategic value for organizations. For this reason it is fundamental to manage it accurately (Kuang-Tsae et al., 2000).

There are a lot of KMS possibilities to support the teaching and learning process through e-learning systems, such as delivering and evaluating courses, and so forth (Rosenberg, 2001; Avgeriou, 2003). However, according to LOs and standards capabilities, it is necessary to consider how to manage quality LOs, taking into account their characteristics.

About LOs evaluation, Williams suggests taking into account the fusion of two proposals: Stufflebeam’s (1971) CIPP evaluation proposal (context, input, process and product) and Patton’s utilization-focused approach (1997).

The CIPP approach assumes that anything that might be evaluated could be usefully evaluated at various stages in this development. His proposal organizes the interests, questions, values, and participation of potential evaluation users and stakeholders around four types of evaluation, which parallel four stages of development: context, input, process and product. Patton (1997) argues that the key to evaluation utility is to identify people who are disposed to learning from evaluation. He outlines several procedures for identifying these users and then working with them to clarify what they want to know and what they are likely to do with information gathered by an evaluation. Taking into account both proposals, Williams suggests to evaluate LOs in the four stages CIPP evaluation proposal identifying different kind of people to evaluate them and different ways to do it.

In order to promote quality LOs management we suggest evaluating LOs according to the same kind of evaluations: context, input, process and product together with the suggestions about who, evaluate, when and what instruments and strategies to use. The idea is to obtain a re-feed process to guarantee a continuous LOs quality contents from a pedagogical point of view.

## Context Evaluation

In order to promote quality LOs it is necessary to consider the possible context of use. Due to their reusable capability LOs can be interchanged for different educational situations.

According to Stufflebeam (1971), context evaluation focuses on evaluating needs, priorities, shared vision of participants, expectations of people and organizations, and how their efforts fit into broader time and location contexts. According to this we think LOs context evaluation needs to consider the following issues:

- **Curricula:** LOs must be suitable for the new educational context curricula plans
- **Student characteristics:** LOs need to be suitable for students’ previous knowledge
- **Learning objectives:** LOs need to have all the necessary elements in order to achieve learning objectives
- **Technical requirement:** The new context in which LOs can be reused need to have suitable LOs technical requirement, for example, suitable computers and Internet connection and so forth.

According to reusable LOs capabilities, we consider to evaluate external LOs (imported, buy, etc.) or create them. The possibility to import or create LOs enables one to enrich a knowledge management system. However, the first thing to consider is what kind of LOs we are trying. On this basis we think it is necessary to normalize them because in this way it is possible to guarantee a suitable degree of granularity. To achieve this, we suggest the next steps (Morales et al., 2006b).

1. **Classify LOs components:** LOs may be classified for different purpose by the metadata “9. Classification.” According to this, users can define some characteristic for them adding a vocabulary to the metadata schema. To achieve a better LOs management we suggest the following LOs classification.

- **Classify LOs objectives according to their cognitive domain:** In this way it is easier to know about their compatibility for suitable new educational situations. Then, we suggest Bloom’s cognitive domain taxonomy



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