Chapter 18

Experimental Research and the Internet

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Learning Objectives

1. Summarize in your own words the debates associated with conducting experimental comparisons on the Web.
2. Describe the identifying characteristics of Web-based experimental research.
3. Summarize in your own words how the information processing modes are integrated to define a model of human cognitive architecture.
4. Describe the identifying characteristics in Anderson’s revision of Bloom’s taxonomy of educational objectives.
5. Describe the identifying characteristics in Mayer’s cognitive theory of multimedia learning.
6. Summarize in your own words how the mind works during multimedia learning.
7. Speculate on at least one application of cognitive load theory for research on Web-based learning in your area of interest.
8. Compare the comments in Clark’s position on media effects with the findings of Bernard’s recent meta-analysis of distance education technology.
9. Replicate the “Student Checklist” from memory.
10. Describe the independent variables in Hogg’s study, and how did she control for age differences.

11. In Chuo’s study, summarize in your own words the effect of the Webquest writing instruction on EFL learners’ writing performance, writing apprehension, and perception.


13. Describe the treatment conditions in Part One of Tang’s study.


15. Explain why “user interaction” was important in this research.

16. State the dependent variables in Carter’s thesis research.

17. Describe the characteristics of the treatment and control groups.

18. Demonstrate the procedure for conducting Web-based experimental research.

19. Define “experimental research.”

20. Summarize in your own words “the human side of Web-based learning.”

21. Describe the prospect of conducting research on the adoption of an innovation.

22. Describe the models and theories of conducting research on online student discussions.

23. Identify which of the three types of experimental design characterizes this Web-based educational research, pre-experimental, quasi-experimental or true experimental design. Explain why.

24. Identify the dependent variable(s) and independent variable(s) in the study.

25. Describe the purpose of the study. What is being compared in the study?

26. Describe the participants in the study.

27. Facilitation strategies and the acquisition of higher order thinking skills in Web-based learning communities: A study of theory development.

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**Abstract**

Throughout the 1950s and 1960s experimental research played a major role in audio-visual research and development (Reiser, 1987, 2002). Experiments were published on the effects of slide-tape presentations, educational television, programmed learning, teaching machines, and audio-tutorial instruction. During the 1970s and 1980s, the experimental focus shifted from audio-visual research to instructional technology research on whole programs, such as PLATO, CAL, microworlds and Internet Hunts. It seems that today we have returned to the experimental investigations of audio-visual communication. Over the years, experimental evidence of audio-visual communication has become the basis of current models and theories, including: Baddaley’s (1992) model of working memory, Paivio’s (1986) dual coding theory, Penney’s (1989)