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THE ORGANIZATION, ADMINISTRATION AND EVALUATION OF A READING AND STUDY SKILLS PROGRAM FOR STUDENTS ENROLLED IN A MEDICAL LABORATORY ASSISTANTS TRAINING PROGRAM.

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AN ANALYSIS AND EVALUATION OF A READING IMPROVEMENT PROGRAM FOR MEDICAL LABORATORY ASSISTANT TRAINEES WHO NEEDED TO IMPROVE THEIR SKILLS IN ORDER TO SUCCEED IN THEIR TECHNICAL COURSE IS PRESENTED. THE STUDENTS WERE GIVEN TESTS OF VOCABULARY, COMPREHENSION, RATE, AND LISTENING COMPREHENSION. THEY KEPT RECORDS OF THEIR OWN PROGRESS, AND POST-TESTS WERE GIVEN AT THE END OF THE COURSE. THE PROGRAM WAS SET UP FOR 10 HOURS OF INSTRUCTOR TIME EACH WEEK. THERE WERE THREE 2-HOUR LECTURE AND DISCUSSION SESSIONS FOR THE ENTIRE GROUP, TWO 1-HOUR PERIODS ARRANGED FOR INDIVIDUAL INSTRUCTION ON SPECIFIC SKILLS AS NEEDED, AND THE REMAINING HOURS WERE USED FOR WORK WITH STUDENT CONSULTANTS AND FELLOW INSTRUCTORS AND FOR GENERAL PREPARATION. THE TECHNIQUES, MATERIALS, AND ORGANIZATION USED WERE SIMILAR TO THOSE USED IN ADULT AND COLLEGE READING PROGRAMS. PRE- AND POST-TEST SCORES WERE ANALYZED BY THE T TEST TO SHOW SIGNIFICANT GAINS IN LISTENING COMPREHENSION AND READING RATE AND BY RESIDUAL GAIN TO SHOW IMPROVEMENT ON THE NELSON-DENNY READING TEST. RESULTS ARE REPORTED IN TABLE FORM. FIFTEEN REFERENCES ARE INCLUDED. (RH)

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Office of Executive Dean for Student Life

UNIVERSITY OF MARYLAND

College Park, Maryland

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I. REVIEW OF THE LITERATURE:

Adult and College Reading Programs

Adult and college reading programs generally speaking have many characteristics in common. Both include rate improvement as a major goal of the program with an emphasis on flexibly adjusting rate for difficulty of material and purpose of reading. Both stress methods of survey reading and skimming; use of machines and printed exercises; comprehension improvement and vocabulary development. Intensive reading for detailed understanding and retention is emphasized more in the college programs while the adult programs seem to be moving toward fewer, more intensive practice sessions. The new techniques of brainstorming and the group discussion of problems has been especially successful with both the college and adult programs. As both programs are frequently taught by the same personnel, general objectives and methods are very similar. (2)

A Balanced Program

A balanced reading program, adult or college, must consider the following: Diagnosis, rate, comprehension or critical reading, evaluation, and research. (8)

The overwhelming need for diagnosis is adequately spelled out by Heilman in his article, "New Challenges and Old Problems in College-Adult Reading,"

> we need a very careful diagnosis of each individual who enrolls in college or adult programs and we need this careful diagnosis so that we can use it to design or build reading programs which fit the specific needs of enrollees, and later, diagnosis should serve as a blueprint for instruction. (8)

The second consideration of his article is rate with the possibility that many college and adult reading programs are overly machine-oriented. In evaluating 214 respondents as to their use of mechanical devices he concludes, "the materials used strongly suggest an overemphasis on mechanical devices and instruction dominated by concern with rate." The problem of reading rate is also reviewed in "The Future of Rapid Reading" by Charles T. Letson (10) who reaches the following general conclusions:

> Rapid reading is a useful skill and we may expect further developments in it.
> Rapid reading is being overemphasized and commercialized, causing misconceptions.
> Thousands of words-per-minute reading rates are impossible; for these are skimming rates.
> Rapid reading is largely an individual matter and should be taught only to those who are able to benefit by it.
> Rapid reading techniques can be taught at lower grade levels.
> There are other important skills and rapid techniques that should be stressed.
> Flexibility of reading rate, rather than just rapid reading, is the ultimate goal.

In "The Role of Reading Films," Carroll and Thalberg (4) comment favorably on the use of reading machines with the lack of individual instruction being sighted as an important drawback; the "Pros and Cons of Tachistoscopes,"

by L. D. Gilmore (7) also lists poor for general group instruction as a limitation of this device and then adds the proper use of the T-scope by the instructor as the all important factor in its utilization. Finally, Bernard Schmidt (15) says in "Mechanical Devices and Reading Instruction,"

> students are improving their reading with films, pacers, and film strip devices as an integral part of the teaching program. The results obtained in these programs, in comprehension, speed, and flexibility have been reported until there is no question of their improvement.

The third area of consideration suggested by Heilman comes in the form of a question. Has comprehension or critical reading, been overshadowed by the interest in rate of reading? He concludes that this is so. As recently as the 1962 National Conference Yearbook, Albert J. Kingston, Jr. (9) introduces his article, "Some Thoughts on Reading Comprehension," with " . . . the term reading comprehension is a vague and poorly defined concept." In searching through the past seven years of research in reading, Heilman (2) found only two descriptions of techniques for teaching critical reading - - these he considered exceptions. One of these studies, that of Cora Fischer, (6) describes how emphasis should shift to development of specific comprehension skills as rate improves. She believes comprehension to be of intellectual order of varying degree with some skills being less difficult to learn than others:

> choosing main idea
> recognizing significant details
> summarizing skills
> direction following
> vocabulary improvement
> and skimming represent skills of the lower intellectual order
> inferences
> intent and tone of author
> purpose of author
> semantic devices
> and becoming aware of personal biases representing comprehension

skills of the higher intellectual order. For practice in specific comprehension skills, the exercises in workbooks such as Marvin Glock's Improvement of College Reading were recommended.

The facet of evaluation, the fourth area under consideration by Heilman, is summarized in "Some Thoughts on the Current State of Research in Reading,"

> A recent look at about a thousand research studies in reading turned up about three hundred studies in which someone had given a reading test, taught a course, then given another reading test. . . . the other studies contributed very little to our knowledge of reading. (12)

and the "1962" Review of Research in College-Adult Reading," (1) mentions the various criteria which were used to evaluate reading programs: standardized reading test score gains, academic achievement, control groups, and applications of statistical tests of significance of obtained gains were listed.

The last consideration for a well-balanced reading program is research. Heilman poses two questions for this area (a) is there a need for research in college-adult reading and (b) has the research of the past had any significance in college-adult reading?

Helen Robinson (13) comments on the voluminous research in reading with the need

> to improve research designs in order to obtain greater satisfaction from the large number (but varying in quality) of studies done each year. Furthermore, most published reports are brief with sketchy descriptions, often with such serious omissions that the reader is unable to make a critical analysis of the investigation.

In addition to the plan of critical review among reading researchers, two suggestions are offered in "Applying Research Findings to classroom practice," a. increased communication between research workers and b. objective evaluation of new research to avoid the confusion of conflicting findings and to insure application of research in suitable environmental settings. (14)

My Study

As a reading specialist for the Baltimore County Public Schools with some knowledge of the operation of the Reading-Study Skills laboratory at the University of Maryland, I was called on to inaugurate the reading part of the new training program for Medical Laboratory Assistants at the D.C. General Hospital. My first problem was to decide which kind of a program would best facilitate learning in this situation. After reviewing the literature, I found that adult and college reading programs were quite similar (2) with only a slightly different emphasis in teaching techniques, materials, and general objectives; I felt that I could develop a reasonably specialized adult reading program to carry out my objectives.

The article by Heilman (8) suggested that the necessary steps in the development of such a program are diagnosis, rate, comprehension, evaluation, and research. Diagnosis best was accomplished through the use of tests of mental ability; reading (for an analysis of vocabulary, comprehension, and rate); listening comprehension; and a pre-questionnaire designed to gather additional pertinent information about each individual. Reading rate was developed by the use of the T-scope, Controlled Reader,

and the SRA power builders. The emphasis was, however, on flexibility rather than higher speeds and always in relation to comprehension. The purposes of the machines (4) were to decrease regressions, the time of fixations, and subvocalization; and to increase recognition spans. They were also used to motivate the students to read more efficiently. Comprehension was tested at the completion of each Controlled Reader film with questions of recall, inference, author's purpose and main idea. The SRA booklets and power builders tested each reading selection with questions of cause and effect, sequence, writer's tone, inference, recall, main idea, important relationships, context clues, and semantic variations. EDL's Listen and Read tapes were used to develop listening comprehension, and finally dittoed materials were handed out to explain, develop and evaluate comprehension skills. Evaluation consisted of pre and post testing; subjective evaluation by the students (a mid-term sentence completion evaluation sheet in addition to pre and post questionnaires), the instructors, and director of the Medical Laboratory Assistants Program. Finally, for research this study was to be as detailed as possible with every step of the reading-study skills program written out. The "New Method of Measuring Reading Improvement," by Earl F. Rankin, Jr. (11) was used to give further value to this report by presenting the reader with a statistical grasp of the residual gains of each student.

II. PURPOSE:

The purpose of this study was to organize, instruct and evaluate a reading-study skills course as a part of the training program for Certified Medical Laboratory Assistants.

Description of Medical Laboratory Assistants Training Program:

Graduation from an accredited high school, preferably with ability and interest in science and mathematics, is required for admission to the laboratory assistants program. The course of training is at least 12 months long; beginning with 10 weeks of formal instruction including lectures, discussion, demonstrations, supervised practice, text assignments, practical examinations, and quizzes both oral and written. The remainder of the instruction consists of 40-44 hours per week of actual hospital laboratory training with one instructor for every two students.

This program was initiated by the National Committee for Careers in Medical Technology with funds being provided by the Office of Manpower, Automation and Training of the Department of Labor. The goals for this project are to determine how personnel can be trained for employment as Medical Laboratory Assistants - and to expand training opportunities in this field throughout the country.

As the project is focused on the "utilization of certain disadvantaged persons, such as physically disabled, minority groups, high school graduates needing more academic background, mature women seeking to return to work, and workers displaced by automation and economic shifts,"

the formalized instruction was purposely organized to include reading and study skills. (3)

The reading-study skills training program was set up for 10 hours of instructor time per week, running concurrently with the 10 weeks of formal instruction. Of the total 10 hours per week, three 2-hour lecture and discussion sessions were planned for the entire group, two 1-hour periods were arranged for individual instruction (several students at a time would work individually in the area of their choice), and the remaining two hours each week were used to work with student consultants, fellow instructors, and for general preparation.

III. PROBLEM:

To organize, administor, and evaluate a reading-study skills course as a part of the training program for Medical Laboratory Assistants.

The tested variables were reading tests (including vocabulary comprehension and rate), listening comprehension, mental abilities, grades, ranking order, and pre and post questionnaires.

IV. PROCEDURE:

1. General instruction (for all students)
   a. Individualized practice in reading comprehension, rate, and vocabulary development utilizing the SRA and Reading for Understanding kits, Controlled Reader, and T-scope.
   b. Group instruction with the Listen and Read tapes for the general improvement of reading-study skills.
   c. Lecture-discussions on study skills areas as, memory, concentration, time scheduling, note taking, etc. (using reference books and dittoed materials).
   d. Use of the Medical Terminology: a programed text to help students develop a working medical vocabulary through the study of Greek and Latin prefixes, suffixes, and roots; to assist students in a method for the correct spelling of medical terms; and to teach students to use a medical dictionary intelligently.

2. Specific Instruction (primarily for students in need of help in special areas)
   a. Instruction will be provided for the students who need help in the following:
      1. Syllabication - using the Botel discovery method
      2. Theme or report writing - using the tapes from the University of Maryland reading lab
      3. Study habits and methods - using Pauk's How to Study in College
      4. Reading techniques - using dittoed materials and reference books
         skimming
         reading for details
         reading to get the main idea
         reading to grasp the author's purpose
         reading technical reports
         etc.

3. a. Materials

Controlled Reader/filmstrips/workbooks
SRA Kit/workbooks
T-scope
Reading for Understanding Kit
Listen and Read tapes/workbooks
Textbook: Medical Terminology
Dittoed practice sheets

b. References

How to Study in College
by Walter Pauk
How To Teach Reading
by Norton Botel
Reading Improv. for Adults
by Paul Leedy
Dictionaries (medical and regular abridged)
Reading and Inquiry
by J. Allen Figurel (ed.)

4. Goals For The Instructor

a. Find the students reading levels, and specific strengths and weaknesses to facilitate individualized instruction.

This first goal was accomplished by a pre-questionnaire and a reading test, the Nelson-Denny, to find the students interests and achievements. The staff and I agreed that this goal would have been even more successful had I concentrated on how to study, how to read the textbook, how to prepare for examinations, etc. for the first week or so and then devoted more time to the individual's specific area(s) of needs.

b. Make the students constantly aware of progress.

This was done by graphs and charts for the reading-study skills and weekly quizzes by the instructors of chemistry, math, etc. Again, a conference of all instructors before the start of the program might have made a more meaningful relationship between the reading skills development and content subjects. It was suggested that the reading instructor meet with the staff and discuss the scope of the entire program: type of material covered, textbooks used with the other instructional materials, and the projects assigned, such as research papers, etc. before the start of instruction.

c. Relate, whenever possible, the value of the skill development to the vocational aspirations of the students.

This was done by a demonstration of the S4 3R, dittoed materials on memory, and concentration to help the student better read and comprehend their text materials. After discussing the chapter on how to read technical journals (from Leedy's Reading Improvement for Adults), more time could have been assigned to the group for the reading and discussion of various journal articles.

d. Introduce each lesson with a lecture-discussion but allow ample time for individual practice.

The first hour of the two hour group session was planned for lecture-discussions with the second hour for practice. This procedure worked out fine, but I now believe that more significant individual results would have occurred with more emphasis on practice in the specific area (s) of need.

e. Take part in a weekly "bull-session" with the students to continually re-evaluate the instruction and keep abreast of the students needs.

The weekly period of allowing the students to talk about their problems plus the use of student consultants and a mid-term sentence completion sheet gave feedback for the reading-study skills and the overall training program. These reactions were responsible for some very positive changes while the program was in progress, making the students themselves responsible for most of the innovations.

f. Attempt to relate reading and study skills to other courses working with fellow teachers.

The instructors sat in on some of the lecture-discussion classes so that they might relate back to their courses. Especially valuable was the discussion with the S4 3R method, with an instructor present who carried the ideas to the classroom the next day for further examination and use. The technique of introducing new vocabulary was used by another instructor when she began to list the words from the next chapter of the text and going over these "new" terms before introducing the chapter's contents. Finally the staff evaluated the reading-study skills part of the program with comments on how to improve its efficiency and also how they might more fully utilize its offerings.

V. Results:

a. Pre-Questionnaire Summary
b. Mid-term Evaluation: Sentence Completion
c. Post-Questionnaire Summary
d. Suggestions for Reading Skills Improvement by other Participating Instructors in the Medical Laboratory Assistants Program
e. Cummulative Chart of Raw Scores
f. Results of the Listening Comprehension Test (informal)
g. Results of Rate on Nelson-Denny Reading Test
h. Results of the Total Raw Scores on the Nelson-Denny Reading Test

a. Pre-Questionnaire Summary

Questions	Response				
1. Have you had any special reading courses in the past?	Yes 4	No 12			
2. Check the areas in which you feel you need the greatest improvement:	read faster 5	improve comprehension 3	spelling 5		
	study skills 7	listening skills 6	note-taking 8		
3. Problems that might cause reading difficulties:	poor start 1	visual problems 2	lack of interest 8		
	emotional blocks 2	Other 1 (poor study conditions)			
4. Do you have any hearing problems?	Yes 0	No 16			
5. Do you wear glasses?	Yes 8	No 8			
6. Recent Physical exam & Eye exam?	Yes 16	No 0			
7. Type of books preferred:	Popular fiction 9	Science 2	Social Science 2	Hist. Novels 4	
	Classics 7	No strong reading preferences 7			
8. Books read other than school assigned during past month:	One 6	Three 3	Five 1		
9. Number of mag. and newspapers subscribed to regularly:	One 2	Two 5	ree 3	Four 3	Five 1	Six 2
10. How much typical reading?	Extensive 0	Quite a bit 4	Some 9	Limited amt. 1	Very little 0
11. Leisure time preference:	Watch TV 4	Movies 0	Talk with friends 3	Read 3	Sports 2

12. Most correct answer for you:

	Yes	No
a.- I make certain that I clearly understand what is wanted before I begin an assignment.	16	0
b.- Trouble in expressing myself in writing slows me down.	9	7
c.- My instructors criticize my written reports as being hastily or poorly organized.	3	13
d.- I memorize definitions of technical terms, formulas, etc., without really understanding them.	9	7
e.- I have trouble with the mechanics of English composition.	3	13
f.- Even though an assignment is dull and boring, I stick to it.	11	5
g.- In taking class notes, I try to copy down the instructor's exact words as closely as possible.	6	10
h.- I carefully study the figures, graphs, and tables in a reading assignment.	8	8
i.- If I read or study a long time, I get a headache.	6	10
j.- After reading several pages, I am unable to recall what I have just read.	4	12
k.- I have trouble picking out important points of a reading assignment.	4	12
l.- When reading a long assignment, I stop every once in a while to think about what I have just read.	9	7
m.- I seem to get little in relation to the time I spend studying.	5	11
n.- I can concentrate on a reading assignment for only a short while.	5	11
o.- When reports or written assignments are returned, I find a lowered grade because of careless mistakes.	12	4

13. Write a brief biography -

b. Mid-term Evaluation: Sentence Completion

Sentences	Responses
1. As a lab technologist, I will have to overcome	selfishness 1; complex reading 1; playing 1; laziness 3; shyness 1; sloppiness 1; lack of confidence 2
2. My outstanding quality is	math. 1; friendliness 2; remembering 1; listen.when interest 1; ability to control temper 1; pay atten. 1; trying to apply new ideas 1
3. My worst habit is	chewing gum 3; talking 2; get friends to do my work 1; lateness 1; not listening 1; put things in mouth 1; expressing self 1; not willing to help others 1
4. My biggest problem is	chemistry 1; not enough time 1; lack of conf. 1; studying 1; not enough allowance 1; understand what I read 1; not sociable 1
5. The time I spend studying each week	not enough 2; average 2; 10 hrs. 1; 12-15 hrs. 3; 15-20 hrs. 2; a great deal 1
6. My reading is	good 2; improving 3; average 4; above average 1
7. My vocabulary is	good 1; improving 5; average 4; above average 2
8. The practice or exercises in this course	good 1; OK 4; helpful 3; satisfactory 1; interesting but hard 2
9. I feel that we need more	study time 4; tips on how to study 1; group discussion 2; discipline 1; speed reading 2; practice in reading 1
10. What we need most is	how to study 2; serious attitude 2; uniform curriculum 1; individual help 1; work with SQ3R 3; understanding of total program 2
11. The machines are	easy 1; enjoyable 1; OK 1; helpful 2; very good 1; a little hard 1; tapes boring 4

c. Post-Questionnaire Summary

	Disagree	Agree	
1.	1	12	I felt I was making progress in the lab.
2.	2	12	I worked in the area (s) that I wanted to.
3.	4	9	I plan to return to the lab. next semester
4.	12	2	I wanted more individual assistance.
5.	12	2	I was unclear as to the steps I should take in the program.
6.	13	1	The reading counselor was not available when I wanted help.
7.	11	3	My attitudes toward school work improved from working in the lab.
8.	7	2	I found it difficult to locate materials I needed to work with.
9.	4	4	I would refer a friend to the lab.
10.	7	1	I felt the lab. was too impersonal (too cool and austere)
11.	5	1	I would prefer taking reading class for credit.
12.	5	1	The reading counselor seemed disinterested in my problem.
13.	5	1	I felt the tour of the lab. was confusing.
14.	8	3	I couldn't see any relation between my school work and the work I was doing in the lab.
15.	7	0	The reading counselor did not seem to know how to help me.
16.	8	4	There was too much noise in the lab.

To what extent did your work in the RSSLab. help you in each of the following areas.

	Worse than before	None	Some	Much
17. Grades	1	3	3	3
18. Study Efficiency	1	1	4	4
19. Reading Comprehension			4	6
20. Attitudes toward yourself	1	4	3	2
21. Reading speed			4	6
22. Writing Skills	2	2	2	
23. Vocabulary	1		3	6
24. Ability to take exams	2	1	5	2

How do you feel about the following?

	Didn't use	Helpful	Unnecessary	Waste of time
25. Testing (pre-test)	1	2		1
26. Test Interpretation with Counselor	3	1	1	
27. Your individual Program Plan (e.g. for reading)	1	2		1
28. Progress check-ups	1	3		1
29. Tour of the lab.	2	2		
30. Post-tests	1	4		1

d. Suggestions For Reading Skills Improvement by other Participating Instructors in the Medical Laboratory Assistants Program

1. Conference of all instructors before start of didactic period to acquaint reading instructor with:

    a. Other personnel
    b. Scope of program
    c. Type of material covered
    d. Textbooks and other instructional material
    e. Projects, such as research paper
    f. Schedule, arrange best times

2. Better correlation of material used in reading program with actual materials used in course. More interesting and useful for students.

3. Pre testing early in orientation week will supplement GATB scores in deciding student requirements for individual areas of improvement. Reading instructor can plan materials for more specific areas.

4. Concentration of material in first week would help students and instructors. Units on how to study, write reports, study for examinations, etc., would be best presented at this time.

5. The reading instructor could plan to present a certain amount of general materials, as suggested above, to all students. Later, after evaluation of pre tests and observation, he could arrange more individualized sections for the students in need of help in particular areas.

e. Cumulative Chart of Raw Scores

Code	Age	Sex m-1 f-2	Final Grade	Class Rank	Henmon-Nelson Mental Ability Quan.	Ver.	Total	Listen Comprehension Pre	Post	Gates-Survey Reading Test Voc.	Comp.	Nelson-Denny Pre Voc.	Comp.	Tot.	Rate	Nelson-Denny Post Voc.	Comp.	Tot.	Rate
B.M.	19	2	C	11	15	25	40	12	16	56	40	33	34	67	318	39	36	75	379
G.M.	19	2	B	1	30	36	66	18	14	57	45	34	40	74	238	42	48	90	333
M.G.	19	2	D	12	12	17	29	10	12	50	45	27	40	67	238	27	50	77	327
B.G.	21	2	F	14	5	35	40	13	16	57	40	38	52	90	396	61	82	143	524
J.A.	19	1	D	13	12	17	29	10	13	46	37	18	30	48	115	20	36	56	203
J.B.	20	2	B	2	17	32	49	15	20	56	42	45	64	109	318	53	60	113	403
N.C.	20	2	C	4	14	16	30	9	11	50	42	18	24	42	216	29	30	59	245
P.C.	18	1	C	5	16	30	46	19	22	55	41	35	50	85	216	39	80	119	309
P.J.	20	1	C	6	16	33	49	15	17	58	40	45	40	85	501	49	42	91	615
W.B.	18	2	B	3	28	47	75	18	21	58	45	44	48	92	226	53	62	115	333
S.J.	18	2	C	7	14	31	45	11	15	56	40	29	52	81	318	44	52	96	425
S.S.	18	2	C	9	9	30	39	15	18	59	41	37	52	89	407	46	46	92	425
T.A.	19	1	C	8	29	30	59	13	18	57	40	34	46	80	298	49	56	105	290
W.R.	21	2	C	10	10	25	35	8	10	54	41	29	38	67	275	35	40	75	309

f. Results of the Listening Comprehension Test (informal):

Pre-	Post-
25 - 0	25 - 0
.	.
.	.
.	.
19-1	22-1
18-2	21-1
17-0	20-1
16-0	19-0
15-3	18-2
14-0	17-1
13-2	16-2
12-1	15-1
11-1	14-1
10-2	13-1
9-1	12-1
8-1	11-1
.	10-1
.	.
.	.
1-0	.
	1-0
14 total	14 total

The distribution of pre and post scores for 14 students.

No. scores - 14, Median - 7.5 score, Pre - 13 Post - 16

	Pre	Post
Mean	13.29	15.93
S.D.	3.51	3.69

t - test of mean difference
to - 13.49 α - .01
to - 2.65, df - 13

g. Results of Rate on Nelson-Denny Reading Test:

Pre-	Post-
501 (words per minute)	615 (words per minute)
407	425
396	524
318	425
318	403
318	379
298	290
275	309
238	333
238	327
226	333
216	309
216	245
115	203

The distribution of pre and post rate scores for 14 students.

No. scores - 14, Median - 7.5 score, Pre - 281.5 Post - 333.0

	Pre	Post
Mean	291.43	365.71
S.D.	97.33	108.36

t - test of mean difference
to - 5.82 α - .01
to - 2.65, df - 13

h. Results of the Total Raw Scores on the Nelson-Denny Reading Test:

Pre-	Z scores	r	Post-	Z scores	Residual Gains	Derived Scores	Grades
67	-.56	-.46	75	-.75	-.29	72.1	C
67	-.56	-.46	77	-.67	-.31	71.9	C
74	-.16	-.13	90	-.14	-.01	74.9	C
90	.74	.61	143	2.05	1.44	89.4	B
48	-1.63	-1.35	56	-1.54	-.19	73.1	C
109	1.81	1.50	113	.81	.69	81.9	B
42	-1.97	-1.64	59	-1.41	-.23	72.7	C
85	.46	.38	119	1.06	.68	81.8	B
85	.46	.38	91	-.09	.29	77.9	C
92	.85	.71	115	.89	.18	76.8	C
81	.23	.19	96	.11	.08	75.8	C
89	.68	.56	92	-.05	.51	80.1	B
80	.18	.15	105	.48	.33	78.3	C
67	-.56	-.46	75	-.75	-.29	72.1	C

Pre-

$\bar{X}$ - 76.86
S.D.- 17.73
r - .83

Post-

$\bar{X}$ - 93.29
S.D. - 24.26

Using the Residual gain = $Z_2 - r_{12} Z_1$, of Earl F. Rankin, Jr. (11), the total pre and post raw scores of 14 students were evaluated. The "derived scores" permit grading for improvement on the normal distribution curve in terms readily accepted by most students i.e., 90 to 100 = A, 80 to 89 = B, etc.

VI. SUMMARY:

This study involves an analysis and evaluation of a reading improvement program for medical laboratory assistant trainees. This group differs from the usual adult or college reading students in that they needed skills improvement immediately to help them succeed in their technical course. They also showed a wider range of skills and educational background than is typical of most college programs. The techniques, materials, and organization used are similar to those used in adult and college reading programs.

The purpose of this program was to develop adequate reading and study skills to help these students succeed in their technical course. These are considered essential tools for the MLA students who must pass a formal ten week course on general scientific knowledge and techniques.

Goals were established early in the course for both the students and the instructor. The students were given tests to evaluate their skills and then kept records of their own progress. The instructor formalized the following goals: relate the value of skills development to the general course of study, allow ample time for practice, use constant feedbacks to help in planning lessons, and make students continually aware of their own needs and progress.

For evaluation, the "t" test was used to show significant gains in listening comprehension and rate of reading. Through a "residual gain" analysis, the individual total pre and post raw scores of the Nelson-Denny Reading test were used to evaluate each student's improvement. The students were then given a final evaluation in the form of a letter grade A, B, C, D, or E. It was felt that this system of appraisal would be more meaningful to the student as it is typical of grading in the formal classroom.

As there was no control group available, the "residual gain" results were further used to compare final achievement scores to the normal curve distribution.

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