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ABSTRACT

A structured tutoring technique utilizing the services of parents and high school students was devised. A study was carried out in Provo, Utah, with 10 children in each of six groups--three kindergarten and three first-grade groups consisting of one control group, one with parent tutors, and one with student tutors. The tutors were given a manual of instructions and received a limited amount of training in one session lasting 1 hours. The tutoring lasted for 6 weeks during which time the child was taught naming, sounding, and blending of specified letters. Pretesting and post-testing was done to obtain gain scores and the percentage of children who achieved the criterion in each skill practiced. In mean gain scores the difference between the control and the treatment groups was significant, but there was no significant difference between the two treatment groups. A significant difference was found between the tutored and non-tutored groups for the sounding of letters and blending letters into nonsense words, but not for naming letters. Tables and references are included. (DH)

THE EFFECT OF PARENTS USING STRUCTURED TUTORING TECHNIQUES IN TEACHING THEIR CHILDREN TO READ

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STATEMENT OF PROBLEM

At the primary grade level one of the most difficult tasks children are required to master is reading. The process of reading is complex and consists of numerous sub-skills, any one of which can become a major stumbling block for a child. Many writers assume that identification skills are an important aspect of reading mastery. For example, in a summary of reading success studies, Durrell (1958) indicates that: "Most reading difficulties can be prevented by an instructional program which provides early instruction in letter names and sounds, followed by applied phonics and accompanied by suitable practice in meaningful sight vocabulary and aids to attentive silent reading" (p. 5). Each of these specified competencies (naming, sounding, blending, and sight words) requires drill and practice for acquisition, especially for the child who does not find reading easy. Because of the time restraints of classroom teachers it is not possible for the teacher to provide the kind of extensive individual drill and practice that a particular child may need. Consequently many children are lacking in the skill of decoding and blending sounds, as well as the other prerequisite skills. In one school in the area tested recently, thirty-five percent of a third grade classroom did not even know the sounds of the consonants, vowels, and digraphs. The rate of acquisition of basic reading competencies varies greatly with children, and it can be assumed that there will be in every classroom children who have not mastered basic skills.

Cost restraints make it prohibitive to even consider having enough teachers to insure that children with problems will receive enough in-

dividualized help to provide mastery of basic reading skills. It is necessary, therefore, to look in other directions to provide readiness skills and remedial skills for children in the schools. This study was designed to investigate the feasibility of utilizing adults other than teachers as tutors to help primary grade children with individual drill and practice in the skills of naming and sounding letters and decoding phonetic words. When examining possible adult populations to be considered as tutors, the choices appear to be parents, or older students, either high school or university. Even when assuming that parents can work successfully with their own children, one must be realistic and assume that not all parents will have either the inclination or the time to tutor. In order to meet real world considerations, then, it was necessary to identify an alternate type of adult population and to determine feasibility of structured tutoring techniques with them as well as with parents. Other real world considerations lead us to select high school students over university students. High school students can be selected in an area where subjects reside and need not be dependent upon transportation. They also can be hired for lower wages thus putting their services within the reach of parents of more modest means. The study, then, was designed to investigate the feasibility of structured tutoring techniques for adult tutors, and whether parent tutors are more effective than hired high school tutors.

Previous studies have shown that student tutors can be trained through use of the structured tutoring model to achieve learning gains in children (Keele and Cornwall, 1970; Harrison and Brimley, 1971; Harrison, 1967, 1968, 1969). Structured tutoring is a model in which

students are trained in validated tutoring techniques through the use of independent study materials, training sessions, and role playing. Learning tasks are broken down into small tasks, as in programmed learning, and the progression from task to task is systematic. The addition of the tutor makes it possible for the program to include human sensitivity and flexibility while at the same time structuring, or programming, the acquisition of the learning task. Most previous research, however, has focused upon intergrade tutors or aide's.

PROCEDURES

Developing Materials

A tutor manual was designed for adult tutors that prescribed validated procedures for teaching the names of the letters, the sounds of the letters, and the blending of sounds into nonsense words. The manual was developed in a trial and revision strategy in which previous research findings for student tutors were adapted for the adults. Then adult tutors used the manuals and further revisions were made. The manual teaches the use of established principles of learning (maintaining a calm atmosphere, rehearsing the task with the child, consistently praising the child, never punishing the child, establishing reward systems, providing immediate feedback) and specific techniques for teaching sounds, letters, and blending. The manual is designed to teach all letters and sounds, but was adapted for the specific letters and sounds to be used in this study. Based on the materials being used for reading in the school, we selected the letters a, i, f, m, n, and s for the kindergarten children and the same letters plus v and z for the first graders to master. The sounds selected included those for the letters above (short a and i),

the sh for kindergarten, and the sh and th for the first graders.

The children who achieved criterion in blending were expected to be able to blend at least eight out of ten unfamiliar nonsense words of three or four letters composed of the sounds they had studied. Nonsense words were used to insure that the child could indeed blend and that the word was not part of his sight vocabulary. The training materials included specific instructions in the teaching of these particular letters and sounds, and in all possible nonsense words to be generated from those sounds, except the ten to be used on the posttest. Before the final revision of the materials the criterion test for posttesting was devised and the nonsense words to be used there were not included for drill in the materials.

Selection of Subjects

After the production of the training materials all the kindergartners and first graders in one school in the area were tested, using a criterion test based on the desired objectives. After pretesting all the children in the two grades, a sample group was established.

For the first grade the population was considered to be all children who missed at least four of the ten sounds designated for the study, and at least four of ten nonsense words. In the kindergarten all children were possible subjects because none could name more than four sounds and none could blend any words.

From this pool of children the experimental groups and controls were randomly assigned. Parents of subjects were then called to either tutor or to allow a student to tutor their child. Two parents chose not to tutor, and two others were randomly chosen. Three parents chose not to have the

child tutored, and three replacements were chosen randomly.

Selection of Student Tutors

At this point an advertisement was placed in the local newspaper requesting response from high school students living in the immediate area of the school, who were willing to work for $1.25 an hour for approximately four to six weeks. Over fifty calls were received. From this pool twenty tutors were selected. The only considerations for selection were availability over the period of the study and lack of need of transportation. There was no attempt to obtain grade point averages or consider other factors. The average age of the tutors was 16.

Training of Tutors

After selection of the controls, the parents, and the student tutors, the manual was distributed to the individuals who would be tutoring, with instructions to read it thoroughly before the orientation meeting which was held three days later at the school the children attended. The students and parents met with Dr. Harrison and a graduate assistant for about one and one-half hours, during which time their questions about the manual were answered.

They were given a kit consisting of preprinted letters appropriate to the criteria for first grade or kindergarten, and the tutor log in which they were to record what was done in each session with the child. Both parents and tutors were encouraged to work with the children about four times a week for approximately fifteen minutes in each session until the child achieved mastery of naming, sounding, and blending. From the meeting on they worked individually with the children.

They were free to call either of the authors to receive answers to questions, but in all other aspects their tutoring was unsupervised and they were untrained. This is in contrast to previous uses of structured tutoring, where there has always been systematic instruction in the techniques.

Posttests

After six weeks the children being tutored and the controls were tested individually at the school on each of the specified criterion. The pre- and posttesting was done by the same undergraduate university students, who had received training in the recording and administering of the tests.

RESULTS

The data will be reported in two ways. The first is that of criterion achievement; that is, reporting numbers and percentages of those who were tutored who achieved criterion on each of the objectives on which they were tutored. To do this the following tables are presented summarizing the results for each subject who was tutored and for the controls. Following that is the summary of criterion achievement.

Also presented are the results of analysis of variance using a fixed hierarchal model. The problems associated with using an analysis of variance on this type of data are evident. The most obvious is the lack of distribution of scores on the pretests, especially in the kindergarten controls. The low upper limits on the possible scores also affect the statistical assumptions.

It is recognized that the results of the statistical analysis cannot be generalized from the particular school population which was used in the study, at least statistically. For the purpose of the study, which is the determination of the feasibility of adult tutors, especially parents, using structured tutoring techniques to tutor children in reading, the summary of criterion achievement appears to be much more informative and significant.

TABLE I

KINDERGARTEN - CONTROLS

	Pretest - # of errors			Posttest # of errors			Gain Score		
	Naming	Sounding	Blending	Naming	Sounding	Blending	Naming	Sounding	Blending
Criterion	0/6	1/7	2/10	0/6	1/7	2/10			
S_1	5	7	10	4	7	10	1	0	0
S_2	6	7	10	5	7	10	1	0	0
S_3	6	7	10	6	7	10	0	0	0
S_4	6	7	10	6	7	10	0	0	0
S_5	3	7	10	2	6	10	1	1	0
S_6	4	7	10	4	6	10	0	1	0
S_7	6	7	10	6	7	10	0	0	0
S_8	6	7	10	4	6	10	2	1	0
S_9	6	7	10	4	6	10	2	1	0
S_{10}	6	7	10	6	6	10	0	1	0
Means	5.4	7	10	4.7	6.5	10	0.70	0.50	0.0

TABLE #2

KINDERGARTEN - PARENT TUTORS

	PRETEST - # of errors			POSTTEST - # of errors				Gain Scores			
	Naming	Sounding	Blending	Naming	Sounding	Blending		Naming	Sounding	Blending	# of tutoring sessions
Criterion	0/6	1/7	2/10	0/6	1/7	2/10					
S_1	2	7	10	0	0	2	*	2	7	8	10
S_2	0	5	10	0	0	0	*	0	5	10	11
S_3	6	7	10	0	0	0	*	6	7	10	18
S_4	2	5	10	0	0	0	*	2	5	10	14
S_5	4	7	10	0	0	5		4	7	5	12
S_6	2	7	10	0	0	0	*	2	7	10	4
S_7	4	7	10	1	0	6	#	3	7	4	12
S_8	1	7	10	0	0	0	*	1	7	10	7
S_9	2	7	10	0	0	0	*	2	7	10	5
S_{10}	6	7	10	1	1	8		5	6	2	16
Means	2.9	6.6	10	.2	.1	2.1		2.7	6.5	7.9	10.9
					+ adjusted gain			.2.7	6.5	9.13	

* Achieved mastery on each tutored element

Not tutored to mastery, or not tutored regularly

+ Includes only those tutored on the skill

TABLE #3

KINDERGARTEN - STUDENT TUTORS

	PRETEST # of errors			POSTTEST # of errors				Gain Scores			
	Naming	Sounding	Blending	Naming	Sounding	Blending		Naming	Sounding	Blending	# of tutoring sessions
Criterion	0/6	1/7	2/10	0/6	1/7	2/10					
S_1	0	7	10	0	0	2	*	0	7	8	14
S_2	1	4	10	0	0	4		1	4	6	12
S_3	6	7	10	0	0	2	*	6	7	8	17
S_4	3	7	10	0	0	3	#	3	7	7	8
S_5	4	6	10	0	0	10	*	4	6	0	16
S_6	1	3	10	0	0	0	*	1	3	10	14
S_7	0	5	10	0	0	0	*	0	5	10	13
Means	2.14	5.57	10	0	0	3		2.14	5.57	7.0	13.4
				+ Adjusted gain				2.14	5.57	8.17	

* Achieved mastery for each part tutored on

Not tutored to mastery on individual parts; or not tutored regularly

+ Includes only those tutored on the skill

TABLE #4

FIRST GRADE - CONTROLS

	PRETEST # of errors			POSTTEST # of errors			Gain Score		
Criterion	Naming 0/8	Sounding 1/10	Blending 2/10	Naming 0/10	Sounding 1/10	Blending 2/10	Naming	Sounding	Blending
S_1	1	4	10	0	3	10	1	1	0
S_2	0	4	10	0	2	5	0	2	5
S_3	2	10	10	0	5	10	2	5	0
S_4	0	10	10	0	6	10	0	4	0
S5	3	7	10	1	3	8	2	4	2
S_6	0	5	10	0	2	8	0	3	2
S_7	0	4	10	0	3	10	0	1	0
S_8	6	10	10	2	6	10	4	4	0
S_9	1	4	10	0	2	9	1	2	1
S_{10}	6	7	10	2	4	10	4	3	0
Means	1.9	6.5	10	0.5	3.6	9	1.40	2.90	1.0

TABLE #5

FIRST GRADE - PARENT TUTORS

	PRETEST # of errors			POSTTEST # of errors				Gain Score			
	Naming	Sounding	Blending	Naming	Sounding	Blending		Naming	Sounding	Blending	# of tutoring sessions
Criterion	0/10	1/10	2/10	0/10	1/10	2/10					
S_1	5	7	10	0	4	10	#	5	3	0	10
S_2	0	4	10	0	0	2	*	0	4	8	11
S_3	1	5	7	0	1	3	#	1	4	4	12
S_4	4	10	10	0	0	2	*	4	10	8	20
S_5	0	4	8	0	0	0	*	0	4	8	8
S_6	4	5	10	1	5	8	#	3	0	2	3
S_7	3	5	10	0	0	1	*	3	5	9	13
S_8	0	8	10	0	1	9	*	0	7	1	5
S_9	0	6	10	0	0	0	*	0	6	10	7
S_{10}	1	4	10	1	2	4	#	0		6	3
Means	1.8	5.8	9.5	0.2	1.3	3.9		1.6			7.2
					+ Adjusted gain			1.6	5.0	7.83	

*Achieved mastery for each part tutored on.

#Not tutored to mastery on some elements or not tutored regularly.

Adjusted, includes only those tutored on the skill.

TABLE #6

FIRST GRADE - STUDENT TUTORS

	PRETEST # of errors			POSTTEST # of errors				Gain Scores			
	Naming	Sounding	Blending	Naming	Sounding	Blending		Naming	Sounding	Blending	# of tutoring Sessions
Criterion	0/10	1/10	2/10	0/10	1/10	2/10		0/10	1/10	2/10	
S_1	2	9	10	0	0	2	*	2	9	8	16
S_2	0	6	10	0	0	2	*	0	6	8	20
S_3	0	6	10	0	0	0	*	0	6	10	13
S_4	0	4	10	0	0	1	*	0	4	10	4
S_5	1	4	10	1	2	4		0	2	6	8
S_6	6	7	10	0	0	10	*	6	7	0	24
S_7	0	9	10	0	0	1	*	0	9	9	17
Means	1.28	6.42	7.0	.14	.28	2.8		1.14	6.14	7.29	14.6
						+ Adjusted gains		1.14	6.14	8.5	

* Achieved mastery for each part tutored on

Not tutored to mastery on some elements, or not tutored regularly

+ Includes only those tutored on the skill

Summary of Criterion Achievement:

Kindergarten--Parent Tutors

Criterion Objectives	# Receiving Tutoring	# Achieving Criterion Who Received Tutoring	% Achieving Criterion Who Received Tutoring
Naming	10	8	80%
Sounding	10	10	100%
Blending	8	7	87%

Kindergarten--Students

Naming	7	7	100%
Sounding	7	7	100%
Blending	6	4	66%

Kindergarten--Total Tutors

Naming	17	15	88%
Sounding	17	17	100%
Blending	14	11	78%

Kindergarten--Controls

Criterion Objective	# of Children	# Achieving Criterion	% Achieving Criterion
Naming	10	0	0
Sounding	10	0	0
Blending	10	0	0

First Grade--Parent Tutors

Criterion Objectives	# Receiving Tutoring	# Achieving Criterion Who Received Tutoring	% Achieving Criterion Who Received Tutoring
Naming	10	8	80%
Sounding	8	7	87%
Blending	6	5	83%

First Grade--Student Tutors

Naming	7	6	86%
Sounding	7	6	86%
Blending	7	5	71%

First Grade--Total Tutors

Naming	17	14	82%
Sounding	15	13	87%
Blending	13	10	77%

First Grade Controls

	# of Children	# Achieving Criterion	% Achieving Criterion
Naming	10	7	70%
Sounding	10	0	0
Blending	10	0	0

Statistical Data

To test the hypothesis that there is no significant difference between the mean gain scores of subjects not tutored, those tutored by parents, and those tutored by high school students, an analysis of variance using the fixed hierarchal model was performed. It was decided that a level of significance of .01 would be necessary to fail to accpet the hypothesis. Because of the fact that not all children were tutored on the same skills, the analysis was provided on each of the three skills: naming, sounding, and blending. Each of these will be reported separately.

NAMING

Hypothesis	F Score	DF	Score Required for .01 Significance
$T_1=T_2=$ Control	1.88	2	>5.08
Kindergarten = First Grade	1.24	3	>4.22

The treatment score necessary for the .05 level of significance for the first comparison would be greater than 3.19, and greater than 2.80 for the second comparison. Therefore, the differences among the groups are not statistically significant, and the hypothesis of no difference between the groups cannot be rejected. Possible reasons for this will be discussed in the conclusions.

SOUNDING

Hypothesis	F Score	DF	Score Required for .01 significance
$T_1=T_2=$ Control	34.25	2	>5.09
Kindergarten = First Grade	5.03	3	>4.23

Since the first comparison indicated differences in the population significant at the .01 level, it was necessary to do a mulitple comparisons test to determine the source of the differences. The Least Significant Difference

analysis was employed. Mean gain scores for the groups were: Controls, 1.699; Parents, 5.789; and students, 5.857. The difference between the control group and the treatment group was significant at the .01 level. There was no significant difference between the two treatment groups.

BLENDING

Hypothesis	F Score	DF	Score Required for .01 Significance
$T_1=T_2=$ Controls	155.78	2	> 5.18
Kindergarten= First Grade	1.60	3	> 4.31

It is obvious that the differences in the population are significant in the first comparison. Again the Least Significant Difference Multiple Comparison test was performed to determine the sources of the differences. The mean gain scores were: Controls, 0.500; Students, 8.333; Parents, 8.571. The difference between the control group and the treatment groups was significant at the .01 level, but there was no significant difference between the two treatment grops.

The hypothesis that there is no significant difference between tutored groups and non-tutored groups is not rejected for the naming of letters, but can be rejected at the .01 level of significance for the sounding of letters, and blending letters into nonsense words. The hypothesis that there is no difference between the kindergarten and first grade groups cannot be rejected for naming and blending, but can be accepted for sounding at the .01 level of significance.

However, too much strength cannot be given to the differences in sounding, for two reasons. First, the probability of Type II error is high because of the tenuous assumptions about distribution. Secondly, the kindergarten

children had not been and are not being exposed to the teaching of sounds in school and so their possible gain scores were much higher than those possible for the first graders. On blending and naming the school exposure is more constant, with both groups being exposed to naming and neither group being exposed to blending. In both of those areas the age factor made no significant difference.

CONCLUSIONS

Statistical Data

For ease of discussion, the statistical data will be considered first, and then the criterion data. The tutoring treatments resulted in statistically different results in the behaviors of sounding letters and blending letters and not in the naming of letters. The lack of significance in the naming was to be expected because of the high entering behavior in comparison to the other two skills. Even in the kindergarten, where little formalized teaching had yet occurred in the naming of the letters, only 37% of the total sample had no ability to name any of the letters in the objective. In the first grade only 11% could name no letters, and 63% of them made fewer than three errors on the pretest, leaving them with a maximum possible gain score of three or less. In the kindergarten, 44% of the children made three errors or fewer.

In both sounding and blending the statistical data indicates that it is indeed feasible to provide untrained parents and/or other adult tutors with materials which carefully prescribe the educational principles and tutoring techniques they should use for teaching specific reading skills; and that significant learning can be achieved. Because of the factors mentioned above, it seems plausible to assume the same for teaching naming of letters.

Criterion Data

In order to make any valid conclusions about the validity of the materials from the criterion data, it is necessary to examine the children who were tutored on a skill but did not achieve mastery. For this the tutor logs (record of each day's tutoring activities) were examined. The tables will be examined one by one. On Table 2, subject S_5 had only reached the point of rehearsing the blending task with his mother (mother does the task with the child while explaining it) and she had not had time to teach him to do the task on his own before the conclusion of the study. Subject S_7 had been tutored only to the point of blending two letter words, and the posttest was composed of three and four letter words. S_7 was also not tutored on a regular basis because of many illnesses in the family. Subject S_{10} was not tutored on blending, but made one error on naming and so did not achieve criteria on all tutored skills.

On Table 3 subject S_2 was tutored by the high school student through all skills. The only indication of problems in the tutoring was the notation that the child was "vague on some parts of sounding," yet the tutor continued. One requirement was that the child have total mastery of each skill before moving onto the next. Subject S_4 received only three sessions totally on blending.

On Table 5, subject S_1 received only a total of 10 sessions, even though his entering behavior would indicate the need for many more. He was not tutored to mastery on sounds, and was not tutored at all on blending. Subject S_3 received three sessions on blending, with all but a few minutes spent on two letter blending. Even at that he came within one error of achieving criterion. Subject S_6 was tutored a total of 3 times, and received no work with either sounds or blending. Subject S_{10} was tutored only twice, and received no help with sounds and blending.

On Table 6, student tutors, Subject S_5 was tutored a total of eight times, received a total of three sessions on blending, and the tutor stopped tutoring two weeks before the testing time. The child may not have been tutored to mastery, so that the time factor would affect his results.

If the above information is considered significant, then it appears that the use of the structured tutoring techniques in the prescribed way does result in achievement of criterion on a specific objective. If the study had been able to be run with no time restraints so that every child could have been tutored to mastery according to his learning speed and entering behavior, the indications are that mastery rates could have been even higher.

There appeared to be a higher rate of erratic tutoring by first grade parents than by kindergarten parents. The reason for this may be within the time schedule for the school. The kindergartners all went to school for half a day, while the first graders were in school until 3:30. Six parents indicated that their child did not work as well when other children were present, and two first grade parents indicated problems with working tutoring times in around the school times. It would appear that the kindergarten child would have a higher probability of being home alone with mother, and more alternatives for tutoring times. The fatigue factor might also have had some effect for the children worked with by student tutors, who were also in school until 3:30. The kindergartner had had a break time from school, whereas the first grader was less likely to have had extensive time for play or rest.

Some problems were identified in the study which may be of value for future research. It may be noted that the number of children tutored by student tutors is less than for parents. Originally the groups were matched in number, but a total of six students (coincidentally three in each age group) did not report to tutor the child, and the parents did not notify the researchers that the students had not come. This is probably not a very high

mortality rate, considering that the only criteria for selection were availability and transportation. More dependable students probably could be insured by a selection process which includes other criteria and an interview.

Only one tutor had any problems interacting with the parents, and this parent claimed that he was rude to her. In all fairness to the tutor, it must be admitted that she would be an easy person to feel rude with. From the time of their altercation he simply tutored the child when the mother was not at home, which was frequently. We had provided no instruction for these tutors in public relations, and this would probably be a necessary part of a study involving larger numbers of students and parents.

Because of the university population here there are few jobs for high school students, and most jobs in the area for any student are low paying. The $1.25 wage per hour may be very unrealistic for another area, It was assumed that the pay would make the tutors more consistent in their tutoring than were the parents. However, there appeared to be no real difference between the two groups, with the exception that the tutors who weren't dependable didn't tutor at all, while parents in every case worked with the child at least two times.

This study has indicated that, at least for the population studied, structured tutoring by adult tutors is an effective avenue for providing reading readiness skills for kindergarten children and remedial work for first grade children who have not mastered important skills in reading. The results indicate the validity of the tutor manual for adults, and that there are no significant differences between the effectiveness of parents as tutors and high school students as tutors. Further research comparing other types of adult tutors may be indicated.

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