

Library Skills Literacy Table

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One intent of national-level reports such as the Secretary's Commission on Secondary Skills and America 2000 is to foster approaches to the education of our children that go beyond factual information to conceptual learning; beyond isolated rules to principles for application; and beyond textbook problems with known, predictable solutions to real problems with solutions that are unique to students and their interpretations of their resources and environments. Discussions of higher-order learning are not new. Bloom's taxonomy includes analysis and synthesis skills. Bruner describes "problem finding," and Gagné distinguishes problem-solving and cognitive instruction. The paper closes with an appraisal of research trends and current practice in the teaching of information literacy.

Schools used to have libraries with librarians. The general roles of the librarian were to manage a collection of print materials, promote reading and a love of good literature, and teach children how to find things in the library. Some librarians also kept track of filmstrips, slides, 16-mm films, audio tapes, records, and the various accompanying projectors and players (although larger schools frequently had a person called an audiovisual specialist who was responsible for maintaining, scheduling, and circulating non-print materials and equipment). Teaching children to find information was limited to the card catalog for the print collection, a guide for periodicals, and standard print reference sources such as dictionaries, atlases, almanacs, thesauri, encyclopedias, and various books of people, quotations, and places. Teaching children to find information in the library was circumscribed by the forms of information available, primarily requiring use of card catalogs, indexes, guide words, and alphabetical and numerical sequence to about the third character.

Then rapid change began. In approximately a five-year period leading out of the 1970s and into the 1980s, we saw video disc and half inch videocassette appear; audio cassette began to replace records; school libraries, school librarians, and audiovisual specialists were replaced by media

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When referring to cognitive objectivism and instructional design, I am using narrowly defined terms that denote the assumptions, processes, and procedures described below. This technical use of the terms is not to be confused with a much more general use of instructional design to refer to anything that one might do in preparation for teaching a lesson. Although instructional design has recently been labeled *cognitive objectivism*, many instructional designers reject the label objectivist because they do not subscribe to all of the assumptions implied by the term (Merrill 1991). That said, I will go ahead and use the term here because it does denote the traditional instructional design view that the world has an “objective,” real structure that does exist regardless of how different individuals may internalize and interpret what they experience.

In a practical sense this means that knowledge and skills can be organized and categorized and that relationships can be identified within and among categories (Bloom, Englehart, Furst, Hill, and Krathwohl 1956; Gagné 1985; Dick and Carey 1996). Thus state departments of education can produce curriculum guides and scope and sequence documents; media specialists can list the skills that they plan to teach in the information curriculum for the year; and teaching sequences can be identified based on procedural, logical, and subordinate/superordinate relationships among skills.

Based on these assumptions, instructional designers work as follows:

1. Specify learning outcomes, usually in the form of goals and objectives
2. Analyze the skills required to reach the learning outcomes, identifying sequential relationships among the skills
3. Analyze the intended learners with regard to
 - o their mastery of skills that should have been learned prior to beginning the new instruction
 - o their predisposition for learning, including: attitudes, abilities, achievement levels, physiological or psychological limitations, family support structures, etc.
4. Specify instructional strategies (instructional events, materials, methods, and activities) based on learning outcomes, skills requirements, and what is known about the learners
5. Select and/or prepare instructional materials
6. Implement the instruction at

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Fig. Status of Instruction in School Media Centers

My estimation of where we are in practice is based on the literature in our field, several years of LM_NET, and observations of media center programs in Florida, Ohio, and Arizona. With the constraints imposed on media specialists through staffing patterns, scheduling, and problems in breaking out of old perceptions of roles and responsibilities, it is difficult to bring together the cooperative arrangement among teachers, students, and media specialists that is required to implement a good information skills program. To that, add constraints imposed by state and district curriculum requirements, testing, and accountability standards, and for the media specialist to move toward a full-blown, constructivist, information literacy program becomes a

Several topical areas for discussion are suggested by the current status of practice and research/advocacy in our field. First, there may be some simple problems regarding the use of the term *constructivism* that could be resolved by efforts within our professional organizations to develop thoughtful, operational definitions with accompanying scenarios of how constructivist theory applies in our teaching of information literacy. Are our professional organizations really advocating a fully constructivist conception of teaching/learning, or is it more of a combination objectivist/constructivist approach? Discussion of this definitional question could raise a dilemma regarding theory and practice. Restating the constructivist position to accommodate the current combination of objectivist/constructivist methodologies would probably create some dissonance among theorists in our field; however, pushing the agenda toward a fully constructivist conception of teaching information literacy would probably create dissonance among practitioners in our field by driving the official position of the profession even further away from current practice. A second topical area for discussion concerns appropriate research

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1. **TaDi** (determining the purpose and need for information)
 - 1.1 Define the problem.
 - 1.2 Define the information requirements of the problem.
2. **InfoSug** (examining alternative approaches to acquiring the appropriate information to meet defined needs)
 - 2.1 Determine the range of possible resources.
 - 2.2 Evaluate the different possible resources to determine priorities.
3. **Locate** (locating information sources and information within sources)

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The following scenario provides a window into a third-grade constructivist (in my mind) classroom. The teacher began the lesson with a Plexiglas box filled with jellybeans, which she had placed in layers separated by paper, suggesting that the children think of ways to figure out how many beans were in the box. The children were given unifix cubes to use as tools and were asked to record their solutions. After working in collaborative groups for awhile, they convened a “math congress” to discuss their ideas. A few children began by explaining that they were going to count the top layer, see how many layers there were, and then add them up. Another child suggested that the same strategy could be used to count the top layer if they counted the rows and looked at how many rows there were. Agreeing with this strategy, they began to count the beans in each row but then became confused whether some beans should be counted once or twice—once as a unit in the row, once to represent the number of the row. (This is a common confusion as children struggle to construct multiplication—entering with a unitary assimilatory structure they must grapple with a grouping structure in order to make sense of the task.) The teacher was noncommittal; instead she simply facilitated discussion. After much debate, they resolved that issue explaining and proving their reasoning to the rest of the group, which concurred. For the top layer they produced an answer of 6 rows with 8 beans in each. The teacher recorded 6×8 explaining that mathematicians write the expression with an X to show groups and to differentiate it from addition and subtraction. Some children argued that from where they were sitting they saw 8 rows of 6. They counted to make sure it was still 48 and discussion ensued over whether the total answer would always be the same when the digits were reversed (the commutative property). After proving to each other that it would, by building several rectangles and recognizing the reciprocal nature of the columns and rows, they began to count the layers and over the next several sessions proposed short-cut addition strategies (involving the distributive and associative properties of multiplication) such as adding up two layers three times. After each session the teacher had the children write in mathematics journals their individual ideas so that she had a clear idea where each child was, and she wrote back, in

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