

Educational Software Evaluation

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INTRODUCTION

From 1980 to 2000, there were many articles written on the subject of software review and evaluation. Upon initial investigation of educational software methodologies, it appears that there are as many evaluation methodologies as there are authors presenting them. Several articles (methodology analyses) have been written describing these evaluation techniques (Bryson & Cullen, 1984; Eraut, 1989; Holznagel, 1983; Jones et al., 1999; McDougall & Squires, 1995; Reiser & Kegelmann, 1994, 1996; Russell & Blake, 1988). Each of these articles describes various methodologies and presents the most current evaluation methodology available, but fails to provide a complete history of the types of evaluation methodologies. These analyses of evaluation methodologies focus on the individual methodology, but refrain from putting individual methodologies into a greater systematic context.

As new individual methodologies arise over the years, many of these fit into the same “type” categories of evaluation methodology that were previously developed. The author is proposing a type analysis of educational-software evaluation methodologies. This classification will show that while many evaluation methodologies progress, new methodologies arise that are similar to previously developed theories. This method allows for needed flexibility due to the nonlinear nature of academic research in this field. This article proceeds with three types of educational-software evaluation methodologies.

1. Teacher centered
2. User centered
3. Design centered

TEACHER-CENTERED EVALUATION METHODOLOGIES

Guidebooks

In 1983, the University of Hawaii conducted a study of educational-software production (Truett, 1984). Over half of the software producers did evaluate their products as a part of the production process, and the major factor in design was teacher evaluation. Since teachers were also the primary consumers, as well as the source of some opinion about educational-software products, information gathered regarding the opinions of teachers was collected and published. These consumer guidebooks first appeared around 1982. Some of these first guides for educational software were *Educational Software Directory: A Subject Guide to Microcomputer Software*, *The Educational Software Selector*, and *The Yellow Book: A Parent's Guide to Teacher-Tested Educational Software*. A detailed listing of these published directories of software evaluation is provided by Crovello (1984) in “Evaluation of Educational Software.”

The guidebooks were characteristically simple, providing companies' names and addresses, along with lists of programs divided up by subject area. The target audience was K-12 teachers. These guidebooks provided “objective” information regarding available software, but few provided the means to evaluate the software on one's own. This lack of individual methods to evaluate software and the predominance of guidebooks as the method for software review created a commercial relationship between software-reviewing bodies and the software companies. Software companies were eager to have their products “teacher tested.” While directories like the *Yellow Book*, *Softwhere*, and *Facts*

on File provided educators with listings of educational software, the need for self-evaluation became evident. This need developed into self-evaluation guidelines for teachers.

Guidelines

Most educators at this time had little experience with using computers in education, but those who did allowed others to participate by publishing their “method” for evaluation (Weintraub & Thompson, 1985).

These first teacher-tip evaluations came in the form of guidelines and checklists. Evaluation guidelines were generally short published articles describing the teacher’s attitudes toward software evaluation. The guidelines developed a set of principles for use when evaluating educational software, but shied away from providing a definitive quantitative method. In many of these articles, just as with the *Yellow Book*, technological considerations were placed at the forefront.

While these early evaluation guides are independent of each other, they all share similar characteristics. Evaluation guidelines propose a “new” methodology that is directed at teachers. They seek to provide a practical software-selection method for teachers who often have little technical training. But for each of these guidelines, there is a new set of standards. Weintraub and Thompson (1985) propose a three-pronged evaluation theory that focuses on instructional design, format, and documentation. Another shared characteristic of these early evaluation guidelines is the common focus on technology. While the educational aspects and opportunities of the relatively new educational-software programs are a factor, the technological considerations appear to be overwhelming the discussion about software evaluation.

Checklists

The individuality of the teacher guidelines prompted other educators to formulate a clearer, more concise approach to evaluation. These first steps toward a methodology came in the form of the evaluation checklist or evaluation form (Caffarella, 1987; Chang & Osguthorpe, 1987; Fetter, 1984; Gorth & Nassif, 1984; Perreault, 1985; Reynolds, 1985; Richards &

Fukuzawa, 1989). These forms quickly became the standard in educational-software evaluation due to the lack of an evaluation theory. The checklists were often long and extremely technical, even more so than the guidelines, and they focused heavily on the technical aspects of the software. Many were simply fact-finding checklists to identify the technical aspects of the program including methods of data entry, technical specifications, hardware requirements, methods of scoring, and so forth. Few had options for positively or negatively evaluating aspects of the program (Gorth & Nassif). One of the few new aspects in evaluation checklists is the inclusion of educational concerns as main subject headings. Caffarella places the educational goals of the program at the top of the evaluation form, but still dedicates a great deal of the evaluation form to technical considerations. This is similar to Dudley-Marling and Owston’s (1987) proposal of a four-point criterion-based evaluation system, in contrast to the prevailing checklist methods. Their method highlights the following four aspects of the software program.

1. Pedagogical content
2. Instructional presentation
3. Documentation
4. Technical adequacy

While paying lip service to pedagogy and placing educational concerns at or near the top of their checklists, these checklists were still dominated by technical considerations.

USER-CENTERED METHODS

There appears to be a natural tendency for educational-software evaluation methods to move from teacher- to student-based evaluation. The trend in teacher-based evaluation models from the technical to the educational aspects in evaluation led to the natural focus on the subject of education: the student (Reigeluth, 1987). Caldwell (1992, p. 38) cites guidelines stating, “Allowing your students to use the program is the ultimate evaluation. Observe their responses to the program.”

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