

Quantitative measurement of errors and remedial instruction in reading Arabic

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Teaching children how to read, viewed through an historical scheme, shows certain trends. The "whole" method was used as a reaction against the old phonic method in the early twentieth century. Later on, the "experience approach," which is associated with "progressive education," supplemented the "Whole" method. Then came the Gestalt theory, which was used as a theoretical basis for learning word "wholes." However, "the most prominent criticism of instruction in the 1940's and 1950's centered around the place of phonics in the teaching of reading." (1) The crucially important fact which is drawn from the historical evaluation of teaching how to read is the:

"Realization that different children learn in different ways, that the process of learning to read and reading are more complex than we once thought, and that the issues in reading instruction are many sided... From the scientific point of view, we must regard as false prophets those who advocate one method or one type of material for all children regardless of whether they are at different stages of learning to read or whether they are reading for different purposes." (2)

There are no decisive conclusions that the success of learning to read a new foreign language is related to any one approach or philosophy of teaching the language. Experimental studies have made only gross comparisons bet-

ween "traditional" and "new" type courses without isolating the effect of different approaches to the teaching of reading. They have established that students succeed in learning to read about as well under any approach. (3) However, this should not close the door for more and varied experimentation in regard to those oriental tongues of which Arabic calls for more ample attention.

THE PROBLEM

The purpose of this study has been to diagnose, analyze, and measure quantitatively the reading errors committed by American college students while learning to read modern standard literary Arabic.

SUBJECTS

When the Fall Quarter of 1969 began, twelve students were enrolled in the beginning course of Arabic. This relatively small number suggested the case study method of research as the method of conducting the study, which took place in the University of Utah in Salt Lake City, Utah.

First, each student was given the Modern Language Aptitude Test, (4) for the purposes of screening the cases individually, obtaining general ideas about the range of their language aptitude, and acquainting the investigator with the strengths and weaknesses of each case,

(1) David H. Russell and Henry F. Fox: "Research on Teaching Reading," in *Handbook of Research on Teaching*, American Educational Research Association (Chicago: Rand McNally and Company, 1963), p. 867.

(2) *Ibid.*

(3) See the works of Emma H. Birkmaier, "Modern Languages," in C.W. Harris (ed.), *Encyclopedia of Education Research*, 3rd ed. (New York: Macmillan, 1960); and D.L. Hamilton and E.F. Haden, "Three Years of Experimentation at the University of Texas," *Modern Language Journal*, Vol. 34, No. 2 (February, 1950), pp. 85-102 and J.M. Hahfeld, *An Experiment Employing Two Methods of Teaching Spanish to College Freshmen*. Doctoral Dissertation, University of Pennsylvania, 1950.

(4) John B. Carroll and Stanley M. Sapon, *Modern Language Aptitude Test* (New York: The Psychological Corporation, 1959).

TEACHING PROCEDURES AND TECHNIQUES

1. A series of twenty-four lessons was mimeographed in the form of a textbook especially designed for research purposes.

2. The try-out text was divided into two major phases: The first phase consisted of five lessons. The purpose of these five lessons was to teach the student how to read and write modern standard literary Arabic. In order to do so, especially designed audio-visual materials were prepared.

In order to identify the nature of his reading errors, each student was given a reading test individually at the end of the academic year. The test was composed of two parts: The first consisted of eleven words, each of which was projected separately; the second consisted of twenty-five pairs of words, each pair representing one unit.

The words of both parts were chosen on the basis of their frequent use in the Egyptian newspapers and literature. Very few of these words were known to the students but all were vowel-diacritically according to the Arabic vowel system. No time limit was required for the reading. Each student's reading was recorded on tape.

METHOD OF ANALYSIS

Each recorded word was analyzed by the experimenter who was the instructor of the twelve cases. After careful examination of the student's recordings and comparing their pronunciation with the original sounds of Arabic, the experimenter was led to believe that Monroe's (5) diagnosis of children's difficulties in reading could be used as a diagnostic method in analyzing the student's responses in reading Arabic. Monroe has listed six types of errors as follows: (1) Faulty vowels (2) Faulty consonants (3) Addition of sounds (4) Omission of sounds (5) Repetition of sounds (6) Reverse.

The only error which the subjects of this experiment did not commit at all was the "reverse" of consonants. Therefore, only the first five types were taken by the experimenter to analyze the student's reading. These types were

defined according to the nature and principles of Arabic as follows:

Faulty vowels: A vowel error was recorded for each mispronunciation in which the student altered one of more of the Arabic vowel sounds: /a/, /u/, /i/; /a/, /u/, /i/.

Faulty consonants: A consonant error was recorded for each mispronunciation in which the student altered or mispronounced one or more consonant sounds. i.e., the /q/ is pronounced /k/; /h/ is pronounced /h/ is pronounced /h/; ξ is pronounced /' / (or hamza).

Addition of sounds: A sound-addition was recorded for each mispronunciation in which the student omitted one or more sounds or part of a word.

Repetition of sounds: A sound-repetition was recorded each time the student repeated a vowel or a consonant in his/her mispronounced word. Table I shows the typical individual profile of errors of all the twelve cases.

ANALYSIS OF THE RESULTS

The profile of errors gives a measure of the quantitative differences between a student's performance and that of other students. The profile is of practical value in assisting in the diagnosis of the specific difficulties which a student has in learning Arabic as a foreign language. For example, the major problem of case 5 in Table 1 is "addition of sounds." The same table shows clearly that the profiles are as varied as the number of students examined.

The overall picture given by the data in Table I suggest the following:

1. As far as the twelve cases of this study are concerned, Monroe's system of analyzing reading errors served as an excellent diagnostic device for analyzing the students' errors in reading Arabic.

2. The error least committed by all the students was the repetition of sounds, and the most serious type of error was "addition of sounds."

(5) Marion Monroe, *Children Who Cannot Read* (Chicago: University of Chicago Press, 1954), pp. 34-37.

TABLE I
Typical Individual Profile of Errors
of all the Twelve Cases

Case	Faulty Vowel	Faulty Consonant	Addition of Sounds	Omission of Sounds	Repetition of Sounds	Total
1	1	1	1	2	—	5
2	4	12	4	9	1	30
3	5	11	3	4	1	24
4	17	10	15	5	2	49
5	6	7	18	8	5	44
6	2	3	4	3	5	17
7	3	7	13	0	5	28
8	4	6	10	6	4	30
9	6	9	4	3	9	31
10	4	3	5	2	7	21
11	4	8	10	3	4	29
12	13	4	8	0	3	28
Total	69	81	95	45	46	336
Mean . . .	5.75	6.75	7.91	3.75	3.83	

DISCUSSION AND CONCLUSION

The important outcome of this study is the development of a technique where by students' errors in reading Arabic can be diagnosed, classified and grouped together objectively. Such a technique can throw enough light on the student's problems and confine them to certain mathematical value which may be called "quantitative measurement of reading errors." Effective teaching of Arabic as a foreign language cannot be measured by verbal judgment such as saying that student "A" reads better than student "B", or that student "C" is not a good reader at all. Sound teaching is usually based on sound theory and valid and reliable techniques. Therefore, using Monroe's adapted diagnostic method makes the students' errors measurable quantitatively. It enables the language instructor to pinpoint individual problems. It will be significant to test this method of analysis on other foreign languages.

A FOLLOW UP STUDY

THE PROBLEM

This report is a follow up to a study on the kinds of errors that American students commit when they learn to read Arabic and the means of measuring such errors quantitatively. The previous study suggested that no matter how students are taught to read Arabic, or any foreign language, they tend to develop certain errors in the early stage of their reading performance. The errors of the subjects of the study were thoroughly analyzed from two basic sources: (1) The profile of reading errors, and (2) tests of various discriminations involved in reading. From these two sources of data, the factors which appear to have impeded progress in reading were as follows: (1) Faulty vowels (2) Faulty consonants (3) Addition of sounds (4) Omission of sounds (5) Repetition of sounds.

The purpose of the present study was to follow up the cases of those students who showed enough errors in their reading performance and who needed special attention or "remedial instruction."

SUBJECTS

Eight students from the same twelve cases previously diagnosed received varying amounts of remedial instruction in reading according to the methods outlined previously. Four of them volunteered to receive training under class supervision. Instruction was given individually. The work done with them was intensive and carefully controlled. In these cases the remedial work was given usually in hour sittings at regular intervals. For comparison purposes, these cases were known as group A.

Group B consisted of the four students who received no remedial instruction in reading, but continued in their regular Arabic course in the class. Both groups were tested again after a period of time in order to determine the progress made by reading-difficulty cases during ordinary class instruction without special assistance. Group B, therefore, gave a basis for the comparison of the effectiveness of remedial-reading instruction with ordinary class instruction in cases of reading difficulty.

LIMITATIONS

Due to the fact that Arabic is a recently introduced language in a small number of American universities, and consequently, very few students enroll in this language, the most obvious limitation of this study is its necessarily small number of cases.

PROCEDURES AND TECHNIQUES

Selection of Remedial Methods.

The selection of remedial methods in this experiment was made with a view of overcoming, if possible, the impediments which had hindered the student from reading Arabic effectively and in an acceptable manner. Drills and devices were arranged to minimize the student's excessive errors in reading, to assist in establishing, as far as possible, the discriminations which he failed to make, and to enable him to utilize to the fullest extent the discriminations which he was able to make successfully.

The complexity of the reading process of Arabic scripts offered the opportunity for a variety of methods of learning. Individual differences suggest that different individuals learn to recognize a printed symbol in entirely different ways. For example, the student who was able to discriminate letters but not words; was taught by a method which began with small units and built up the larger ones gradually. The students who failed to discriminate precisely the sounds of words was taught the movements of placing speech organs to obtain the desired sounds.

Because of the following reasons, the methods selected were primarily those which required auditory and visual responses on the part of the student:

1. The audio-visual responses are seen in their relationship to teaching and the learning process as a whole.
2. The audio-visual responses, when carefully controlled, do assist in discrimination. The students who had difficulty in their reading of Arabic failed to discriminate certain characteristics, such as the sounds of vowels or the connecting positions of patterns. Forcing the student to make different audio-visual responses to different characteristics reinforces the visual and auditory characteristics.
3. The audio-visual sensory stimuli assist in holding the student's attention. Attention has been defined as an adjustment of the organism in such a way as to bring the sensory stimuli into the field of greatest vividness or intensity (6).

The Differences Between Remedial Instruction and Ordinary Teaching of Reading Arabic.

Remedial instruction of reading is a different problem from the usual teaching of reading to students who have minimum difficulties. The problem of effective educational instruction in reading Arabic is to find the methods which are best adapted to develop reading skill in the majority of the students who are learning the language. The problem of remedial instruction in reading is to find a possible method of learning for those students who have not been able to read by methods adapted to the group. The methods found helpful for reading-difficulty

(6) Harvey A. Carr, *Psychology*, New York: Longmans, Green & Company, 1925, p. 78.

cases may not necessarily be the same in regular instruction. During the whole phase of the experiment, there were three basic assumptions: (1) although it is desirable to be a reader within a reasonable level, it is better to be a slow reader than a non-reader; (2) although it is desirable to be able to recognize large units and more complex patterns, it is better to read sentences word by word, sound by sound, than not to read them at all; (3) although it is desirable to obtain meaning without the awareness of mechanics, it is better to get the meaning by mechanical steps than not to get it at all.

Individual Instruction.

One of the most important factors in remedial instruction which was undertaken in this study was individual instruction. Under such conditions the instructor was able to study the student and his reading difficulty more carefully than in a group. Individual instruction, in addition to its general usefulness for each student of Arabic, could be considered an important factor in the success of the methods applied and in the efficiency of the material utilized. It should be noted, however, that some of the students who showed almost complete inability to learn Arabic at the very beginning improved their reading. In addition, special methods were applied successfully to a small group of reading-difficulty cases. It could be asserted that both the nature of the methods and the individual instruction contributed jointly to the effectiveness of the remedial work.

Psychological Factors in Remedial Instruction.

"I feel that I am really stupid or dumb." This was a comment by one of the students who showed inability to read Arabic. When he became aware of his own little success, his picture about himself began to change. In his specific case, instruction began with simple material so selected and designed that he would have a high percentage of success. In this case, moreover, the remedial work was psychologically therapeutic in replacing failure with success and in stimulating a genuine desire for a goal which could be achieved.

METHODS AND MATERIALS

The methods and materials which were selected to correct the excessive errors were given

according to the various types of errors which were known as a result of the analysis of the student's reading performance.

Although the methods and materials used in this study seemed to be new, they were probably not entirely new to other languages. The only difference was their specific application to particular difficulties.

ERROR IDENTIFICATION AND CORRECTION

1. Faulty vowels and consonants. Among the causes for faulty vowel and consonant errors are the following: (a) difficulty in discrimination of specific speech sounds; (b) inability to associate or to retain visual and auditory symbols easily.

It was necessary, in all the cases, to build up the ability to discriminate the Arabic sounds. Special words were selected and written on slides. These, and others used for different purposes, were synchronized, i.e., sound accompanied the word as it appeared on the screen. While the word was projected on the screen, an interval was provided in order that the student could repeat aloud and copy down what he heard and saw. In order to obtain the correct placement of the speech organs in specific sounds, devices such as diagrams of function and location of speech organs, and live demonstrations by the instructor were used.

The drills in sound discrimination were varied by presenting the various sounds of the Arabic alphabet in different units (words).

The drills for vowels followed the same procedure. The student was shown how to shape the oral cavity to obtain the proper vowel.

In every step each word was a drill in blending the sounds to make the word. The sounding consisted of articulating the word distinctly and slowly enough for the sequence of sounds to become evident (7).

In all the steps taken, the student was encouraged to articulate the separate sounds and blend them as he heard them. The variability of the students in their immediate recognition of words was evident. A word might be recognized immediately as a unit at one setting and yet have to be attacked phonetically.

(7) The method of "sound-blending" has proved in all cases very effective in teaching the student the Arabic alphabet. Although the word was written as a whole, sound-blending distinguished each phoneme or morpheme alone, which helped the student to master the alphabet faster.

A sound dictation method was also used in this stage of remedial instruction. The student was asked to write the words as the sounds were dictated by the teacher.

2. Addition of sounds. Among the causes for inserting extra sounds in words were failure to discriminate the blends of Arabic consonants, failure to discriminate the word form accurately, and failure to give the sound or vowel its proper length. The reading test given before showed that addition of sounds was the most frequent error committed by all the students.

The causes of inserting sounds were found to be: (1) extra lengthening of vowels; (2) overlooking the rules of connecting the end of a word with another word which starts with the definite article, and (3) the position of the speech organs in the formation of specific sounds.

For this kind of difficulty, drills on lists of words which have short and long vowels were used. A special drill was given to train the student to listen to the long vowels and connected definite article in a "sun-letter" combination. The words were printed on cards and mixed so that the words with or without long vowels and definite article did not appear in a regular sequence. The teacher read the word on the first card, the student listened but did not see the card. He then indicated whether or not he thought the word contained either a long vowel or connected definite article. The card was given to him to check his response by seeing whether the long vowel or the definite article was actually present.

3. Omission of sounds. Two main causes were found for the omission of sounds; (a) difficulty in discrimination of complex patterns so that the student recognized a smaller unit within a word and omitted the rest of the word; (b) overstress of speed, in some cases, and inability to blend a sound and a vowel at the same time; e.g., *al-madinatu* was read *al-dinatu*.

The students who selected only a smaller unit within a word were given drills in dividing words into small and easy units, such as syllables in polysyllabic words. The small portions of a word were then combined to make the complete word.

In cases in which the student's omissions were caused by undue speed, he was encouraged to slow down until accuracy was obtained.

4. Repetition of sounds. Repetition often resulted from: (a) other errors which disrupted the meaning of the passage, so that the student reread part of the word in an attempt to join the repeated sound with the following one; (b) the student's attempt to discover the error.

In cases in which other disrupting errors caused the repetition, no specific drill was given since the repetition gradually decreased with the treatment of other errors.

The remedial methods as here described were specially modified to meet the needs of each student. The drill words were designed and modified to attack specifically each student's errors were recorded, the tabulated as mentioned in the first phase of the experiment. The consonants and word were then photographed on synchronized slides, illustrating the various steps of procedures, unusual sounds, short vowels, long vowels and so on.

In remedial instruction the following materials were found helpful and effective: Arabic typewriter, sound-slide series (synchronized), elementary books in Arabic for Arab children, tapes, records, and flash cards.

Although the methods stressed the mechanics of word recognition, such recognition was utilized not as an end in itself, but as a means to accomplish a final goal of reading, and the comprehension of meaning.

RESULTS AND CONCLUSION

1. When the total errors, of cases receiving remedial instruction, measured quantitatively were compared with the total errors of cases receiving no remedial instruction, it was found that the Experimental Group committed significantly less errors than the Test Group (Mean for Group A = 9.25 and for Group B = 15.75).
2. When the progress of the four cases was compared with their performance before receiving any remedial instruction, it was found that their errors were almost reduced to half (the over all improvement = 67.50).

It appears from this study that the students who have difficulty in learning Arabic or similar foreign languages do not overcome the difficulty under ordinary class instruction but are able to make accelerated progress under special methods adapted to their difficulties.