Minimalism (J. Carroll)

Overview:

The Minimalist theory of J.M. Carroll is a framework for the design of instruction, especially training materials for computer users. The theory suggests that (1) all learning tasks should be meaningful and self-contained activities, (2) learners should be given realistic projects as quickly as possible, (3) instruction should permit self-directed reasoning and improvising by increasing the number of active learning activities, (4) training materials and activities should provide for error recognition and recovery and, (5) there should be a close linkage between the training and actual system.

Minimalist theory emphasizes the necessity to build upon the learner's experience (c.f., Knowles , Rogers). Carroll (1990) states: "Adult learners are not blank slates; they don't have funnels in their heads; they have little patience for being treated as "don't knows"... New users are always learning computer methods in the context of specific preexisting goals and expectations." (p. 11) Carroll also identifies the roots of minimalism in the constructivism of Bruner and Piaget.

The critical idea of minimalist theory is to minimize the extent to which instructional materials obstruct learning and focus the design on activities that support learner-directed activity and accomplishment. Carroll feels that training developed on the basis of other instructional theories (e.g., Gagne, Merrill) is too passive and fails to exploit the prior knowledge of the learner or use errors as learning opportunities.

Scope/Application:

Minimalist theory is based upon studies of people learning to use a diverse range of computer applications including word processing, databases, and programming. It has been extensively applied to the design of computer documentation (e.g., Nowaczyk & James, 1993, van der Meij & Carroll, 1995). Carroll (1998) includes a survey of applications as well as analysis of the framework in practice and theory.

Example:

Carroll (1990, chapter 5) describes an example of a guided exploration approach to learning how to use a word processor. The training materials involved a set of 25 cards to replace a 94 page manual. Each card corresponded to a meaningful task, was self-contained and included error recognition/recovery information for that task. Furthermore, the information provided on the cards was not complete, step-by-step specifications but only the key ideas or hints about what to

do. In an experiment that compared the use of the cards versus the manual, users learned the task in about half the time with the cards, supporting the effectiveness of the minimalist design.

Principles:

1. Allow learners to start immediately on meaningful tasks.
2. Minimize the amount of reading and other passive forms of training by allowing users to fill in the gaps themselves
3. Include error recognition and recovery activities in the instruction
4. Make all learning activities self-contained and independent of sequence.

References:

Carroll, J.M. (1990). The Nurnberg Funnel. Cambridge, MA: MIT Press.

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Nowaczyk, R. & James, E. (1993). Applying minimal manual principles for documentation of graphical user interfaces. Journal of Technical Writing and Communication, 23(4), 379-388.

van der Meij, H. & Carroll, J.M. (1995). Principles and heuristics for designing minimalist instruction. Technical Communications, 42(2), 243-261.

John Carroll's home page at Virginia Tech: http://www.cs.vt.edu/info/people/vitae/Carroll.html

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