Learnability

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INTRODUCTION

Learnability is not exactly a new concept in information technology, nor in cognitive science. Learnability has been a key concept of usability (Folmer & Bosch, 2004) in the area of software system design, where it relates to such issues as consistency, familiarity and simplicity. It has also been a traditional concept in linguistics in relation to the ease of language learning (McCarthy, 2001) and in machine learning (Valiant, 2000).

The concept of learnability has recently been repurposed within the field of instructional technology (Duchastel, 2003), building on the concept of usability in Web site design (Nielsen, 2000), and it is that learnability that is considered here. Learnability in this new sense concerns how learnable some piece of instruction is. It deals with a facet of educational resources.

The basic question is this: What makes the content of an instructional site (or of some resource) learnable? Take any one of the many thousands of online learning courses currently available on the Web and ask yourself: Does this course seem difficult to learn (assuming you have the proper background for it)? What would improve it? What would the ideal online course in this area look like? These questions all underlie the learnability of the course.

What then is learnability? Could we say that it is defined by successful learning? That would mean that students who study the course thoroughly learn its content, as evidenced on a good test for instance. Or could we say that a main criterion is ease of learning? Meaning that students experience good intellectual flow and enjoy the course.

Both of these factors, success in learning and enjoyment of learning, can be considered criteria of learnability. Are there others? That is the issue of learnability.

The skeptic will immediately insist that learning takes place within a learner and that it is that locus that mainly determines learnability – that is, the curiosity, intelligence, motivation and persistence of the learner. These are what make or break learning. The teaching materials can only go so far, the learner has to make a go of it, make it succeed.

While there is some truth to that view, it is certainly not the full picture, nor the most useful picture. Consider traditional usability in Web sites or software products. There too, the user plays a role. If he is dull-witted, or perhaps too pressed for time (showing a lack of interest), or just resistant to learning the basics (jumping in and thrashing around – as often happens), there is little scope for success no matter how usable the site or program may have been made. But we do not give up on usability in Web site creation because of that.

The point is designers do not blame the user for incompetence, for ill-will or for the lack of success of their site or program. They maximize usability, realizing well enough that usability is certainly contextual. The same applies, as it should, to learnability: success in learning can be maximized through the product, over and beyond context issues, or in spite of them.

The product view of instruction is an important one, one that is emphasized here. An alternate view, much more widespread, is a process one: learning is a process, and so is instruction in the sense of manipulating the situation so as to facilitate learning. This is why the immense amount of research on learning and education over the past century has not dealt explicitly with learnability.

The process view is not to be denigrated, but a product view can incorporate processes and has definite design advantages. Learnability is best considered in this light.

LEADING QUESTIONS

The challenge before us is to identify those features of excellent learning materials. What makes something learnable? Very learnable, most learnable?

But first, why is it so difficult to pinpoint these features? What are the deep issues underlying learnability? There are three of them we need to consider. They are learning, design, and curriculum. Each is difficult in its own right and learnability involves considering them jointly – hence the magnitude of the challenge.

The first deep question is what is learning? The field of learning has long been a core issue in psychology and numerous theories of learning have been put forth in answer (Kearsley, 2004). The issue is far from settled, as practitioners such as educators well know. There is acknowledgment of different kinds of learning, with different factors at play, but no large agreement on these or on the overall picture.

The second deep question concerns teaching. How do you design for learning? There are general principles that have evolved over time, codified broadly in what is known as the field of instructional design (Reigeluth, 1999). But
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