Learning Objects in Four Instructional Architectures

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Cisco Systems' latest white paper on their Reusable Learning Objects strategy**,** clearly summarizes the benefits and issues around adapting learning objects to different instructional strategies. Specifically Cisco describes how to use learning objects in what I have called Four Architectures of Learning. You can learn more about the four architectures from my book: *Building Expertise*, *2nd Edition* or my article Four Architectures that you can download from our website. Cisco recommends that you start your "Design and mine phase off by identifying your primary learning approach" (Reusable Learning Object Strategy: Designing and Developing Learning Objects for Multiple Learning Approaches., p. 18).

Is one architecture better than another, and how do you decide which one to use? First, there are few 'pure' architectures. Almost all instructional designs incorporate two or more features from different architectures. For example, a guided discovery architecture will often include some receptive instruction and an exploratory course with high learner control may incorporate very directive elements such as short lessons followed by practice with feedback. However, you should make a conscious decision to let one architecture serve as the guiding framework for your course. To make the best decision regarding your primary learning approach, you need to consider 1. the experience of your learners and 2. the type of skills that the job requires. In the next few paragraphs, I summarize some guidelines to help you decide which architecture is most appropriate for your training situation.

When to Use Directive Architectures

Novice learners who need to acquire procedural skills are best served by a directive architecture. Directive

This online directive course teaches procedures with short lessons providing demonstrations followed by guided practice and feedback.

architectures emphasize short lessons that teach a limited skill by means of a demonstration and frequent practice accompanied by corrective feedback. The small chunks and the frequent practice keep cognitive load low. Since novices are most subject to cognitive overload, the directive architecture fits their needs.

When to Use Guided Discovery

More experienced learners however, who need to acquire skills that involve problem solving, are better served by a guided discovery architecture. In the latest edition of *Building Expertise,* I include a new chapter on how to design Problem-Centered Learning (PCL), which is a

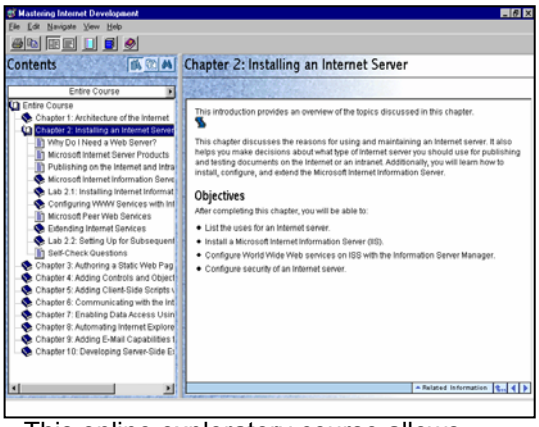
form of guided discovery. In this chapter, I show several examples of PCL

This online guided discovery course allows learners to research a bank loan by exploring resources shown in the interface. Credit: Moody's Financial Services.

lessons and summarize the research on these types of lessons. Another good resource available on our website is Dave Merrill's recent article on his design model that he calls: *Pebble in the Pond*. A guided discovery lesson is centered around a case study involving a real-world task assignment that will require the target knowledge and skills to solve it. By starting a lesson with a case problem, the learner immediately encounters a 'moment of need' for the new knowledge and skills to solve the case. Because the case makes the learning highly relevant, most students enjoy learning from this architecture. However, starting with a real-world case might overwhelm a novice who would benefit more from a directive lesson as described above.

When to Get Exploratory

The exploratory architecture gives learners a high level of learner control. The Internet is a good metaphor where a learner is free to search and access what she needs. Exploratory architectures are effective for learners with some background in the course



This online exploratory course allows the learner freedom to access any instructional resource in any sequence they wish.

content and also learners with good learning management (also known as metacognitive) skills. However, novice learners generally won't know enough to know what they should select in an exploratory architecture.

The Risk of Receptive Architectures

What about receptive architectures? The receptive architecture poses some risks to learning in that structured practice opportunities are not included and in some cases such as lectures or video presentations, learners may not be able to control the rate of delivery. However, we all know that we can learn from a well-written book or from a well-organized lecture that includes effective visuals. However, I believe that receptive architectures such as page-turners in e-learning and lectures in classroom training are overused because they are easier to develop and deliver than the other architectures.

All four architectures however include content and that content can be reused in different architectures tailored

for different learners and for different instructional goals. For example, a real world case and the knowledge and skills needed to solve it can be independently tagged. The directive architecture would assemble those objects by starting with the knowledge objects (concepts or processes) with practice, adding the skill (procedure or principles) objects with practice, and ending with the case object. In contrast, the guided discovery architecture would start with the case object and supporting objects and provide learners with access to the knowledge and skills objects as they solve the case.

I believe that the exploding growth in the knowledge and skills required for effective performance in organizations outstrips traditional instructional design methods and resources to design and deliver effective training from scratch. While learning objects won't solve all problems and won't be implemented the same way in all organizations, there is no question that they are one path to streamlined and timely delivery of training and performance support.

For More Information

Cisco Systems. (2003). Reusable Learning Object Strategy: Designing and Developing Learning Objects for Multiple Learning Approaches. Available at www.cisco.com.

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