

# Chapter XXVI

## Action Research with Internet Database Tools

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### LEARNING OBJECTIVES

1. Distinguish between “learning objects,” “learning resources,” “instructional devices,” and “instructional artifacts.”
2. Distinguish between student vs. teacher-made artifacts.
3. Summarize in your own words the current market on jobs in artifacts in your area.
4. Classify primary from secondary artifacts, social artifacts and idea artifacts.
5. Describe the identifying characteristics of the multipurpose frame as an instructional artifact.
6. List four factors that contribute to the mental restructuring of knowledge.

### ABSTRACT

This chapter will discuss and present examples of Internet database tools, typical instructional methods used with the tools, and implications for Internet-supported action research as a progressively deeper examination of teaching and learning.

### ACTION RESEARCH AND THE SCORM

Perhaps nowhere is the Internet database tool more critical today than in upgrading military readiness. Since 1997, the United States Department of

Defense has supported the Advanced Distributed Learning Initiative to maintain military readiness where armed forces and their support activities need to be highly adaptive to address threats effectively and rapidly. The SCORM (Sharable Content Object Reference Model) was developed to achieve this goal. The SCORM is a set of implementation guidelines and requirements for bridging the gap between needs of training developers and providers and developers of Internet database tools. The technical specifications in the SCORM enables the possibility of re-usable learning objects, resources, instructional devices and artifacts. For reasons of clarifying action research with these tools, it is important to describe some of the characteristics of these different Internet database tools, namely: “learning objects,” “learning resources,” “instructional devices,” and “instructional artifacts.”

## **INSTRUCTIONAL ARTIFACTS**

Most educational and psychological researchers prefer to describe “artifact” without actually defining it, explaining its origin in the world, nor even who designed it. For example there are two profound articles by Deborah Nelson about what children know and want to know about “artifacts” (Nelson et al., 2004) and the observations that two-year-olds name artifacts by their functions (Nelson et al., 2000). Both never actually define “artifacts,” explaining their origin, how they were obtained, or who designed them. Similarly, for Waltz (2004) “artifact” is described as another way of objectifying educational technology and subjectifying the children that use it. No mention of what it an “artifact” is, no explanation of where it came from, how it can be obtained, nor even who designed it. Haryu and Imai used the term in a recent experiment.

*In Study 1, three 12-year-old children were tested to determine whether they had interpreted a new*

*noun associated with a familiar artifact to be a material name, or a new label for the object.* (Haryu & Imai, 2002, p. 1378)

Although these and many other researchers describe “artifact” without actually defining it, they all ascribe importance to the term “artifact.” Its widespread use begs certain questions that arise for us in conducting Web-based educational research with or about artifacts. What is an “artifact”? Is an “artifact” something concrete or can an “artifact” be imagined, or felt, or an idea? Can we ascribe qualitative criteria to an “artifact,” such as “well-preserved,” or “rare,” or “unique”? Is it something developed by a student, by the teacher, or generated from system activity?

## **STUDENT- AND TEACHER-MADE ARTIFACTS**

### **Teacher/Designer-Made Artifacts**

Some educational researchers classify “artifacts” as products developed by a teacher, instructional designer or software developer. Bannan-Ritland (2003) says that “artifacts” are things designed by the teacher or researcher “...to engineer and construct effective learning environments (using software and other artifacts) that allow teachers and learners to make these propositions actionable” (p. 21). Bannan-Ritland’s conceptualization of “artifacts” as teacher- or designer-made devices is consistent with “resource-based teaching,” the second phase of online teaching (Mann, 2000, 1999a, 1999b).

### **Student-Made Artifacts**

Other educational writers describe “artifacts” as products of research, developed by students during a qualitative case study, again without saying what the products are exactly (Oliver & Hannafin, 2001). This coincides with the American Heritage

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