

Annotated bibliography of references for the Validation Report on the Edmark Reading Program

Background articles and Initial Research Reports:

Bijou, S.W., Birnbrauer, J. S., Kidder, J. D., & Tague, C. (1966). Programmed approach to retarded children; Psychological Record, 16, 505—522.

This is the original report written on the research conducted by Sidney Bijou and his colleagues at the White River School District beginning in 1962. The study had several objectives: To develop a motivational system to strengthen both academic and classroom conduct, to develop systematic procedures to strengthen cooperative behaviors, and to develop programmed instructional materials that included teacher manuals. The study involved twenty—seven EMR students. The authors note that one characteristic of programmed instruction is that it is sequential and individualized so that the child can proceed at his own rate with success. This is the basis for the development of the Edmark Reading Program.

•Sidman, M. , & Cresson Jr., O. (1973) . Reading and crossmodal transfer of stimulus equivalences in severe retardation. American Journal of Mental Deficiency, 77, 5 15—523.

Children normally develop auditory comprehension long before they develop visual comprehension. At some point developmentally they bridge the gap between the auditory and visual processing and start on the path to reading comprehension. One question had been whether severely retarded children ever bridge the gap. The authors contend the gap can be bridged if the instruction is effective. In their own study they taught two severely retarded boys to read with comprehension by sequencing their instruction. The boys were taught to match dictated words to pictures and to printed words. Eventually the boys were able to transfer to the purely visual task of matching printed words to pictures thus successfully bridging the gap between auditory and visual.

Birnbrauer, J. S., Bijou, S., Wolf, MM & Kidder, J. D. (1965). Programmed instruction in the classroom. In LP Ullmann & L Krasner (eds.) Case Studies in Behavior Modification. New York:Holt, Rinehart, Winston, 358-363.

Birnbrauer, J. S., Kidder, J. D., & Tague, C. (1964). Programing reading from the teacher's point of view. Programed Instruction, 3, 1—2.

The authors discuss the programmed instruction they initiated at Rainier School. In planning the curriculum they hoped to establish classroom procedures that would allow the children to work independently and consistently. The focus of the article then is on the issues related to achieving these objectives while establishing and maintaining an effective instructional program. These issues include sustaining motivation after the novelty of the program has worn off and integrating the program into the curriculum. With regards to the latter, the researchers identified four common errors within published programs. These errors are: unrealistic prerequisites, unessential prerequisites, unmentioned prerequisites, and dead-end content.

Birnbrauer, J, Wolf, MM, Kidder, JM, & Tague, C. (1965) Classroom behavior of retarded pupils with token reinforcement. Journ. Exp. Child Psychol., 2:219-235.

Skinner, B.F (1961). Why we need teaching machines. Harvard Educational Review, 31, 377-398.

Bijou, S. (1965). Application of operant principles to the teaching of reading, writing and arithmetic to retarded children. New Frontiers in Special Education, Washington, DC: NEA.

Greene, F. M. (1966) Programmed instruction techniques for the mentally retarded. In N.R. Ellis (ed.), International Review of Research in Mental Retardation, 2, 228.

Birnbrauer, J. & Lawler, J. (1964) Token reinforcement for learning. Journ. of mental retardation, 2, 275-279.

Becker, W.C. (1992) Direct instruction: a 20 year review. In R.P. West & L.A. Hamerlynck (eds), Designs for Excellence in Education, Longmont, CO:Sopris West.

Edgar, E.B. & Sulzbacher, S. (1992). Influences and effects of the behavioral paradigm in special education. In R.P. West & L.A. Hamerlynck (eds.), Designs for Excellence in Education, Longmont, CO:Sopris West.

Replication study:

Lent, J. R. (1968). Mimosa Cottage: Experiment in hope. Psychology Today, 3., 51-58.

The Mimosa Cottage Demonstration Project was started in 1965 by the Parsons State Hospital and Training Center and the University of Kansas Bureau of Child Research. It was a program designed to modify the behaviors of mentally retarded girls between the ages of eight and twenty-one. The method used in the program was operant conditioning. Operant conditioning is based on the premise that if a specific behavior is reinforced there is a strong probability that the same or a similar behavior will occur in the future. The program had four general training categories which included academics. Instruction was broken down into small and clearly defined behavioral components that increased in difficulty. It is significant that the staff developed their own instructional materials because they could not find appropriate published materials for TMR students. The one exception was The Rainier Reading Program developed by Sidney Bijou. The Rainier Reading Program is the precursor to the Edmark Reading Program.

Validation studies by Independent Investigators:

Vandever, T. R., Maggart, W. T., & Nasser, S. (1976, August). Three approaches to beginning instruction for EMR children. Mental Retardation, 14, 29—32.

This article is a comparison of three different reading programs; Edmark, Sullivan, and Merrill. Population studied was fifteen classes of primary age educable mentally retarded children. The purpose of the study was to determine which program most influenced the development of word recognition. End of the year posttests showed significant difference in achievement for children who received Edmark instruction. The authors also discussed specific issues such as the feasibility of using peer tutoring to offset the impracticality of teacher-provided one-on-one instruction. The question of whether word transfer to the regular classroom is sacrificed in the Edmark program for rapid initial learning is examined. While children receiving Edmark instruction scored highest (mean of 9.2) on a posttest when tested on the words they had been taught, no group scored well (mean of 3.5) when tested on common words not included in instruction.

Walsh, B. F., & Lamberts, F. (1979). Errorless discrimination and picture fading as techniques for teaching sight words to TMR students. American Journal of Mental Deficiency, ~5, 473—479.

A comparison was made of the effectiveness of two approaches for teaching beginning sight words to 30 TMR students. These programs were Dorry and Zeaman's picture—fading technique and Edmark's errorless discrimination. In the picture—fading technique, words are taught association with pictures that gradually fade out over a series of trials. The study found that performance differences favored the Edmark approach. Students recognized more words after

errorless discrimination instruction and they were also more successful on picture—word matching. It was noted in the article that the picture—fading method is used to teach sight vocabulary in the strictest sense while Edmark's errorless— discrimination method "is intended to impart a general, analytic "reading skill" in addition to a sight vocabulary."

Vandever, T. R., & Stubbs, J. C. (1977). Reading retention and transfer in TMR students. American Journal of Mental Deficiency, 82(3), 233—237.

This study poses the question: Can TMR students be taught to read sight word vocabulary, retain the vocabulary they have learned and transfer the ability to read to new (untaught) words? The authors are careful to make a distinction between word calling and actual reading. Word calling involves being able to read the word but not having any concept of what the word means. Many TMR students are characterized as word callers. The authors investigated the possibility of word acquisition, retention and transfer for TMR students by using the Edmark Program. Two word lists were used with the students. One list was the first 150 words from the Edmark vocabulary list. The other list consisted of 32 high frequency words that do not appear on the Edmark list. The results of the study indicated that the students were able to acquire new words, retain them over the summer and to some degree transfer their new reading ability to untaught words (although transfer results were not as significant as the reading and retention results). The authors pointed out that many students who may have done poorly in the beginning gradually developed prereading concepts they did not have prior to instruction, such as left—to-right progression and understanding the function of spaces between words. Finally, the authors stress that precise instructional procedure is the most efficient and profitable method when teaching TMR students to read.

Studies with peer tutors & paraprofessionals:

Van Etten, C., & Van Etten, G. (1976, October). The measurement of pupil progress and selecting instructional materials. Journal of Learning Disabilities, 2(8), 4-19.

This article compares three reading programs: Edmark, Game Oriented Activities for Learning, and DISTAR. The focus is on each program's model for pupil measurement . The dimensions of measurement that are considered are frequency and directness. There are four types of measurement including direct and continuous and indirect and noncontinuous. Edmark is noted for its direct and continuous measurement.

Andersen, B. L., Licht, B. G., Ullmann, R. K., Buck, S.T., & Redd, W. H. (1979). Paraprofessional reading tutors: Assessment of the Edmark Reading program and flexible teaching. Amer. J. Community Psychol., 7:6, 689-699.

This study compared the effectiveness of two different methods for tutoring first grade children with reading difficulties. Two groups of tutors (university undergraduate students) taught an identical list of 150 words using positive reinforcement. One group, however used programmed instruction (Edmark). The other group of tutors was allowed flexibility in instruction and pacing. Results showed significant improvement for the group using Edmark. One suggested possibility for the programmed group's superior results was the degree of structure in the Edmark program. Less reliance seemed to be placed on the tutors' skills thus reducing chance for inaccurate instruction.

Barrier, H. C. (1981). The effectiveness of the Edmark Reading Program utilizing a single subject multiple probe design. Unpublished master's thesis, The Pennsylvania State University, University Park.

This was a Master's thesis that sought to accomplish several objectives. One objective was to try to substantiate the existing claims made by the publishers of the Edmark reading program. Another objective was to document the effectiveness of the program in a classroom setting with a group of trainable mentally retarded students. The method of research utilized was a single subject multiple probe. The author began the paper with a brief history of Edmark. She then described her efforts to corroborate Edmark's efficacy claims. It was her conclusion that a discrepancy existed between the claims and the actual data base. A review of the research "revealed only a limited number of studies utilizing the Edmark program." The author states, however, that even though the data on Edmark is minimal, teachers' testimonials have been positive. Phase II of the study was to conduct an empirical test in the classroom. The paper includes the method of research, a complete description of the program, teacher and student prerequisites, the criterion for progression and the learning principles incorporated in the program. The results of the author's study was that the moderately retarded students/subjects learned a mean of 44.1 words from a mean of 52.5 words taught. "The high percentage of words learned through this program document Edmark is an effective reading program..." Another statement made by the author is that with the help of volunteers and peer tutors Edmark can be "the most successful program of your entire curriculum." She notes that student reaction to the program was very positive and that parent feedback was supportive. Retention was high due to the use of over learning.

Long term followup Studies:

Sulzbacher, S. & Kidder, J. D. (1979). Teaching sight words to severely retarded children and adolescents. In J. Button, T. Lovitt, & J. Roland, Communications research in learning disabilities and mental retardation (pp. 113—123). Baltimore: University Park Press.

In the beginning of this article the authors note that studies of teaching methods

for reading never address the subject of learning styles. Do mentally retarded and learning disabled students learn at a slower pace or do they just need different teaching strategies? The authors believe that research studies that attempt to establish the superiority of one program over another can almost always be contradicted because of the individual differences of the children involved in the different studies. Cha]] is cited as suggesting a code emphasis approach as probably the most effective for retarded children although she admits the research is minimal on this. The authors continue by providing an analysis of the Edmark Reading Program and why they think it works. They include the rationale for choosing the format and the words used in the program. There is also a description of the authors' analysis of one particular student's errors for determining which words to include in her program. The point of this was to illustrate the advantage of the whole—word approach versus the phonic approach. Difficult words can be randomly dropped from a whole—word program but key phonic elements that may be difficult for the student can not.

- Sulzbacher, S. I., & Kidder, J. D. (1975). Following up on the behavior analysis model: Results after ten years of early intervention with institutionalized, mentally retarded children. In E. Ramp & G. Semb (Eds.), Behavior analysis: Areas of Research and Application (pp. 62—69). Englewood Cliffs, N.J.: Prentiss Hall.

The authors begin this article by giving a brief history of the research conducted by Sidney Bijou and his colleagues in the White River School District in 1962. The researchers pioneered one of the first elementary special education classrooms to exclusively use the behavior analysis model. The article documents what has happened to the Programmed Learning Classroom in the eleven years following the termination of the grant and research support. At the time the report was written approximately one hundred institutionalized mentally retarded children had passed through the program with considerable success.

Research with Preschoolers:

Narodick, S., et.al., (1991) A microcomputer screening system for preschool children. Final Report, SBIR Contract No. RS90086030, Us. Dept. of Education.

Battenberg, J. K., & Merbier, J. B. (1989, Fall). Touch screen versus keyboard: A comparison of task performance of young children. Journal of Special Education Technology, X.(1), 24-28.

This study compared the effectiveness of the computer keyboard to the Edmark touch window. The population was 40 developmentally delayed and 40 non—delayed kindergarten children. It was noted in the study that children who were physically involved had difficulties with the traditional keyboard. There was also a tendency in one study for all subjects to touch the graphics on the window even when presented with the keyboard. Results indicated improvement in performance by both groups of children when using the touch window. Because the window was developmentally appropriate, the children became more engaged in the activity than in the input device.

Other selected references:

Brown, V. L. (1984, January/February). A comparison of two sight word reading programs designed for use with remedial or handicapped learners. *RASE*, *5*(1), 46-54.

In this article Edmark is compared to the Essential Sight Words Program. The first half of the article describes each program in detail including their basic components of instruction. In the comparison section both programs' word lists are compared along with their program design and their potential usefulness. It is noted that both programs can be used effectively as a supplementary program and each is relatively flexible. The article concludes with recommendations for follow up activities to be used in conjunction with the programs. Teachers should be aware that the discussion is very brief and the one concrete suggestion is the use of the short books in the "By Myself" series (Hooper, & Reidlinger). This series apparently uses picture cues, rebus and most of the basic sight words introduced in the Edmark program.

Snell, M. E. (1978). Functional reading. In M. E. Snell (Ed.), *Systematic Instruction of the Moderately and Severely Handicapped* (pp.324—384). Columbus, OH: Charles Merrill.

This article takes a look at classroom reading instruction for the moderate and severely retarded population. It includes background research, reading programs, and materials. Edmark is described as the only commercially available program developed specifically for the mildly and moderately retarded nonreader. The section on Edmark describes the program and discusses the advantages and disadvantages of the program. Advantages include the fact that Edmark is based on research, progresses in a sequential manner, requires no special training, and allows teachers to monitor student's progress closely. The

disadvantages discussed include its expense, the lack of supplemental reading materials, and the one-on—one instruction. It is stated in the article that research shows reading instruction centered on the whole—word approach for moderately retarded learners generalizes to the classroom.