A Preliminary Report of A Three Year Study Teaching Analytic Thinking to Children in Grades K-7

The Analytic Teaching (A.T.) program at Texas Wesleyan College trains teachers to use the tools of philosophy and logic as an instructional method. The goals of this teaching method are to improve children's thinking skills, increase student scores on standardized tests, and enhance student attitudes toward things academic. Teachers in the program are taught how to use the methodology and a set of instructional materials devised by Matthew Lipman and Ann Margaret Sharp of the Institute for the Advancement of Philosophy for Children (I.A.P.C.). The Wesleyan Analytic Teaching Program is modeled after the Philosophy for Children Program.

Since the beginning of the program in 1979 over 300 teachers have been trained in Analytic Teaching and as a result, close to three thousand elementary and middle school students in the Fort Worth area have been taught analytic thinking skills. Also, in 1979, a pilot study in Analytic Teaching was initiated with two fourth grade Vanguard classes in Fort Worth. Children were placed in these special Vanguard classes if they scored above the seventy-seventh percentile on the Iowa Test of Basic Skills. The pilot study was considered successful because students in these classes showed improvement in their analytic thinking skills. (Reed and Henderson, 1981).

In April, 1982, the School of Education at Texas Wesleyan College and Sellars Elementary School, with approval from the Fort Worth Independent School District, agreed to initiate a study examining the effects of integrating Analytic Teaching into all classes at all grade levels over a three year period. Sellars Elementary School provided a unique opportunity to studying Analytic Teaching methods because many of the teachers had participated in Wesleyan's Analytic Teaching Program. All the teachers not previously trained in Analytic Teaching methods were trained in special in-service workshops that were the equivalent of 3 to 4 hours of graduate credit. The faculty at Wesleyan involved in the Analytic Teaching Program agreed to serve as a resource for consultation, advice and modeling over the three years. Assessments of the effects of the program on students were planned at the end of the first and third year. This paper presents the results of the assessment after the first year (1982-83) of the study.

The agreement to embark on this extended study was reached relatively late, creating a few problems. The first problem encountered involved selecting the assessment instrument to be used as the pretest. The Fort Worth Independent School District is responsible for charting students' progress on the Iowa Test and Texas Assessment of Basic Skills. The authors anticipated that student scores on these tests will improve as a result of the Analytic Teaching Program. However, the results of these standardized achievement tests were not available at the time this paper was developed. These standardized skills tests are not designed, primarily, to measure improvement of general cognitive or reasoning skills. Therefore, an additional assessment instrument more directly measuring reasoning skills was deemed appropriate.

The New Jersey Test of Reasoning Skills, a fifty-five question test, was selected for use with students in the fourth through the seventh grades. The New Jersey Test has been used extensively with children involved in Philosophy for Children programs around the country. However, an adequate instrument for assessing the reasoning skills of children in the kindergarten through third grade was not found. The GANT Analytic Thinking Test, a thirty-four question test, was devised by the first author for use with students in kindergarten through the third grade. This test was designed to measure those reasoning skills taught by the material and methods used in the philosophical novels Pixie and Rebecca. The GANT Test needs further study, although the results reported in this paper suggest that the GANT Test compares favorably with the New Jersey Test.

When testing began, a second problem became apparent. The attention span and reading level of students in the K-3rd grade varied markedly. For example, many of the kindergarten students did not know the alphabet. This presented a problem since students were expected to select answers coded A, B, C, and D. Other children could not write the letters of the alphabet. To address this problem the following procedures were adopted for both pretest and posttest assessments.

The GANT Test given to kindergarten students was reduced to twenty-two questions. The test was given over a period of one week by asking students two or three questions at a time. The kindergarten teachers used their own judgement in recording the answers chosen by their students. Some kindergarten teachers substituted ships, trains, and flags for the usual letter answer selection codes. Some teachers read the questions to each individual student, while others read the questions to the children groups. Out of necessity, testing procedures with kindergarten classes were not standardized. Students in grades one through three had teachers administer the complete thirty-four item GANT Test over a two-day period. One-half of the questions were given on each day. Since the GANT Test is a new, previously unstudied instrument and the procedures employed with kindergarten classes were inconsistant, the test results must be viewed with caution.

The New Jersey Test used with students in grades four through eight was given according to test instructions at both the pretest and posttest administrations. Two class periods (forty-five minutes each) were set aside in which to administer the test. Students were read the test instructions, given a sample question and then asked to complete part of the test.

In addition to reporting the test scores for children at Sellars, scores for students in other schools are reported. These students were taught analytic thinking by teachers involved in a graduate practicum in Analytic Teaching during this same period. Teachers in this practicum had already completed six-credit hours of graduate work in Analytic Teaching. They encountered the

same difficulties when administering the GANT Test to young children as the Sellars teachers. They utilized similar procedures for administering the test to kindergarten classes. Control classes in this study consisted of students and teachers who had no exposure to the Analytic Teaching Program. The teachers in the control classes administered the GANT or New Jersey Tests to their class using the same procedures employed by the teachers teaching analytic thinking.

The results of this study are summarized in Tables 1 & 2 and Figure 1. The test scores reported represent the number of items missed by the student on the test. No significant tests were performed on the data because of the sampling and measurement limitations of this study. However, the descriptive data presented is very promising and suggest that additional investigations examining the teaching of analytic reasoning skills directly to students at all grade levels should be initiated.

Table 1 presents the pretest, posttest and difference scores for the 498 children in kindergarten through the third grade who participated in this study. Table 2 presents the same test data for the 362 children in the fourth through the eighth grades who participated in the study. Figure 1 graphically presents the overall results of the study comparing average test scores for the various groups at both the pretest and posttest.

As an examination of the data indicates the average test scores improved from the pretest to the posttest assessment for the children in all grades who were given direct instruction in analytic thinking strategies. On the other hand the average test scores stayed the same or grew worse for children in all grades who were not given instruction in analytic thinking skills. The pattern of improvement for children involved in the Analytic Teaching Program was the same across all grades and for the two different tests. Although the data is preliminary in nature, the results strongly suggest that instruction in analytic reasoning skills can improve children's thinking skills regardless of grade level.

Ronald Reed and Allen Henderson

Reference:

Reed, R., and Henderson, "Analytic Thinking for Children in Fort Worth Elementary Schools: Initial Evaluation Report Summer 1981", Analytic Teaching, Vol. 2, No. 1, Nov. - Dec. 1981.

Reed, R., Rebecca. Unpublished manuscript.

Lipman, W., Pixie. New Jersey. First Mountain Foundation, 1982.

Note: For further information contact Ronald Reed or Allen Henderson at Texas Wesleyan College, Fort Worth.

Table 1

Analytic Teaching Study Fall 1983
Average Pretest, Posttest and Difference Scores
Kindergarten - Third Grade

GRADE

GROUP		Kindergarten			First			Second			Third			TOTALS		
		Pre	Post	Def	Pre	Post	Def	Pre	Post	Def	Pre	Post	Def	Pre	Post	Def
	TEST	17.2	10.7	-6.4	26.5	20.5	-6.0	0	0	0	24.3	15.4	-8.9	17.0	11.7	-5.3
			N=63			N=77			N=0			N=116			N=256	
	CONTROL	15.3	14.3	-1.0	23.3	23.4	.13	16.5	17.8	1.2	17.6	17.7	.06	18.2	18.3	.10
			N=11			N=48			N=57			N=34			N=150	
	PRACTICUM	15.9	10.3	-5.6	24.2	17.6	-6.7	28.8	15.5	-8.3	0	0	0	16.0	10.8	-5.2
			N=18			N=38			N=36			N=0			N=92	
	TOTALS	16.1	11.7	-4.4	24.7	20.5	-4.2	13.4	11.1	-2.4	14.0	11.0	-3.0			
			N=92			N=163			N=93			N=150			N=498	

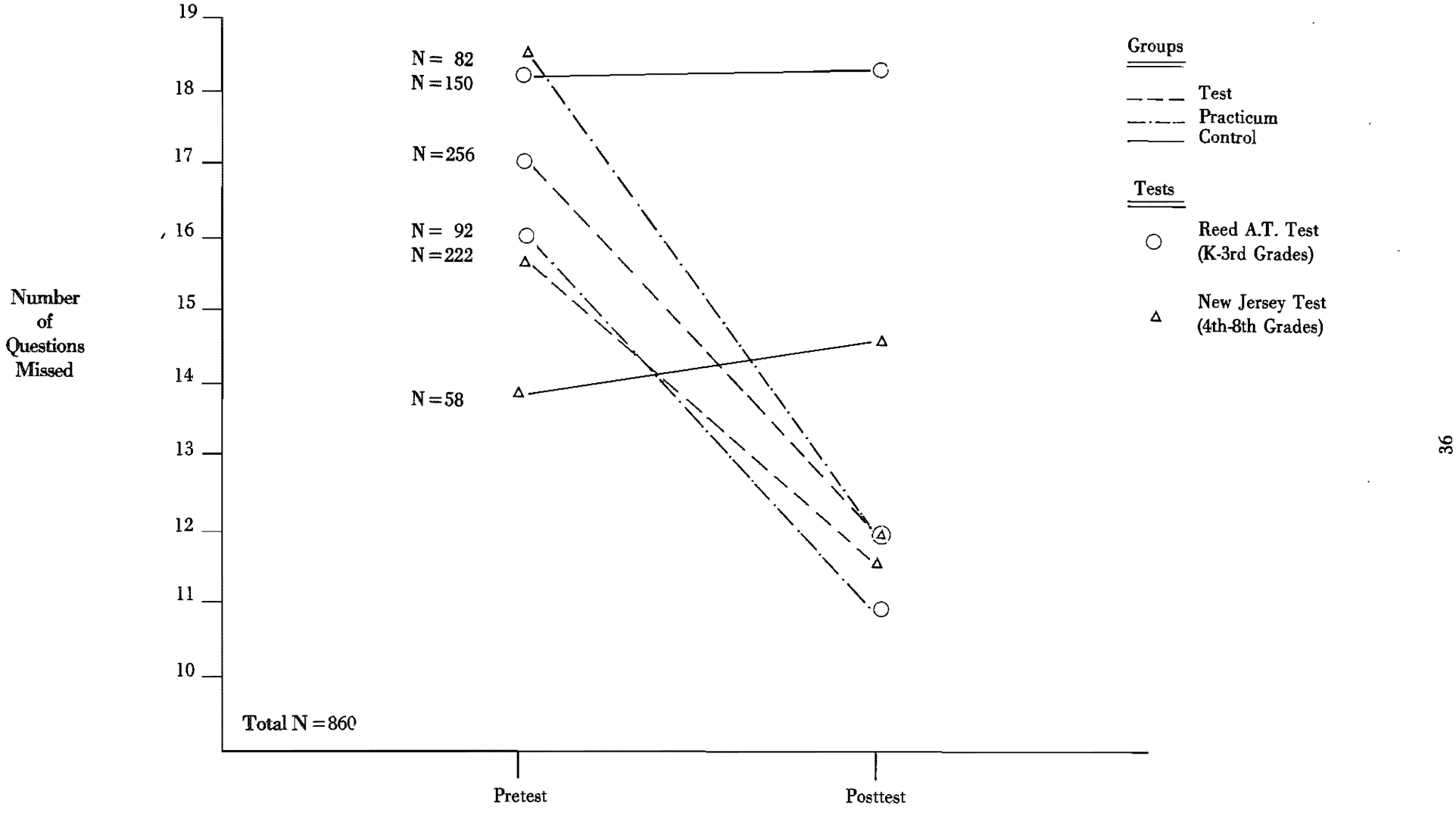
Table 2

Analytic Teaching Study Fall 1983
Average Pretest, Posttest and Difference Scores
Fourth - Eighth Grade

GRADE

GROUP		FOURTH			FIFTH			SIXTH			SEVENTH & EIGHTH			TOTALS		
		Pre	Post	Def	Pre	Post	Def	Pre	Post	Def	Pre	Post	Def	Pre	Post	Def
	TEST	34.3	25.9	-8.3	28.5	20.0	-8.5	0	0	0	0	0	0	15.7	11.5	-4.2
			N=94			N=128			N=0			N=0			N=222	
	CONTROL	25.4	27.2	2.8	0	0	0	12.2	12.0	-.18	17.7	18.9	1.1	12.8	14.5	.69
			N=40			N=0			N=11			N=7			N=58	
	PRACTICUM	24.6	16.7	-7.8	31.7	20.3	-11.4	17.7	10.1	-7.6	0	0	0	18.5	11.8	-6.7
			N=43			N=10			N=29			N=0			N=82	
	TOTALS	28.1	12.2	-4.8	20.1	13.4	-6.6	10.0	7.4	-2.6	5.9	6.3	.38			
			N=177			N=138			N=40			N=7			N=362	

FIGURE 1



Analytic Teaching Study Fall 1983

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