

A FIELD STUDY ON A PROGRAMMED THERAPY FOR LANGUAGE PROBLEMS

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Problem

Introduction

Programming and educational technology represent teaching procedure which maximize the educational outcome by defining and operating a systematic" sequence of the basic learning elements—stimulus, response and consequence. One of the basic considerations in such an instructional equation is the deliberate and correct use of information about human learning. Indeed, the efficacy of teaching strategies which adhere to these principles is well substantiated in the literature. It would appear that any attempt at designing a teaching strategy must incorporate these basic elements. In fact, it is doubtful if it is possible to avoid it. At the moment the only choice appears to be whether or not to go about it in a systematic way.

This basic observation would appear to apply to language teaching as well. Yet in our field very few teaching strategies look upon the teaching of language as a programmatic educational technology. The reasons are many but probably include at least the fact that to become technically precise in language teaching is difficult and also, to many, the technological and or learning approach, at the philosophical level, is humanistically repugnant and individually degrading.

In the final analysis the worth of any particular teaching system is usually determined by the appeal of the underlying theoretical assumptions, or by personal dislike, or by its effect upon the child's language performance. Indeed some language programmes are designed to meet the emotional needs and self-image of the teacher, some are designed to achieve changes in language performance of the student, and some are a mixture.

Teaching strategies which utilize a large amount of programmatic detail usually view language from more of a topographical point of view than do less programmatic procedures. That is, more attention is paid to performance and there is a deliberate attempt to base decisions about teaching activity upon some observable performance. In fact, definition of the goals of the procedure **are** based upon performance.

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Language, in this context, can be viewed as a definable, and thus teachable, performance. The act of talking is an observable performance on the part of the receiver. The phonemic and morphological components describe the constraints of the sounds used and the way in which they are clustered (words). The grammatic component describes the temporal ordering of and the relationship between words and classes of words. The semantic component describes the meaning or intent of the message (Gray and Ryan, 1973).

This inclination to describe language as a learnable skill frequently causes concern among those who prefer not to use programmatic-learning strategies for language teaching. The concern appears to be that learning theorists and behaviorists have not been able to develop a theoretical model which accounted for or explained the normal development of language. However, the central question in teaching language to a non-language child is not whether or not learning principles and programming do participate in the normal development of the language but, rather, can learning principles and programming be used to teach language.

If a child does not develop language normally then for the language teacher there is no other alternative but to teach it. The magical influence of the passage of time and the event of readiness have not produced it. Even those teachers who ascribe most ardently to the developmental philosophy of language instruction must end up teaching it. There is currently no way we can go inside the child and alter the developmental biology in a manner to cause language to begin to develop. After all the talk about differential diagnosis, etiology, natal history, natal development, language surface and base structure is finished the ultimate reduction is what is the child *doing*, what do I want him to *do*, and finally how do I *teach* him to do it.

Method

Programme

In 1968 we began to develop a language teaching strategy which relied heavily upon education programming and basic learning algorithms. The procedure itself was termed programmed conditioning (Gray & Fygetakis, 1968 a, b; Fygetakis & Gray, 1970). It became the basic instructional equation in the Monterey Language Programme (Gray & Ryan, 1970). That programme was developed to teach linguistic grammar rules as well as vocabulary. The target for the programme was normal language performance.

The Monterey Language Programme consists of a curriculum of 40 specific individual programmes each designed to teach a specified grammar usage or vocabulary performance. The curriculum and the design of individual programmes for teaching syntactic performance included child selection procedures for student-programme compatibility, locater procedures for optimal placement within a given programme, automatic branching to maintain high levels of response

accuracy, carry over procedures to insure use in the natural environment and continuous data monitoring of programme run characteristics to ascertain proper programme administration and student progress.

Field Application

This programme, like others of this general type, was developed in a laboratory setting. This had both disadvantages and advantage?.

A distinct difficulty with laboratory developed procedures is that they are developed in an environment which is different from the one in which they are intended to operate. Thus, it becomes important to field test such programmes extensively in order to determine if the programme, operation and therapeutic benefit noted in the early testing continues to hold up in the field.

Since 1970 the Monterey Language Programme has been carefully taught to more than 1200 teachers and therapists located in 40 public school or clinical operations throughout the country¹. This has involved in excess of 30,000 students.

During the therapy activity the teachers and clinicians maintained data sheets on which they recorded programme step, number of responses, accuracy, amount of therapy time by student, by lesson and pre and post programme criterion tests. Whenever a student finished a programme the completed data sheets were turned in. The information on the sheets was converted into data statements about the operational characteristics of the programme run and its administration.

These data are called run data (Gray, 1974). Four major categories of run data are student responding accuracy, number of responses needed to complete a programme; amount of therapy time needed to complete the programme, and pre-post programme criterion tests. These categories indicate the proficiency with which the procedure was carried out.

Results

Field Data

One advantage of this type of programme development is the opportunity to study the programme closely and to develop a set of data notations which will indicate both the adequacy of teacher and programme operation as well as student progress. Table 1 presents the overall run data for the Monterey Language Programme from the sample of data which was analyzed in 1973-74.

Table 2 presents a substrata of that data organized according to 6 general geographic regions. The bottom set of figures labeled BSI represent the Behavioral Sciences Institute's laboratory established norms for run data which indicate appropriate operation.

¹ Monterey Learning Systems, 99 Via Robles, Monterey, California 93940.

Table 1
Run data in mean values for total sample of students on whom data sheets were returned
Total Language
Run Data

% Accuracy	Hours	Responses	Criterion Tests	
			Before	After
90.5	3.6	911.0	11.6	94.7
Totals				
Students	1,545			
Hours	9,309			
Responses	2,469,866			

Table 2
Run data in mean values for selected subsample of total sample. Selection was by 6 geographic areas. BSI entries represent the Laboratory established norms for adequate program operation
Different Sites
Run Data

Site	% Accuracy	Hours	Responses	Criterion Tests	
				Before	After
California	89	3,1	820	12	95
Iowa	95	2.9	700	10	97
Minnesota	91	3.4	760	9	97
North Carolina	95	3.1	660	18	96
Oregon	92	2.5	670	8	98
Pennsylvania	91	2.6	690	7	96
BSI	90	3.7	800	22	93
Totals					
	1,331				
Hours	7,800				
Responses	1,911,316				

Table 3 shows the run data for 4 etiological subclassifications.

Table 3

Run data in mean values for selected subsample of total sample. Selection was by 4 general etiological classifications. Hearing group was comprised primarily of profoundly deaf subjects

Different Children

Run Data

Type	% Accuracy	Hours	Responses	Criterion Tests	
				Before	After
Non-English	91	1.7	513	14.6	97.2
Hearing	91	3.4	471	14.9	95.2
EMR	91	2.5	606	11.0	92.4
TMR	86	4.9	1052	12.4	92.3
Totals					
Students	303				
Hours	1,879				
Responses	399,960				

Table 4 shows the results of pre-post language tests. A variety of generally recognized tests were used. The approximate therapy time between pre and post test was 10 hours.

Table 4

Pre and Post test scores on 7 different language tests. The PCLT entry is the criterion referenced test which is specifically keyed to the Monterey Language Program itself. Instructional time between pre and post test is 10 hours

Test Scores

230 Children 6 month period

Test	Before	After	% Improvement
PCLTp	37.2	57.3	54
PPVT	5.3	6.0	13
ACLC	75.9	85.7	12
NSSTt	19.9	22.8	15
NSSTe	9.6	13.3	35
BCI	63.8	57.3	17
BOEHM	24.6	28.9	17

Summary and Conclusions

From the foregoing data two conclusions appear warranted. First, programmatic procedures for language teaching can be used by teachers and therapists in the field in a manner equivalent to that observed in the laboratory. There were no remarkable differences in run data among regional locations or among noted etiologies.

Second, therapeutic impact was reflected in a variety of criterion referenced and norm referenced tests which accounted for both expressive and receptive language performance. This outcome suggests that programmatic procedures can result in clinical gain in the field as well as in the laboratory.

If the Monterey Language Programme and other similar programmatic language teaching procedures continue to demonstrate clinical efficiency, therapeutic gain and educational accountability in the field then perhaps it is time to consider that programming and techniques of educational technology do have a valuable place in the delivery of services to children with language handicaps.

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