# Chapter 7
# Coding Digital Learning Objects for Adoption for Online Teaching and Learning


## ABSTRACT

*A general observation is that 20% of reusable learning objects (RLOs) are adopted at least for a time, but a majority of LOs are created (probably for local purposes), placed online, and not used at all by others. This work explores how digital learning objects (DLOs) may be coded for desirable features for local adoption and usage. This then explores how DLOs are actually designed with varying weights applied to the desirable DLO features of users. Finally, there is a gaps analysis between what inheritors of DLOs are looking for and what design and development teams and instructional designers actually create. If digital learning objects are to be more widely shared, having instructional designers and developers close the gap in LO work may be an important step. A main challenge involves a fundamental imbalance in incentives in the LO economy as currently practiced.*


## INTRODUCTION

*The reuse of learning resources is the raison d'être of Learning Object technologies. -- Xavier Ochoa and Erik Duval in "Measuring Learning Object Reuse" (2008)*

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Digital goods have long been conceptualized as products that can be non-rivalrously used and re-used without much (any?) additional cost once the initial production cost was covered (Benkler, 2006). Digital goods are not consumed or destroyed by use, and the same contents may be used simultaneously. This concept extends to (digital) learning objects (DLOs), defined as "any digital resource that can be reused to support learning" and "educational materials designed and created in small chunks for the purpose of maximizing the number of learning situations in which the resource can be utilized" (Wiley, 2002, p. 1). Another defined a learning object as "*a digital file (image, movie, etc.) intended to be used for pedagogical purposes, which includes, either internally or via association, suggestions on the appropriate context within which to utilize the object"* (Sosteric & Hesemeier, 2002, n.p.). Yet another definition is a freeform one: "Instructional content becomes a learning object when it is *used* as a learning object" (Parrish, 2004, p. 52). In this latter case, how something is used defines its label. In practice, there are various "objects" that fit the definition:

*Examples of smaller reusable digital resources include images or photos, live data feeds (like stock tickers), live or prerecorded video or audio snippets, small bits of text, animations, and smaller web-delivered applications, like a Java calculator. Examples of larger reusable digital resources include entire web pages that combine text, images and other media or applications to deliver complete experiences, such as a complete instructional event. (Wiley, 2000, p. 34)*

While many learning objects (LOs) have been created, their quality has varied, and there has not yet been "firm evidence that RLOs provide educational benefit" (Sinclair, Joy, Yau, & Hagan, 2013, p. 177). A core requirement of modern learning objects is that they have to be reusable, based on factors such as interoperability, "flexibility in terms of pedagogic situations," and "modifiability to suit a particular teacher's or student's needs" (McCormick, Scrimshaw, Li, & Clifford, 2004, pp. 137 - 138, as cited by Kurilovas, Serikoviene, & Vuorikari, 2014, p. 526).

In the early dream of a learning object economy, professional teams (including content experts) would develop shareable digital learning objects (DLOs) that would be distributed online. An early proponent, Advanced Distributed Learning originated the Sharable Content Object Reference Model