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AUTHOR Koos, Eugenia M.
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ABSTRACT

This paper covers issues concerning public or cable educational television for young children. The basic question is whether the use of an interactive system should be taught to young children by untrained family members in the home or by workers in day care centers. Preliminary studies of such a system for four-year-olds from both advantaged and disadvantaged homes indicate that they not only can learn to operate such a system with the help of a parent or sibling but enjoy it. The advantages of such a system include: (1) Both the parent and child can receive instruction; (2) Master teachers and expert programing can be made available to every child with access to TV; and (3) Immediate feedback and tangible reinforcement of appropriate responses implement learning in young children. Despite these advantages, the proposed system drew the full approval of only half of 10 educational specialists responding to a questionnaire on the system. This difference of opinion gives rise to two more issues: (1) the controversy on whether a tangible reward should be associated with learning in the young child, and (2) the question of whether the instruction should reward the child for learning a middle-class Anglo vocabulary or a minority-group vocabulary. Although some study has been made of these and other issues, it is recommended that interdisciplinary debate be conducted to provide guidance to public policy makers. (CK)

Use of Public or Cable TV for Instruction and Contingent Token Reward of Learning in the Young Child: Advantages and Disadvantages

Eugenia M. Koos
Mid-continent Regional Educational Laboratory

Since Hunt and Bloom drew attention to the critical importance of the preschool years for later learning ability, there has been a general move to broaden the scope of learning opportunities for young children. Karl Pribram[1] has recently reported work by Hyden giving evidence that neurons make contacts past divided glial cells, thus increasing brain function capacity, only after repetition of a nerve impulse pattern. The cost and logistics involved in providing for this enriching input to young children, however, have slowed efforts to amplify that now being provided by parents, nursery schools, day care centers, and television programs. The low per capita cost of televised instruction would appear to make it the most efficient mode of such stimulation.

There is little dissent among the ranks of those calling for improvement in the quality and quantity of TV programming for children. When the undoubted capacity of the medium for instruction is discussed, however, the continuing division between behaviorists and humanists affects opinion here also. Kliger[2], for example, has been critical of the Sesame Street approach because of a failure to apply systematic methods of language teaching. Toffler[3] urges that we begin in the nursery to acquaint the next generation with the environmental changes to which they must adapt as a result of technology. Martin[4], writing on "Self-growth and self-enhancement through technology," observes that it offers the greatest potential for effecting learning in

1. Pribram, K. The Brain. Psychology Today, 5, No. 4, September 1971, p. 47.
2. Kliger, S. Fog over Sesame Street. Teachers College Record, 72, No. 1 September, 1970.
3. Toffler, A. Future Shock. New York: Random House, 1970.
4. Martin, J. H. Self-growth and self-enhancement through technology. Educational Technology, June, 1971, 15-18.

cognitive skill areas "acquired and employed in intellectual isolation" such as reading and mathematics, but also notes its latent potential for simulating environments and teaching processes. Yet programming emphasis is still primarily on entertainment.

These expectations outlined for the medium point to the need for an interactive TV system with programming designed to provide learning experiences. Two-way cable TV could do so, but it appears that wide availability of such a system is some years away. We have proposed an interim system making use of tone signals placed on the videotape received by the home or school TV. The viewer indicates his choice of response by pressing a button on a response unit. After each appropriate response, a smiling face lights up on the response box and a token may be dispensed by the apparatus. The tokens may be used to complete formboards, or the parent or his surrogate may establish the value of the token after the child receives the first few, then schedule subsequent exchanges as appropriate. Locking of the keyboard before feedback is given precludes misuse.

This system will permit immediate feedback to the learner and, to the extent that air or cable channel time is available, will allow programs of a sequential nature to be offered to young viewers, so that they can integrate and confirm each new bit of learning.

The basic question yet to be answered, of course, is whether the use of an interactive system be taught to young children by untrained family members in the home, or by workers in day care centers.

Our preliminary studies of such a system with four-year-olds from both advantaged and disadvantaged homes indicate that they not only can learn to operate such a system with the help of parents or siblings, but enjoy it. Parent cooperation,

of course, is mandatory. We have found that children from homes having rather stringent discipline are quite reluctant to operate the response apparatus without continuous initial support by an authority figure.

The advantages of such a system are:

1. Both parent and child can receive instruction, testing and feedback in the home.

2. Master teachers and expert programming can be made available to every child with access to the TV; Ed Zigler's concern about the quality control of multiple day care centers could be reduced measurably by installation of this transportable curriculum for preschoolers.

3. Immediate feedback and tangible reinforcement of appropriate responses implement learning in young children; this system requires little or no staff time after the initial demonstration to the child.

4. Educational productivity is greatly enhanced; cost-benefits ratio is low.

5. As Terry Borton[5] has pointed out, the richness of TV fare typically exceeds the young child's capacity for digesting it, although he uncritically attempts this. It is a curriculum in need of adaptation to the capacity of the preschool viewer.

6. Evaluation of progress of each viewer is possible through the collection of data from frequency counters installed in response boxes.

7. Multiple-channel CATV capacity allows programmed instruction at different levels of difficulty to be transmitted simultaneously. Two-way CATV linked to a computer will allow the monitoring and recording of each child's percentage of hits and misses, so that he can always be challenged by new material.

8. Research potential is high.

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5. Borton, T. Dual audio television. Harvard Educational Review, 41, (1), February, 1971, 64-78.

Despite these rather obvious advantages, the proposed system drew the full approval of only half of ten educational specialists responding to our questionnaire on this system. Two did not actively oppose use of token reinforcement, but either urged that its use be limited to special groups or be phased out as soon as possible. Three were completely opposed to its use. Responses to the question "How do you view the giving of a token to the child for participating in the program?" were as follows:

View token system as desirable	Would not object to tokens given for attention by very young or very handicapped children but would prefer intrinsic motivation	View token system as undesirable
Education of Handicapped faculty member	NEA project staff member	Elementary Education faculty member
Special Education faculty member	Station Manager, Public TV Station Operated by School District	Montessori system Instructor
Evaluator of Head Start Program		National Reading Center staff member
Communication Department faculty member		
Researcher on Montessori system versus traditional nursery system for disadvantaged children		

One respondent to our questionnaire expressed concern that overzealous parents would place undue importance on the earning of tokens as a measure of learning, perhaps requiring a disproportionately high rate of correct response.

Some pointed out that, during televised input into the home, we cannot be certain either that the learner observes intended feedback or receives an intended reward, even though he makes the response. In fact, if the respondent's older sibling pockets a token earned by the preschooler, he may feel considerable frustration from inability to wrest possession of the reward from the other.

It was also stated that the most effective principles of programmed instruction cannot be applied via TV in the absence of a two-way system. Thus, we may design a series of programs to teach action verbs to preschool children, test these on one group, then transmit these to a new group only to learn from randomized home observation that learning was not as rapid in the new group, so that many more repetitions and less new material should have been scheduled.

This clear division of opinion on the desirability of making use of a contingency system points up one of the most difficult issues to resolve; that is the controversy on whether a tangible reward should be associated with learning in the young child. Attachment of a symbolic exchange value to the token arouses fears of "building materialistic expectations among young children" in many persons committed to the "intrinsic motivation" position with regard to learning.

Secondary to this issue is the question of whether the instruction should reward the child for learning a middle-class Anglo vocabulary or a minority-group vocabulary. Since public TV is by definition intended to serve no special interest group, a decision to teach a middle-class vocabulary via TV may evoke strong protests.

But we have inconclusive evidence on the type of instructor speech patterns that best facilitate learning in the young child. Research findings are far from uniform. Bereiter and Engelmann[6] (1968) gave evidence that direct instruction in standard English is effective as a means of obviating the problem. Keisler and Stern[7] (1968) found that children who received instruction in a familiar dialect learned more than a comparable group receiving instructions in standard English.

Borton's two week study of the use of dual audio for commercial TV in inner city homes is quite relevant to this issue. From it, he concluded that the narrator must speak in a language pattern and intonation which they can easily understand. He says "White middle-class language patterns were often lost on black working class children: a 'teacher voice' that turned dual audio into a lecture was a sure guarantee that children would tune out."

6. Bereiter, C. and Engelmann, S. Teaching disadvantaged children the language of instruction. Canadian Education and Research Digest, 8(1), March, 1968, 68-72.
7. Keislar, E. and Stern, Carolyn. Effects of dialect and instructional procedure on children's oral language production and concept acquisition. Urban Education, 3(3), 1968, 169-176.

Rystrom's[8] study of the effect of eight weeks of standard English dialect training on pronunciation and oral reading scores of black first graders indicated the procedures used in that study produced negligible results (1968). His interpretation of this outcome suggested that factors other than the method per se might be responsible, namely, short duration of the study, lack of uniformity between the oral dialect materials and the reading materials, low interest level of the dialect lessons, and inappropriateness of the reading ability tests.

With regard to the broader question regarding reward for learning, the obvious solution to the problem of possibly building expectation of tangible reward for subsequent school success is to allow each parent to supplement or substitute the array of rewards offered by the TV system with his or her own array. Since parental time and attention have enduring appeal for the young child, these may prove the most effective symbolic value of the token.

This issue needs our thoughtful attention. Two alternatives are possible. The young child may be rewarded (1) either to confirm the correctness of his choice of alternative dealing, say with language, e.g. grammar, meaning or usage or (2) he may be rewarded merely for paying attention to the program. If we choose the second, we discard the confirmatory power of the token. If we choose the former, we perhaps risk the danger of parents setting an unattainable level of achievement for the child.

8. Rystrom, R. E. The effects of standard dialect training on Negro first-graders learning to read. Dissertation Abstracts, 29, 4199, 4200A, 1968.

Carl Rogers, in his historic dialogue with B. F. Skinner on the dangers of control by psychotechnology, expressed concern about the potential power of the "hidden persuader." While there appears little doubt but that the use of interactive TV to instruct preschoolers in the home is a powerful means of acculturating these children and thus greatly augmenting the probability of their later sustained school success, the dangers of misuse (unintentional or for purposes extraneous to instruction) should be clarified and confronted in order for control to be maintained.

These and other issues not touched on here would seem to warrant thoughtful interdisciplinary debate to provide guidance to public policy makers.

This paper was read at the symposium: Issues in the Use of TV to Foster Learning in Preschool Children, held at the American Psychological Association meeting, Washington, D. C., September, 1971.