

DOCUMENT RESUME

ED 211 410

SO 013 776

AUTHOR Peters, Eileen
 TITLE Teaching and Learning About Aging. Evaluation Report.
 INSTITUTION Acton-Boxborough School District, Acton, Mass.
 SPONS AGENCY Department of Education, Washington, D.C.
 PUB DATE Jul 81
 NOTE 43p.; For related documents, see SO 013 771-777.

EDRS PRICE MF01/PC02 Plus Postage.
 DESCRIPTORS Aging (Individuals); *Aging Education; Cognitive Measurement; Elementary School Students; Elementary School Teachers; Elementary Secondary Education; Evaluation Methods; *Older Adults; *Program Evaluation; Secondary School Students; Secondary School Teachers; Student Attitudes; Validated Programs

IDENTIFIERS Intergenerational Programs; *Teaching and Learning about Aging Project

ABSTRACT

This evaluation study determined the extent to which teachers and students involved with the Teaching and Learning About Aging (TLA) project experienced cognitive growth and attitudinal change. The major purpose of the TIA project was to help students understand aging and related issues and to foster more positive attitudes toward aging and older people. In all, 33 curriculum modules were implemented during 1980-81. Of these, eight modules, offered to youngsters at four grade levels (primary, elementary, junior high, and senior high) were selected for summative evaluation. In addition to grade level, modules were chosen to represent a number of schools, a variety of curriculum content, and differences in instructional approach. Each of the experimental units was matched with a control group. For teachers, the experimental group was comprised of 33 K-12 teachers, two library assistants, and one clergyman. The project conducted an inservice course for these educators. Thirty-two teachers constituted the control group. The four evaluation instruments utilized are described in the report. Findings include the following. As a result of the TIA inservice course, teachers did demonstrate increased knowledge about aging. Of the seven curriculum units for which complete data sets are available, four had a statistically significant impact on students' attitudes toward aging, or understanding of the aging process and age related issues. Instruments are included in the appendix.

(Author/RM)

 * Reproductions supplied by EDRS are the best that can be made *
 * from the original document. *

ED211410

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

This document has been reproduced as
received from the person or organization
originating it
 Minor changes have been made to improve
reproduction quality.

• Points of view or opinions stated in this docu-
ment do not necessarily represent official NIE
position or policy.

TEACHING AND LEARNING ABOUT AGING

EVALUATION REPORT

1980-1981

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

Fran Pratt

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

by:

Eileen Peters
Educational Testing Service
Northeast Regional Office

July 1981

SUPPORTED BY A GRANT TO THE ACTON-BOXBOROUGH REGIONAL SCHOOL DISTRICT
UNDER THE ELEMENTARY AND SECONDARY EDUCATION ACT, TITLE IV-C

Submitted to:

Fran Pratt
Director
Teaching and Learning about Aging
McCarthy-Towne School
Acton, Massachusetts

SP013776

I. INTRODUCTION

The evaluation report that follows adheres to the model presented in Evaluation Resource Center's publication, Massachusetts Validation Process: Request for Validation, 1980. That is, each topic covered is considered in the prescribed order, and all aspects of the evaluation process mentioned in the 1980 document are treated in this report. In some instances, however, we are unable to restrict discussion to the recommended number of pages. For readers who require or are interested in supplementary technical information, instruments and summary tables are included as appendices.

This report has been prepared by staff at Educational Testing Service's (ETS's) Northeast Regional Office. ETS reviewed, revised, and selected instruments and analyzed ^{all} pertaining to ~~claims 2, 4 and 5~~. Supporting services, data processing, and statistical work was supervised by Joseph Pedulla, Associate Director, Center for The Study of Testing, Evaluation, and Educational Policy, Boston College.

II. EVALUATION DESIGN

DESIGN PARAMETERS

A quasi-experimental (treatment/comparison group) design was used to determine the extent to which teachers and students involved with Teaching and Learning About Aging (TLA) experienced cognitive growth and attitudinal change as a consequence of project participation.

A comparison group design (using intact classes) was chosen because the true experimental equivalent (employing random assignment of subjects to groups and groups to treatments) was not possible. The design, incorporating pretesting and posttesting of project participants and controls, enables the investigator to:

- Determine differences (in attitudes and knowledge) between those who participated in TLA) and those who did not.
- Attribute positive outcomes to the project rather than to extraneous variables, i.e. maturation, experiences outside the classroom, etc.

Pretests were administered to:

- Verify the comparability of experimental and comparison groups or make it possible to adjust for pretest differences.
- Provide baseline cognitive and attitudinal information against which the experimental groups' gains or changes could be viewed.

The need to establish that project participants and controls were equivalent before exposure to project activities and materials seemed to outweigh the troublesome aspects of pretesting -- sensitizing subjects. A design to correct for testing effects (for example, the Solomon four-group design) was not possible within the scope of the present evaluation effort.

Regardless of our attempts to assure that project participants and non-participants were virtually identical except for TLA experiences, it is always possible that subjects differed from controls in some undetected way. The effects of self-selection -- possibly increasing motivation -- may be operative for teachers who chose to enroll in the in-service course and develop curriculum modules on aging. Even though randomization was not possible, the design certainly seemed strong enough to support project claims. A paradigm is presented below:¹

Y_b	X	Y_a	(Experimental)
<hr/>			
Y_b	$\sim X$	Y_a	(Control)

b= Before
a= After
X= Treatment (TLA)
 $\sim X$ = No Treatment

ANALYSIS

Attitudinal data were analyzed in accord with procedures used by instrument authors. For the semantic differentials, a number (1-5) was assigned to each scale point. The questionnaire was also coded on a scale of 1 to 5. In both instances, direction of favorability was made consistent.

The analysis formats for attitudinal instruments and the cognitive measure were:

- Use of t-tests to test for differences in mean scores;
- Analysis of covariance, with pretest scores as a covariate and posttest scores as a dependent variable, to test additional hypotheses;
- Test and item analyses.

¹The same design was used for each of the teacher and student studies.

SAMPLING

1. Curriculum Modules

In all, thirty-three curriculum modules were implemented during 1980-81. Of these, eight modules, offered to youngsters at four grade levels (primary, elementary, junior high, and senior high) were selected for summative evaluation. In addition to grade level, modules were chosen to represent a number of schools, variety of curriculum content, and differences in instructional approach.¹

2. Students

Every effort was made to equate experimental and control groups.

The impact of eight curriculum modules on ten classroom groups was assessed. Each of the ten experimental units was matched with a control group. Initial matching was done on the following variables: age/grade in school, school, and (when possible) teacher.² In all instances, perfect grade matches were achieved. And the goal of the experimental/control combinations within a single school was attained for all classroom units except one (for the 4th grade, two experimental classes were in the Gates School, but one of the two 4th grade control classes had to be selected from the Douglas School). In three cases (where it was possible at the junior high school and high school levels), the control group was taught by the same teacher who taught the TLA units.

Three additional checks were made to assure group equivalency in the absence of random assignment to experimental and control classrooms:

¹It is important to note that some modules could not be selected because comparison groups were not available.

²Youngsters are heterogeneously grouped in the Acton Public Schools (grades K-6) making it unnecessary to match groups according to ability level.

- Class rosters were checked for comparable distributions of girls and boys for each experimental/comparison group classroom pair. (It was not always possible to correct for imbalances.)
- The Project Director assured that teachers (both experimental and control) provided the names of students with special needs and students who were involved with other units of the TLA curriculum. Their answer sheets and response forms were removed from instrument packages when they were returned to ETS.¹
- Possibilities for doing analysis of covariance to adjust for pretest differences between experimental and control groups (either attitudinal or cognitive measures) were build into the study. (These analyses were actually run in 2 cases, and are reported in Section II, Findings.)

Appendix A presents summary information on the student sample.

Teachers

For teachers, the experimental group is comprised of thirty-three elementary and secondary teachers, two library assistants, and one clergyman. All subjects but the clergyman were employed by the Acton Public Schools or by the Acton-Boxborough Regional School District. At the time the pretest was administered, none of the experimental teachers had received formal training about aging or age-related topics, nor had they been exposed to any of the materials subsequently used in the in-service course, "Teaching and Learning about Aging."

Thirty-two Acton educators (12 elementary teachers, 16 secondary teachers, 2 librarians, and 2 nurses) constituted the control group. Like their counterparts in the experimental group, controls represented a wide range of teaching specialities and were identical to experimental subjects in that they had not taken a course on aging nor worked with TLA materials.¹

¹Experience with more than one curriculum module could easily have contaminated findings if youngsters in one project's experimental group found their way into another project's control group, or if multiple experiences made it impossible to attribute outcomes to a specific project.

Experimental teachers were, of course, self-selected. A representative control group was selected from among remaining Acton and Acton-Boxborough teachers.

INSTRUMENTATION

Overview

As stated in the request for validation, the major purpose of the TLA Project is to:

- Develop in students better understanding of aging and related issues, and to foster more positive attitudes toward aging and older people.

Further,

- The TLA Project takes the position that there is no single plan for curriculum design and no approach to the subject which should be used by all teachers and learners. The plan is not to have a prescribed program for all students, but rather a series of educational experiences which may be different for each individual student... but which will have a cumulative impact over the years on the students' understanding and attitudes about aging.

Although these goals make pedagogic sense and common sense as well, they do pose two significant evaluation problems:

- Measuring impact when the length of treatment is extremely short;
- Finding instruments that are sensitive enough to detect and measure change brought about by exposure to diverse instructional materials and experiences.

The first difficulty is discussed in Section III, Findings; the second is considered here.

¹Experimental and control groups were equivalent in other ways as well. There were 23 females in the control group and 24 females in the experimental group; age range was also comparable.

In all, eight unique curriculum modules developed for youngsters in grades 1, 2, 4, 6, 7, 10, 11, and 12 were evaluated. The range of content coverage is staggering -- language arts, social studies, music/theatre geometry, chemistry, and art. Obviously it was neither possible nor sound to develop a multitude of measures to assess the impact of dissimilar project units. It was unsound because it could not be done within the scope of the present evaluation, and because to focus on the unique aspects of curriculum units would have been contrary to project philosophy -- the expectation that the project will have cumulative impact over time.

Although no instrument ever seems entirely satisfactory for its intended purpose, we are satisfied that the three attitudinal measures selected for the TLA evaluation are the best presently available. They are the product of comprehensive instrument search and review procedures. In addition, the cognitive measure taps relevant course content, though the fit is probably a little better for teachers (to measure the impact of the in-service course) than for students (to assess the impact of curriculum units in high school courses).

Each of the four instruments is discussed below. Appendix B to this report presents administration information, and Appendix C includes a copy of each instrument used in the evaluation.

i. Semantic Differential (SD) of the CATE, "Children's Attitudes Toward the Elderly" (Jantz et al., 1977)

Originally developed and validated by Jantz, Seefeldt, Galper, and Serock in 1977, the CATE SD consists of ten adjectival pairs (each with a five point scale) designed to tap childrens' evaluative reactions to older people. The bi-polar adjectives are:

- | | |
|------------------------|-------------------------|
| ● good - bad | ● friendly - unfriendly |
| ● happy - sad | ● clean - dirty |
| ● right - wrong | ● rich - poor |
| ● wonderful - terrible | ● healthy - sick |
| ● pretty - ugly | ● helpful - harmful |

The SD is administered orally to young children who are first asked whether old people are one way or the other (good/bad, right/wrong, etc.). After direction is determined, they are asked to indicate intensity, "Are they very pretty, pretty, or a little pretty?"

Validity and Reliability. Jantz et al. (1977) found that a random sample of children (3 to 11 years old) displayed consistent understanding of the adjectives and choice possibilities. Adjectival pairs selected for the CATE were those DiVesta (1966) found to have factor loadings above .75. Using a slightly modified version of the CATE, Phenice (1981) found that very young children (ages 3 to 6) indicated consistent understanding of adjectives and scale positions. Alpha reliability for the "young test" (children ages 3 to 11) was .76.

B. Scale for the Measurement of Children's Attitudes Toward Older Adults
(Fabiano, 1977)

The Fabiano scale is also a semantic differential. It consists of twenty bi-polar word pairs, each with a five point scale. Positive and negative end positions of each scale are alternated, and neutral pairs are introduced to reduce response-set. The scale was developed to measure 4th graders' attitudes toward older adults, and to assess the impact of exposing youngsters to stories that featured older characters.

Validity and Reliability. Fabiano's scale was very carefully derived from previously established work, dating back to Osgood and his associates. Each scale measures at least one factor identified by Osgood and Tuckman-Lorge (evaluation, potency and activity). Fabiano's work on the concept, "older people," was informed by Hickey's and Kalish's (1963) study, "Perceptions of Old People." The reliability of Fabiano's scale was determined by correlating 75 individual pretest and posttest scores, yielding a Pearson Product Moment Correlation coefficient of .75.

3. Aging and the Aged (Ball State University, Teacher Education Program on Aging, 1973)

This measure, originally consisting of 40 items and then refined to 27, consists of statements about aging and the elderly, for example, "age is no barrier to a happy life." Students respond on a five point scale, from strongly agree to strongly disagree.

Aging and the Aged was validated by the Teacher Education Program on Aging for use at the high school level. Omstead reports:

Originally 120 stereotypic statements were presented to two groups: one composed of professionals in the aging field, assumed to have positive attitudes toward the elderly, and the other a group reputed to have negative attitudes.

Statements eliciting the strongest differences between these groups comprise the questionnaire.

Used in the TLA evaluation study, the Aging and the Aged questionnaire had reliabilities of: Alpha = .75 (grades 11 to 12) and alpha = .79 (grade 7).

4. Test on Aging (Pratt, 1980)

The Test on Aging is a 40-item, 4-option, multiple-choice test designed to measure high school students' and adults' knowledge about aging and age-related issues. Steps in the developmental process were as follows:

- The instrument was developed and pretested with an in-service class of teachers during the spring of 1980.
- A test development specialist at Educational Testing Service reviewed the instrument item-by-item, according to standard ETS item and test review procedures (Appendix D).
- The test developer revised the instrument on the basis of ETS' review, being careful not to make substantive changes that created key problems or threatened the test's content validity.

- To establish content validity at the high school level, the test was reviewed by teachers of experimental groups. Each teacher reviewed every test item noting items that did not measure TLA curriculum models as presently constituted. Lists were combined and forwarded to ETS.
- Tests were scored, and item analyses and test analyses done in accord with standard procedures.

Validity and Reliability. For the purpose of establishing a test's validity to evaluate the TLA Project, the primary concern is content validity: Does the test content represent the universe of content it purports to measure? Content validity for the in-service course evaluation is illustrated by Appendix E -- a matrix showing test items classified by course objectives.

Teachers of high school experimental groups (four in all) reviewed the instrument on the basis of their curriculum plans. A compilation of these results show that 33 of the 40 items match course content. While there is not a perfect match of test items to course objectives, on the whole, test content samples course content to the extent possible given diverse curriculum units.

Test reliability, computed using Kuder-Richardson formula 21 procedures (a measure of internal consistency), is .78, and the SEM is 2.5. The Kuder-Richardson is generally considered the best procedure to use with a single test form even though it yields relatively conservative reliabilities.

III. FINDINGS: RESULTS AND ANALYSIS

CLAIM #1

Teachers (enrolled in the TLA in-service course), representing different grade levels and subjects, will demonstrate more knowledge about aging and age-related topics than will comparison group teachers.

1. Expectations

The in-service course "Teaching and Learning About Aging," covers a variety of topics including the aging process, historical and cultural perspectives on aging, economic and political issues associated with aging, and alternatives of the future. Although the course is intensive and draws from many resources, it is short -- four days in length.

While we would hope that the experimental group (teachers enrolled in the TLA course) would evidence more information on aging than would controls, the brevity of the course could reduce its impact.

2. Results

TLA course participants did indeed demonstrate increased knowledge about aging as a consequence of course enrollment. Before the course began, this experimental group obtained a mean test score of 24.91 items (out of 40) compared with the control group's score of 23.96. At posttest time, however, the experimental group obtained an average score of 31.58 while the control group scored as before -- an average of 23.79 items correct.

3. Significance of Results

The experimental group's gain -- a jump of 6 test items -- is unusual in our experience.

At pretest time, the slight difference between experimental and control group means was not a statistically significant one. This indicates that neither group really knew more of what the test measured at the outset. Posttest differences are significant in the expected direction:

Table 1
SUMMARY OF TLA TEST DIFFERENCES BEFORE
AND AFTER TLA IN-SERVICE COURSE

GROUP	N	PRETEST MEAN	POSTTEST MEAN	T VALUE	SIGNIFICANCE
Control	32	23.96	23.79	1.16	.25
Experimental	33	24.91	31.58	10.22	<.001

These results, together with design parameters, enables us to attribute the demonstrated posttest difference to the TLA in-service course.

CLAIM #2

Students working with TLA curriculum modules at different grade levels will demonstrate more positive attitudes toward aging and older people than will their counterparts in comparison groups.

1. Expectations

As discussed in the literature, an attitude is generally defined as an enduring set of beliefs. Indeed, many students of psychology consider attitudes a fundamental part of the personality. Attitudes are organized, structured, internalized: They are very difficult to change. The stability of attitudes, coupled with TLA project design (planning a program that will have a cumulative impact over the school years), suggests that expectations

be very modest. We consider any evidence of attitudinal change a major accomplishment because, as yet, students have not had the "series of educational experiences" the project will provide.

2. Results

Of the six experimental/control group combinations administered attitudinal instruments, two evidenced statistically significant posttest differences (in the right direction), while three showed positive movement but did not differ significantly from controls. The remaining experimental group did not evidence change. These results, by grade level and instrument, are presented in Table 2.

The following interventions took place in the TLA classrooms where statistically significant posttest differences are evident.

Grade 1, Conant School

Children learned about changing life styles across four generations (children, parents, grandparents, great-grandparents). Activities occurring through the year included stories, discussions, visits to the class by older volunteers, and a field trip to the Museum of Transportation.

Grade 7, Junior High Music/Theater

Students developed and acted out skits dramatizing the physical and social problems often faced by elderly people. The skits were performed for and discussed with audiences made up of classmates and elderly visitors.

But three other experimental groups experienced change as well, even though it was not of the magnitude necessary to yield statistically significant posttest differences.¹ For these modules, there was movement in the

¹Suspecting that pretest differences between experimental and control groups might be masking posttest differences, we ran analyses of covariance with pretest scores as a covariate and posttest scores as a dependent variable. For the 6th grade, results approach significance $R^2 = .08$.

Table 2

ATTITUDINAL DIFFERENCES BETWEEN EXPERIMENTAL AND CONTROL GROUPS ON
THREE MEASURES ADMINISTERED BEFORE AND AFTER TLA INTERVENTION

GROUP	GRADE	PRETEST MEAN	POSTTEST MEAN	STANDARD DEVIATION (Posttest)	T VALUE (Posttest)	DF	SIGNIFICANCE	
CATE	1	Experimental	4.0	4.2	.54	3.28	21	.004*
		Control	3.8	3.4	.64			
	2	Experimental (21)	4.1	4.1	.52	-0.14	40	.89
		Control (22)	4.0	4.1	.45			
FABIANO	4	Experimental (49)	3.0	3.1	.46	0.44	91	.65
		Control (45)	3.2	3.1	.53			
	6	Experimental (25)	2.9	3.2	.58	0.98	46	.33
		Control (21)	3.0	3.0	.55			
BALL STATE	7	Experimental (21)	3.6	3.7	.39	2.04	39	.05*
		Control (20)	3.4	3.3	.40			
	11-12 Sociology	Experimental (30)	3.3	3.6	.36	1.24	47	.22
		Control (28)	3.4	3.5	.33			

right direction regardless of age of students, content of curriculum model, or duration of course.

3. Significance of Results

As shown by the data presented in Table 2, significant attitudinal differences (which can be attributed to TLA instructional interventions) were observed in two of the six cases studied. Moreover, there is evidence of attitudinal movement (though not statistically significant differences) in three of the four remaining cases. Considering the difficulty of affecting attitudes, and remembering that TLA assumes incremental change during the entire time youngsters are in school, these results seem more than reasonable.

CLAIM #3

Students enrolled in TLA courses at the high school level (9 through 12) will demonstrate more understanding of the aging process and issues related to aging than will students who are not in TLA courses.

1. Expectations

Despite the fact that the TLA test was developed as a general measure of understanding aging and age-related issues, it was thought to be sensitive enough to detect specific learning taking place in:

- o A 10th and 11th grade chemistry class focussing on the biochemical processes of aging, but also including material on social/psychological factors related to aging;
- o A 9th and 10th grade geometry class dealing with problems related to Social Security finances, and the practical uses of mathematics to analyze and solve social problems;
- o An 11th and 12th grade sociology class, emphasizing social attitudes about aging and changes in the family unit.

While we were hopeful that all three high school experimental groups would demonstrate increased understanding as a result of TLA experiences, we expected differences between experimental and comparison sociology classes to be more striking than those found for other classes. There was a better match between curriculum coverage and test content, and the sociology module was more than twice as long as some other curriculum units.

2. Results

Results for the geometry and chemistry classes are reported below. Unfortunately, sociology posttests were somehow lost and unavailable for analysis.¹

Contrary to our original expectations, TLA course participants in both experimental groups (geometry and chemistry) demonstrated a greater understanding of aging at the end of their respective curriculum units than they did at the beginning. And at posttesting, students in both experimental groups knew significantly more (of what the test measured) than did their counterparts in control groups. These findings are summarized in Tables 3 and 4.

3. Significance of Results

Tables 3 and 4 attest to the significance of these test results. In addition, we think it is educationally significant that these changes occurred as a consequence of a relatively brief exposure to TLA modules.

¹We can report, however, that the mean pretest score for the sociology experimental group was higher than the mean scores for the geometry group (15.3) or chemistry group (18.1). And, for some unexplained reason, the mean pretest score for the sociology experimental group is significantly higher than the control group mean (19.9).

Table 3

SUMMARY OF TLA TEST DIFFERENCES BEFORE AND AFTER EXPOSURE TO SOCIAL SECURITY UNIT (GEOMETRY)

GROUP	N	PRETEST MEAN	POSTTEST MEAN	STANDARD DEVIATION	T VALUE	DF	SIGNIFICANCE
Experimental	39	15.3	21.4	3.3	5.5	79	<.001
Control	43	17.6	17.3	3.3			

Table 4

SUMMARY OF TLA TEST DIFFERENCES BEFORE AND AFTER EXPOSURE TO BIOCHEMISTRY UNIT

GROUP	N	PRETEST MEAN	POSTTEST MEAN	STANDARD DEVIATION	T VALUE	DF	SIGNIFICANCE
Experimental	33	18.1	22.8	4.4	4.82	65	<.001
Control	33	17.3	18.0	3.6			

SUMMARY

To summarize student findings: Of the seven curriculum units for which complete data sets are available, four (modules for grades 1, 7, 9-10, and 10-11) had a statistically significant impact on students' attitudes toward aging, or understanding of the aging process and age-related issues. We think this accomplishment is especially noteworthy because TLA is designed to affect attitudinal change and cognitive growth over an extended period of time -- not in a single year or during a brief course.

We suspect that Teaching and Learning About Aging affects students because it is so effective with teachers.

Reference

- Ball State University. Teacher Education Program on Aging. Program materials including: Pre- and Post-knowledge inventories; interim report, March 1973; 1973 Summer Workshop--Horizontal Group Reports Primary, Intermediate I, II, and III, Junior High School and Senior High School.
- DiVesta, F. "A Developmental Study of the Semantic Structures of Children," Journal of Verbal Learning and Verbal Behavior, Vol V, 1966, pp.249-259.
- Fabiano, E. "Effects of Reading Stories on Children's Attitudes Toward Older Adults." Unpublished M.A. Thesis: Rutgers, the State University of New Jersey, 1977.
- Hickey, Tom, and Richard A. Kalish. "Young People's Perception of Adults." Journal of Gerontology, Vol. 23, No. 2, April 1968, pp. 215-219.
- Jantz, R.K., D. Seefeldt, A. Galper, and K. Serock. "Children's Attitudes Toward the Elderly: Final Report." College Park, Maryland: University of Maryland, 1976.
- Olmsted, Martha. "Influence of a Unit of Instruction in Gerontology on the Attitudes, Knowledge, and Perception of High School Students of the Aging Process." Unpublished Ph.D. dissertation, the University of Michigan, 1976.
- Osgood, C.E., G. Suci, and P. Tannenbaum. The Measurement of Meaning. Urbana, Illinois: University of Illinois Press, 1957.
- Phenice, Lillian. Children's Perceptions of Elderly Persons. Saratoga, California: Century Twenty-One Publishing, 1981.
- Tuckman, Jacob, and Irving Lorge. "The Influence of the Course on the Psychology of the Adult on Attitudes Toward Old People and Older Workers." Journal of Educational Psychology, 43, 1952, pp. 400-407.

APPENDIX A

EXPERIMENTAL AND CONTROL GROUP CHARACTERISTICS: STUDENTS

Experimental Group					Control Group				
Grade	School	Teacher	Students		Grade	School	Teacher	Students	
			M	F				M	F
1	Conant	Harper	9	8	1	Conant	Kennedy	8	7
2	Merriam	Leary	12	12	2	Merriam	Kay	11	12
4	Gates	Feinberg S. McGrail	26	24	4	Gates Douglas	Due Masey	24	24
6	Merriam	W. McGrail	14	12	6	Merriam	Byam	11	15
7	Jr. High (Music)	Werst	9	12	7	Jr. High (Music)	Werst	6	14
9-10	A-B High (Geometry)	Doyle	15	21	9-10	A-B High (Geometry)	Mroz	17	35
10-11	A-B High (Chemistry)	Capone Gittins	17	23	10-11	A-B High (Chemistry)	Capone Betourney	19	28
11-12	A-B High (Sociology)	Frost	10	13	11-12	A-B High (Sociology)	Frost	10	15

APPENDIX B

PRE- AND POSTTESTING
SUMMARY INFORMATION

Grade	Instrument	Administration Date		Course Length ^a
		Pretest	Posttest	
1	CATE	10/14-15	5/27	36
2	CATE	10/16 & 20	6/1	12
4	Fabiano's Scale	10/16	5/7	35
6	Fabiano's Scale	10/16	5/8	8
7 (Music)	Ball State Questionnaire	10/15-16	2/12	9
9-10 (Geometry)	Test on Aging	10/16	6/5	4
10-11 (Chemistry)	Ball State Questionnaire Test on Aging	10/15-17	5/14	5
11-12 (Sociology)	Ball State Questionnaire Test on Aging	10/16-17	12/8	11

^aApproximate number of class periods distributed throughout the year.

APPENDIX C

INSTRUMENTS

Date _____ M _____ F _____
 Name _____ School _____ Grade _____
 Teacher _____ X group _____ C group _____

Old People Are:

Very Good	A Little Good	Don't Know	A Little Bad	Very Bad
Very Sad	A Little Sad	Don't Know	A Little Happy	Very Happy
Very Right	A Little Right	Don't Know	A Little Wrong	Very Wrong
Very Terrible	A Little Terrible	Don't Know	A Little Wonderful	Very Wonderful
Very Pretty	A Little Pretty	Don't Know	A Little Ugly	Very Ugly
Very Unfriendly	A Little Unfriendly	Don't Know	A Little Friendly	Very Friendly
Very Clean	A Little Clean	Don't Know	A Little Dirty	Very Dirty
Very Poor	A Little Poor	Don't Know	A Little Rich	Very Rich
Very Healthy	A Little Healthy	Don't Know	A Little Sick	Very Sick
Very Harmful	A Little Harmful	Don't Know	A Little Helpful	Very Helpful

Date _____ M _____ F _____
 Name _____ School _____ Grade _____
 Teacher _____ X group _____ C group _____

SCALE FOR THE MEASUREMENT OF CHILDREN'S ATTITUDES
 TOWARD OLDER ADULTS

This scale will help us find out some of your ideas about older people.

WHAT TO DO: THINK about people who are older, about 65 years old and older. THINK about most older persons not just one or two. You should keep in mind most older people as you make your choices on the scale.

HOW TO CHECK: On each line below, there are two words that seem to be the opposite of each other. There are five lines between each of the two words.

Pick one of the two words to describe most older people. Then place an "X" on the line that tells best, how you feel. The closer you put the "X" to the word you picked, the stronger is your feeling. The middle line is farthest away from both words; an "X" on that line means neither word describes older people.

You will try the first one with the teacher.

	VERY	A		A	VERY	
	LITTLE	LITTLE	NEITHER	LITTLE	LITTLE	
loud	_____	_____	_____	_____	_____	quiet

REMEMBER	VERY LITTLE	A LITTLE	NEITHER	A LITTLE	VERY LITTLE	
1 weak	_____	_____	_____	_____	_____	strong
2 poor	_____	_____	_____	_____	_____	rich
3 wise	_____	_____	_____	_____	_____	foolish
4 brown	_____	_____	_____	_____	_____	gray
5 still	_____	_____	_____	_____	_____	active
6 wrinkled	_____	_____	_____	_____	_____	smooth
7 green	_____	_____	_____	_____	_____	red
8 happy	_____	_____	_____	_____	_____	sad
9 old- fashioned	_____	_____	_____	_____	_____	modern
10 selfish	_____	_____	_____	_____	_____	thoughtful
11 fast	_____	_____	_____	_____	_____	slow
12 busy	_____	_____	_____	_____	_____	idle
13 lonely	_____	_____	_____	_____	_____	popular
14 round	_____	_____	_____	_____	_____	square
15 sick	_____	_____	_____	_____	_____	well
16 outdoors	_____	_____	_____	_____	_____	indoors
17 forget	_____	_____	_____	_____	_____	remember
18 try	_____	_____	_____	_____	_____	quit
19 sleep	_____	_____	_____	_____	_____	wake
20 working	_____	_____	_____	_____	_____	resting

QUESTIONNAIRE--AGING AND THE AGED

This questionnaire contains statements about aging and aged people. For each statement, indicate how much you agree or disagree with it. Circle your choice for each item. SA= Strongly Agree; A=Agree; N=Neutral or undecided; D=Disagree; SD=Strongly Disagree.

- | | | | | | |
|------------------------------------------------------------------------------------------|----|---|---|---|----|
| 1. Old age is a period of rapidly declining productivity. | SA | A | N | D | SD |
| 2. Aged parents are usually sympathetic to problems of their children. | SA | A | N | D | SD |
| 3. As people become older they become more careless about their appearance. | SA | A | N | D | SD |
| 4. As people become older they become sorry for themselves. | SA | A | N | D | SD |
| 5. Communities should spend less on the older generation than the developing generation. | SA | A | N | D | SD |
| 6. Remarriage for persons of advanced age usually is successful. | SA | A | N | D | SD |
| 7. Generally, as people grow older they become more forgetful. | SA | A | N | D | SD |
| 8. Most older persons are calm and easygoing. | SA | A | N | D | SD |
| 9. As persons become older they become more religious. | SA | A | N | D | SD |
| 10. Older persons need assistance from society in order to live in dignity. | SA | A | N | D | SD |
| 11. To the extent that they are able, children should provide for their aged parents. | SA | A | N | D | SD |
| 12. Creativity declines with age. | SA | A | N | D | SD |
| 13. As persons age they generally become more critical of youth. | SA | A | N | D | SD |
| 14. The decisions of when to retire ought to be made by the worker. | SA | A | N | D | SD |
| 15. Many older persons do not have financial problems because they planned well. | SA | A | N | D | SD |

- | | | | | | |
|-------------------------------------------------------------------------------------------------------|----|---|---|---|----|
| 16. Personal hygiene becomes less important to people as they age. | SA | A | N | D | SD |
| 17. As people age they become more irritable. | SA | A | N | D | SD |
| 18. Self-pity is likely to decrease with age. | SA | A | N | D | SD |
| 19. As people age they tend to maintain their flexibility. | SA | A | N | D | SD |
| 20. Older persons tend to live in the past. | SA | A | N | D | SD |
| 21. As people age, they tend to become more eccentric. | SA | A | N | D | SD |
| 22. Older people do not worry much about death. | SA | A | N | D | SD |
| 23. As people age they are likely to spend more time in idle gossip. | SA | A | N | D | SD |
| 24. Wisdom comes with age and experience. | SA | A | N | D | SD |
| 25. The skills of older people are mostly obsolete. | SA | A | N | D | SD |
| 26. Many older persons could avoid financial difficulty if they managed their money better. | SA | A | N | D | SD |
| 27. There should be a given chronological age at which people must surrender their driver's licenses. | SA | A | N | D | SD |
| 28. The pace of life today is too rapid for persons over 65 years of age. | SA | A | N | D | SD |
| 29. Age is no barrier to a happy life. | SA | A | N | D | SD |
| 30. Older people have too much power in the formulation of social policy. | SA | A | N | D | SD |
| 31. Older people often make nuisances of themselves. | SA | A | N | D | SD |
| 32. Aged parents often demand much attention from their children. | SA | A | N | D | SD |
| 33. Most persons enjoy the freedom of retirement. | SA | A | N | D | SD |
| 34. People go to nursing homes to die. | SA | A | N | D | SD |
| 35. As people grow older they tend to become more stubborn. | SA | A | N | D | SD |

- | | | | | | |
|---------------------------------------------------------------------------------------------|----|---|---|---|----|
| 36. There are many opportunities for retired persons to be contributing members of society. | SA | A | N | D | SD |
| 37. Most persons resent growing old. | SA | A | N | D | SD |
| 38. Older adults should "act their age" and not try to appear younger than they are. | SA | A | N | D | SD |
| 39. It is difficult for older persons to influence decisions in most social institutions. | SA | A | N | D | SD |
| 40. Old age is becoming a more pleasant time of life than it was in the past. | SA | A | N | D | SD |

TEST ON AGING *

Please make no marks on this test. Choose the best answer to each question and circle the appropriate letter on the answer sheet.

1. Which of the following is LEAST likely to happen to people as they grow old?
 - (A) Their hair turns gray.
 - (B) Their skin becomes wrinkled.
 - (C) They develop vision problems.
 - (D) They become much less interested in sex.

2. In terms of length of life, how do women and men compare?
 - (A) Generally men live longer, especially if they grew up in rural areas or retired early in life.
 - (B) Generally men live longer except in time of war or during periods of rapid social change.
 - (C) Generally women live longer except where female infanticide is practised or rates of death are high for women giving birth.
 - (D) Generally men and women have about the same length of life.

3. What determines how people change physically as they grow older?
 - I. Genetic background
 - II. Personal habits (Diet, Exercise, etc.)
 - III. Environmental factors
 - (A) I only
 - (B) II only
 - (C) I and II only
 - (D) I, II and III

4. For most people, the process of physical decline begins between ages
 - (A) 30 and 40
 - (B) 40 and 50
 - (C) 50 and 60
 - (D) 60 and 70

* Prepared by Fran Pratt, Director of the Teaching and Learning About Aging Project, Acton-Boxborough Regional School District, Acton, Ma. 01720. Not for duplication or use without written permission.

5. What is generally true of people's health as they grow older?
- (A) They are more likely to have acute illness (such as sore throats or ear infections).
 - (B) They are more likely to have chronic illness (such as permanent heart or lung conditions).
 - (C) They are more likely to have both acute illness and chronic illness.
 - (D) There is no relationship between age and type of illness.
6. What usually happens to people's memory as they grow older?
- (A) Long-term memory improves, but short-term memory declines somewhat.
 - (B) Short-term memory improves, but long-term memory declines somewhat.
 - (C) Both short and long-term memory decline slightly, stabilize, and then remain constant.
 - (D) All memory functions decline with age.
7. What does current research indicate about the development of personality?
- (A) Personality development occurs until early childhood.
 - (B) Personality development occurs until adolescence.
 - (C) Personality development occurs until middle age.
 - (D) Personality development continues throughout life.
8. Most Americans who are over age 65 live in
- (A) Nursing homes or other institutions.
 - (B) The households of their adult sons or daughters.
 - (C) Government supported housing for the elderly.
 - (D) Their own homes or apartments.
9. From which source do most Americans over age 65 receive most of their income?
- (A) Wages and salaries
 - (B) Social Security and pensions
 - (C) Interest on savings and investment.
 - (D) Welfare or public assistance
10. Where do most Americans over age 65 live?
- (A) In cities
 - (B) In suburban towns
 - (C) In rural villages
 - (D) On farms

11. What percentage of the U.S. population today is made up of people age 65 or over?
- (A) 2
 - (B) 6
 - (C) 11
 - (D) 18
12. Since 1900, the proportion of Americans age 65 or over has
- (A) Declined slightly.
 - (B) Increased slightly.
 - (C) Increased dramatically.
 - (D) Stayed about the same.
13. According to current population trends, what will happen to the average age of the American population between now and the year 2030?
- (A) The average age will decline sharply.
 - (B) The average age will decline slightly.
 - (C) The average age will stay about the same.
 - (D) The average age will increase.
14. How adequate is the income of most Americans age 65 or over?
- (A) Most elderly Americans have incomes below the Federal Government's "poverty level."
 - (B) Most elderly Americans have incomes within the "poverty" or "near poverty" levels set by the Federal Government
 - (C) Most elderly Americans have incomes above the "poverty" and "near poverty" levels set by the Federal Government
 - (D) Most elderly Americans have higher incomes than the average income of young and middle-aged adults.
15. Which of the following factors best explains why the average length of life has increased in the twentieth century?
- (A) Historically, people died at younger ages from disease that modern medicine has overcome.
 - (B) Labor-saving machines have reduced stress thus prolonging life.
 - (C) The natural process of evolution has produced people with longer life spans.
 - (D) Life support systems keep many elderly people alive who would have died in former times.

16. What has been the pattern of birth rate in the United States through the nineteenth and twentieth centuries?
- (A) The birth rate has declined through most of the nineteenth and twentieth centuries.
 - (B) The birth rate has increased through most of the nineteenth and twentieth centuries.
 - (C) The birth rate increased throughout the nineteenth century, but declined in the twentieth century.
 - (D) The birth rate declined throughout the nineteenth century, but increased in the twentieth century.
17. What is happening to the proportion of people over age 65 in populations of the world?
- (A) The proportion over age 65 is increasing in highly developed countries but declining in developing countries.
 - (B) The proportion over age 65 is declining in highly developed countries, but increasing in developing countries.
 - (C) The proportion over age 65 is increasing in almost all countries.
 - (D) The proportion over age 65 is remaining about the same in most countries.
18. Who receives Social Security retirement benefits?
- (A) Only elderly people who need economic assistance.
 - (B) Retired workers who paid into Social Security and their spouses.
 - (C) Only widows and children of deceased workers who paid into Social Security.
 - (D) All elderly people regardless of need.
19. How is Social Security financed?
- I. Through a special tax or "contribution" paid by workers.
 - II. Through a special tax or "contribution" paid by employers.
 - III. Through general revenues paid by all taxpayers.
- (A) I only
 - (B) II only
 - (C) I and II only
 - (D) I, II and III

20. What is expected to happen to Social Security costs and benefits between now and the end of this century?
- (A) Social Security costs will increase but benefits will decrease.
 - (B) Social Security costs will decrease but benefits will increase.
 - (C) Both Social Security costs and benefits will decrease.
 - (D) Both Social Security costs and benefits will increase.
21. How does aging affect sexual interest and behavior of most people?
- (A) Although men maintain sexual interest as they grow old, women quickly lose interest after menopause.
 - (B) Although both men and women maintain sexual interest as they grow old, women are generally more sexually active than men are.
 - (C) As they grow old, both men and women maintain the same level of sexual interest and behavior as they did in earlier years.
 - (D) As they grow old, both men and women maintain sexual interest with some change in sexual performance and behavior.
22. About what proportion of American women who marry and remain married eventually become widows?
- (A) 75 percent
 - (B) 50 percent
 - (C) 25 percent
 - (D) 10 percent
23. The suicide rate for elderly people is
- (A) Lower than the rate for other age groups.
 - (B) Lower than the rate for adolescents and young adults, but higher than the rate for middle-aged people.
 - (C) Lower than the rate for middle aged people, but higher than the rate for adolescents and young adults.
 - (D) Higher than the rate for any other age group.
24. Approximately, what is the average age of Americans today?
- (A) 20
 - (B) 30
 - (C) 40
 - (D) 50

25. What is the branch of medicine that deals with illnesses of old age?
- (A) Gerontology
 - (B) Geriatrics
 - (C) Gerontocracy
 - (D) Geropathology
26. Which of the following statements about senility is true?
- (A) Most elderly people eventually become senile.
 - (B) There are several diseases caused by different factors that produce symptoms known as senility.
 - (C) Senility is a progressive disease that cannot be treated.
 - (D) Senility can be recognized when a person's memory functions decline.
27. On the average, American babies born today can be expected to live about
- (A) 55 years
 - (B) 60 years
 - (C) 65 years
 - (D) 70 years or more
28. What is the technical term that refers to the last stage of life in a normal life span?
- (A) Senility
 - (B) Senescence
 - (C) Disengagement
 - (D) Divergence
29. What do gerontologists study?
- (A) Problems created for society by the elderly population
 - (B) Physical ailments that come with old age.
 - (C) Biological, social and psychological processes of aging.
 - (D) Statistics that relate to births, deaths and life expectancy.
30. Which statement correctly describes life expectancy for non-white Americans?
- (A) On the average, non-white Americans have shorter lives than white Americans.
 - (B) On the average, non-white Americans have longer lives than white Americans.
 - (C) Average length of life is about the same for non-white Americans as it is for white Americans.
 - (D) On the average, non-white Americans have about the same length of life as non-whites of other countries.

31. Based on statistics all of the following contribute to a long life EXCEPT
- (A) Marriage
 - (B) Moderate use of alcohol
 - (C) At least ten hours of sleep daily
 - (D) Work in a non-stressful occupation
32. What does the term "AGEISM" mean?
- (A) Being prejudiced and discriminating on the basis of age.
 - (B) Advocating special programs for the elderly.
 - (C) Showing special respect and consideration for the elderly.
 - (D) The growing proportion of elderly people in society.
33. In which type of society do the elderly generally have the highest status and most prestige?
- (A) A primitive society in which traditional ways are followed with little change from one generation to the next.
 - (B) A society in which there is rapid social and economic change.
 - (C) A wealthy society which can afford to spend large sums on programs and services for the elderly.
 - (D) A society in which the proportion of elderly people is rapidly rising.
34. Of Americans over age 65, about what proportion are over age 75?
- (A) 40 percent
 - (B) 30 percent
 - (C) 20 percent
 - (D) 10 percent
35. To what age does current law protect adult Americans from job discrimination in hiring, firing and promotions?
- (A) There is no law preventing age discrimination in employment.
 - (B) Age discrimination in most jobs is illegal up to age 50.
 - (C) Age discrimination in most jobs is illegal up to age 70.
 - (D) All age discrimination in employment is illegal.

36. Which statement most accurately describes the political behavior of elderly Americans compared to other age groups?
- (A) The elderly are less likely to identify with either major political party than are people in other age groups.
 - (B) The elderly vote more frequently than other age groups.
 - (C) The elderly vote as a bloc on most economic and political issues.
 - (D) The elderly support conservative positions on most economic and political issues.
37. Approximately how many Americans over the age of 65 have completed high school?
- (A) Less than one fifth.
 - (B) Less than one third.
 - (C) More than half.
 - (D) About three fourths.
38. How have retirement patterns changed in the United States since 1900?
- (A) In 1900 most workers were able to retire, but the high cost of living today prevents most people from retiring.
 - (B) In 1900 physical ailments caused most workers to retire, but more can keep working today because of improved health and medical care.
 - (C) Most Americans today can and do retire, whereas most workers in 1900 could not and did not retire.
 - (D) There has been no fundamental change in retirement patterns since 1900.
39. In 1900, the average life expectancy for Americans was between
- (A) 60 and 65.
 - (B) 55 and 60.
 - (C) 50 and 55.
 - (D) 45 and 50.
40. When was Social Security established in the United States?
- (A) During World War I.
 - (B) During the great depression of the 1930's.
 - (C) During World War II.
 - (D) After World War II.

APPENDIX D

EDUCATIONAL TESTING SERVICE TES: ITEM REVIEW PROCEDURES

The Item as a Whole

1. Does it test knowledge or a skill worthwhile and appropriate for the intended test population?
2. Is there a significantly better way to test what the item tests?
3. Is it within the appropriate range of difficulty for the intended test population?
4. Does it measure the indicated objective?

The Item Stem

1. Does it pose a clearly defined problem or task?
2. Does it contain unnecessary information?
3. Can it be worded more clearly or concisely?

The Item Options

1. Are they reasonably parallel in structure?
2. Do they fit logically and grammatically with the stem?
3. Can they be worded more clearly or concisely?
4. Are any so inclusive that they logically eliminate another more restricted option from being the unique key?

The Item Key

1. Is there a single best answer to the question?
2. Does the key actually answer the question posed?
3. Does the key need to be made less obvious in terms of the other options or the stem? (Should it be made longer? Shorter? More detailed? More abstract?)

APPENDIX D
(Continued)

The Item Distractors

1. Is there any possible justification for considering one of them an acceptable response to the question?
2. Are they sufficiently plausible to attract examinees who are misinformed or inadequately prepared? (The distractors must not be a set of irrelevant responses.)

APPENDIX E

ITEM CLASSIFICATION
Teaching and Learning about Aging, Form B

Item No.	Factors Aging Process			Issues of Aging			Item No.	Factors Aging Process			Issues of Aging		
	Biology	Psychology	Social	Social	Economic	Political		Biology	Psychology	Social	Social	Economic	Political
1	X	X					21	X	X				
2	X						22				X	X	
3	X						23		X	X	X		
4	X						24				X		
5	X						25	X					
6		X					26	X	X				
7		X					27				X		
8				X			28	X	X				
9					X		29	X	X	X			
10				X	X	X	30				X	X	
11				X	X	X	31						X
12				X	X	X	32				X		
13				X	X	X	33				X		
14					X	X	34				X		
15				X			35					X	X
16				X			36						X
17				X	X	X	37				X	X	
18					X		38					X	
19					X	X	39				X		
20					X	X	40					X	X