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ABSTRACT

The Colorado Evaluation Project was funded to field test the Common Status Measures concurrently with Colorado's pilot program in assessment and evaluation. The primary purpose is to determine Colorado's educational needs, and the secondary purpose is to test procedures for assessment which can be replicated or adapted by local school districts or other States. These activities have been completed: (1) developing test items; (2) building test forms; (3) drawing a sample of pupils; (4) hiring and training test proctors; (5) administering tests; and (6) keypunching data. A description of these activities, resultant products, and problems encountered is provided. Some 12,000 tests were administered to a random sample of students in 31 districts across Colorado. The Common Status Measures were administered to 1,030 fourth- and eleventh-graders in Colorado. Tests in six subject areas were given to determine whether certain curricular objectives are being met. (Author/KM)

COLORADO DEPARTMENT OF EDUCATION

DENVER, COLORADO

June 20, 1970

A PROGRESS REPORT

On

THE COLORADO EVALUATION PROJECT

(Common Status Measures)

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Byron W. Hansford
Commissioner of Education

Foreword

Field work is complete for testing the Common Status Measures concurrently with Colorado's pilot program in assessment and evaluation. Some 12,000 tests were administered to a random sample of students in 31 districts across Colorado. The Common Status Measures (CSM), administered earlier to a nation-wide sample, were administered to 1,030 fourth and eleventh graders in Colorado. Tests in six subject areas, developed by Colorado teachers and consultants, were given to determine whether certain curricular objectives are being achieved in Colorado. Prior field testing of the CSM is described in a report of the United States Office of Education, dated December 1969.

Cooperating in the project are Dr. Robert Heath of Stanford University and director of Pacific Educational Evaluation Systems, who is directing technical operations; Dr. Gene Glass of the University of Colorado, who is advising on item development; members of the Colorado Department of Education, who planned and carried out the statewide assessment program; and the Belmont Group, who supplied interest and support throughout the entire project.

Analysis of data is under way by the Pacific Educational Evaluation Systems of Stanford, California. This analysis will be directed toward our common purpose - to determine educational needs in Colorado.

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A PROGRESS REPORT ON THE

COLORADO EVALUATION PROJECT

(Common Status Measures)

On the following pages are a review of the purpose of the project, a description of activities completed, problems encountered, and a plan for data analysis. Documentary material may be found in the Appendices. Further information on the Common Status Measures is available in a report prepared for the United States Office of Education dated December 1969.

The Colorado Evaluation Project was funded to field test the Common Status Measures concurrently with Colorado's pilot program in assessment and evaluation. The primary purpose was to determine Colorado's educational needs, defined herein as "the discrepancy between stated objectives and their achievement." A secondary purpose was to test procedures for assessment which can be replicated or adapted by local school districts or by other states.

The project has completed these activities: (1) developing test items, (2) building test forms, (3) drawing a sample of pupils, (4) hiring and training test proctors, (5) administering tests and (6) key punching data. A description of these activities, resultant products, and problems encountered is given below.

Developing Test Items

The Common Status Measures used in this project were, with minor revision, those used in the Comprehensive Evaluation Project completed in 1969 (U.S.O.E.

Contract #EC.0-9-099017-4424(010). Basic verbal status and occupational cognizance are measured by these items. The development of C.S.M. items is described in the final report of that project dated December 1969.

Colorado personnel developed the other items used in the project. These test items were designed to determine whether certain curricular objectives were being achieved in Colorado. Development took place over a one-year period and consisted of five general phases, as explained below.

Writing objectives. Consultants, representing several subject disciplines, met in a week-long work conference to write objectives. Used as the basis of these objectives was Goals for Education in Colorado, a document authorized by the Colorado State Board of Education in 1962. For example, from the general goal of

> "Adequate opportunities for all persons to acquire command of knowledge, skills, habits, and attitudes essential for effective learning throughout life ..."

was derived this more specific objective:

> "The pupil will apply his ability to use parts of a book with facility as measured by an exercise directing the pupil to locate and use the following parts: (a) Title page, (b) Table of Contents, (c) Glossary, and (d) List of illustrations " (Third Grade Language Arts; objective No. 24.)

Specifications for objectives provided that each contain these elements: (1) the subject toward which attention was to be directed, i.e., "the pupil," (2) the behavior sought, i.e., "will apply his ability to use," (3) the content, i.e., "parts of a book," and (4) a measuring device, i.e., "an exercise ..."

The consultants wrote objectives for learning in several subject disciplines appropriate upon the completion of kindergarten, grades 3, 6, 9, and 12. Numbers and types of objectives are indicated in the table below:

TABLE I

Number of Objectives Written

in Grade Levels and Content Areas

Level	Health	P.E.	Math	Language Arts	Science	Total
K			8		14	22
3	28	12	10	21	12	83
6	27	15	17	14	10	83
9	17	26	16	22		81
12	15	26	14	21	—	76
Totals	87	79	65	78	36	345

Music objectives were written some time after the work conference for the same five grade levels as for other subject disciplines.

Defining content areas. The objectives stated in the various subject disciplines were put in broader context by construction of a three-dimensional model (see Appendix A). The objectives were represented on one dimension of the model - that dimension identifying common program offerings in Colorado schools.

A second dimension of the model identified basic educational outcomes derived from Goals for Education in Colorado. In this way, general and specific aspects of the content to be assessed were related visually.

A third dimension of the model identified behaviors sought by the student. These behaviors were classified according to the cognitive, affective, and psycho-motor domains as developed by Bloom and others.

Thus, content areas were defined in a way which suggested possibilities

(1) for item-development, and (2) for constructing hypotheses on educational need. With the definition of these content areas, it was proposed that sampling procedures be employed to select pupils and to select items to assess learning in the content areas so defined.

Judging objectives. Task Force members inspected the objectives for consistency with specifications and then submitted lists of objectives to a sample of teachers in Colorado for judgment. Objectives which were acceptable to teachers were used; those unacceptable to teachers were discarded.

For example, the Objective for Third Grade Language Arts stated above was deemed "very important" by 41.4% of the teachers sampled, "important" by 47.1% of the teachers sampled, "unimportant" by 6.9% and "very unimportant" by 1.1% of the teachers (3.5% not respondi .). Finding that 88.5% of the teachers sampled deemed this objective "important" or "very important," the Task Force judged the objective to be acceptable as a basis for assessment and evaluation of learning in Colorado.

Producing items. Consultants, retained to write objectives-referenced items, met in a three-day training session. Presented were concepts of face validity and item sampling. Stressed were differences between norm-referenced and objectives-referenced items. Objectives-referenced items, the consultants were told, need not (1) predict future success of the pupil, (2) correlate with other abilities or general intelligence, or (3) be hard for some and easy for others. However, such items should discriminate between those who can and those who can't do what is specified in the objective.

Items were developed to assess achievement in the content areas defined in phase 2. To assess achievement of the third grade language arts objective stated above, the following items were produced:

Below are three pages from a book. The next two questions will be about them.

John and Jean Go to the Farm

TABLE OF CONTENTS	
Chapter	Page
1. Packing ...	4
2. A Picnic ..	9
3. Seeing the Animals ...	12
4. Milking the Cows	15
5. Walking in the Fields ...	19

ILLUSTRATIONS	Page
1. Jean Gets Wet ...	10
2. The Pigs Eat ...	13
3. A Pail Falls Over	17

5. The title of the book is:

a) John and Jean Go to the Farm
b) Packing
c) Jean Gets Wet
d) No title is given

5. a) o
b) o
c) o
d) o

6. On which page of the book does "Seeing the Animals" start?

a) 2
b) 4
c) 12
d) 13

6. a) o
b) o
c) o
d) o

The content area which these items assess may be located on the model of variables in Appendix A: (1) Program offering is "reading," (2) Basic educational outcome was "ability to read rapidly with comprehension," and (3) Student behavior elicited is in the "cognitive" domain.

Judging feasibility. Time constraints modified the numbers and types of items which could be used. With the end of the school year fast approaching, most items which had been constructed in the affective and psychomotor domains were set aside for future use.

Building Test Forms

Subject matter tests. For each Language Arts, Science, Math, Physical Education, and Health, five test forms were made for each applicable grade level. The test forms were constructed by CDE and PEES personnel.

Item pools developed by the Colorado Department of Education (CDE) were supplied for each subject and grade level (see Colorado's Item Development Section). After reviewing the items and taking into account time constraints established for test administration, a decision was made as to how many items should be assigned to each form. An item x test form matrix was then completed by assigning test items to test forms for each subject through the use of tables of random permutations. PEES personnel did this item sampling.

In some cases, a group of items was related through reference to a reading passage. In these cases, the items were grouped in a block, and the block was randomly assigned to a test form. Every item in the item pool was assigned to at least one test form.

The music test construction did not follow the pattern outlined above. The music test items were not assigned to various forms. The test involved listening to audio tapes. Therefore there was only one test form for each applicable grade level.

Common status measures. The same forms, with minor revisions, contained in the Final Report of the Comprehensive Evaluation Project (U.S.O.E. Contract #EC-0-9-099017-4424(010) December 1969) were used. Common Status Measures included Basic Verbal and Occupational Cognizance tests. There are six test forms for each test for the fourth and eleventh grade levels.

Pupil characteristic items. A pupil characteristic questionnaire was included with each test form. At the secondary level, the pupil was instructed to complete the form. At the elementary level, the proctor was instructed to aid the student in filling out the form and to verify the responses with the assistance of school records. The questionnaire asked the students to indicate his or her sex, race, father's occupation, and if a second language was spoken

in the home. A copy of the pupil characteristic questionnaire is included in the Appendix.

Drawing a Sample of Students

Students participating in the assessment project were selected by randomizing procedure. This entailed random selection of districts, schools, classes, and pupils. PEES personnel planned the samp[illegible]edures.

Selection of districts. Stratified random sampling techniques were used to select districts representative of all districts in Colorado. Specifically, all districts in Colorado were listed in order of size of pupil enrollment, the smallest first. Starting with the smallest, each sixth district was selected as a sample district. Of the state's 181 school districts, 30 districts were selected in this manner. School District No. 1 (Denver) was added independently of the sampling because of that district's unique size. A total of 31 districts participated in the project (see Appendix B).

Selection of schools. Schools were selected at random from districts. Some districts, however, contained so few schools that all schools in the district were selected. Sample schools are listed in Appendix B.

Selection of classes. Classes within schools were selected randomly during item development. These same classes were tested. Exceptions were made where the teachers who had participated in the judgement of objectives were not teaching those grades or subjects to be assessed. In these cases, other classes were chosen by the principal using a randomizing where possible. Similar exceptions were made where no teachers in the school or district participated in the judgement of objectives.

Selection of students. Test proctors were assigned the task of selecting students from classrooms to take the various tests. The test proctors obtained

a class roster from the teacher, and using a table of random numbers, they selected the appropriate number of students to take a particular test or tests.

Often, approximately half of a class took tests on one or two subject ar[illegible]le the other half took tests on different subject areas. Even when this occurred, the students assigned to take the various tests were still selected at random. No less than five or more than 28 students took any one test at any one time.

Hiring and Training Proctors

Thirteen proctors were retained to administer tests in the Denver area schools. Their assistance, it was decided, would lighten the burden of school administrators as well as teachers in this testing program. Proctors were selected who were experienced as teachers and who could carry out assigned duties with a minimum of disruption of on-going learning activities in the schools.

Hiring. In the Denver Metropolitan area, three proctors were selected to administer music tests at the elementary level, three proctors were selected to administer all other tests at the secondary level. The secondary proctors worked in pairs. Six members of the CDE staff were responsible for administering all tests at all grade levels at the rural schools.

Specialized instructions were developed for each group of proctors. These instructions contained modifications for the various school situations. Appendix C contains examples of these instructions.

Training. The services of a training specialist from PEES were retained for directing a full-day training session for proctors. The session was held on May 1, 1970 in Denver. All of the proctors were present.

The session began with introductory remarks which explained the purposes and nature of the program. These remarks emphasized the critical function played by the proctors in selecting pupils, and in test administration. Following these remarks, administrative details were covered. Then the proctors broke up into the following groups:

1. Rural proctors
2. Denver Metropolitan Secondary proctors
3. Denver Metropolitan Elementary proctors
4. Denver Metropolitan Elementary proctors for Music only

One member of the training staff was assigned to each group. The staff members then conducted a training session tailored to the particular needs of their group. Schools were also assigned to the proctors during this training session.

Later in the day, the proctors who had been trained for the administration of the elementary music tests, trained the secondary and rural proctors for music test administration. They were aided in this task by the training staff. The main differences between the music testing and the other tests were that the music test involved the use of tape recorders, and the test was not broken into five test forms.

A final full group session was conducted to cover items such as procedures for picking up and returning testing materials. Any remaining questions were answered. Proctors were paid twenty dollars per day, plus mileage.

Administering Tests

Administration of tests took place between May 4 and May 22. Arrangements were tailored to the situations found in the 206 different schools participating in the project. A description of these arrangements follow.

Music. The music test was administered in a different room so that the sound of the music tape would not distract the others. The special music proctor administered these tests in the elementary schools. In the secondary schools, the music test was administered by one of the team who also assumed various other proctoring duties.

P. E. The physical education tests required some additional work on the part of the proctors. Some of the items determined if the individual could meet AAHPER standards for a given performance task. Proctors were directed to enlist the aid of school officials in obtaining school records to get the information necessary for answering these questions.

Kindergarten. One proctor was used for all kindergarten testing. The proctor randomly selected ten elementary schools from a master list of all elementary schools involved in the sampling in the Denver, Adams-50, and Jefferson R-1 districts. At each of the ten schools, ten kindergarten pupils were randomly selected from the alphabetic class roster. The proctor arranged to take individual pupils to a separate classroom or office to administer the tests. Each pupil was given one form of the math test and one form of the science test. Therefore, forms A through E of both tests were administered twice at each school - a total of twenty forms. A total of two hundred tests were administered in the Denver urban area.

Achievement tests. The objectives-referenced and Common Status Measures were given during the same testing period in the schools. Numbers of students taking these tests is shown below according to subject and grade levels.

TABLE II

Numbers of Students Taking Tests
According to Subject Areas and
Grade Levels in Metro Schools

Subject Areas	Numbers of Students in Grade Levels						
	K	3rd	4th	6th	9th*	11th*	12th*
C.S.M.			5			15-28	
Health		5		5	10-16		15-28
Language Arts		5		5	10-16		15-28
Math	10	5		5	10-16		15-28
Music		5		5	10-16		15-28
P. E.		5		5	10-16		15-28
Science	10	5		5	10-16		15-28

*Numbers vary according to school enrollment

As shown above each test was administered to five students in grades 3, 4, and 6. Some students took more than one test. For example, five third grade students took both Health and Language Arts, while five others took Math and P. E. Five others took the Science test. Generally the five fourth graders taking the C.S.M. joined the fifteen third graders taking the achievement tests. Each student took a different form of the test: one form A, the next form B, and so on.

Ninth, eleventh and twelfth graders were grouped in similar fashion as for the elementary achievement tests. The groups, however, were larger.

Arrangements. Tests were administered in empty classrooms, lunchrooms, offices, auditoriums, or other space available at the time of the testing. Testing schedules were shifted to meet space requirements in several instances.

Testing schedules for the various schools were developed in cooperation with school officials. Letters to district superintendents were followed by phone calls to building principals to make the arrangements for testing described above. Normally, in the Denver Metropolitan area, two schools a day were visited by each elementary and secondary proctor team.

Upon arriving at a school the test proctors checked in with school administrative personnel. The proctors were told which classes were to be tested and which rooms were available for testing purposes. The proctors then selected students to participate. (See "Selection of Students" above)

Rural testing. Matrix sampling was used to assign subject areas for testing to schools and districts whose pupil enrollment was less than 2500 (see Appendix D). All subjects were tested in schools located in districts with a pupil enrollment larger than 2500. The total number of students taking the various tests was based on the pupil enrollment in the district.

Test accounting. A packet was prepared for each school involved in the testing program. Allocation of tests to a school was noted on a 5 x 8 card and recorded on a master accounting sheet. The 5 x 8 card also contained (a) name of school, (b) district, (c) principal's name, (d) address, (e) school phone number, (f) grades to be tested, (g) subjects to be tested, (h) numbers of pupils to be tested. The proctors returned completed test forms to the department and this was noted on the master accounting sheet. Upon checking the school packets, some were found incomplete; in these cases, where possible, proctors returned to the schools for make-up testing. Approximately 95% of all tests allocated were finally completed.

Keypunching. Tests were boxed according to school packet and sent to PEES at Stanford, California for key punching. Content of the data cards may be found in Appendix F.

Problems Encountered

Certain unforeseen problems arose during the course of the Colorado Evaluation Project. These problems pertained to scheduling, selection of classes and pupils, answer keys, proctor identification, item development, and staff development so others may profit from our experience, the problems are described along with suggestions for their avoidance.

Scheduling. Due to the lateness of testing in the school year, 12th graders in several high schools were out for the year and therefore missed taking the tests. The testing was to measure year-end learnings; however, in the latter part of May scheduling high school seniors takes consideration as to their early leaving. Future efforts should consider dates of school closing for 12th graders to be somewhat earlier than for other grade levels.

Selection of classes. Uniform random procedures are essential in selecting classes if bias is to be prevented in drawing the sample of pupils. Letters explaining random procedures to school principals should have preceded the testing by approximately one week instead of relying on recall of teachers who had participated previously in the judgment of objectives. The letters may explain concepts of randomization, as well as the exact procedures involved. The letters may also provide a form for listing teachers whose classes may be sampled along with the page of random numbers for selection of the teachers whose classes are to participate.

Selection of pupils. In some instances, proctors were unable to follow pure randomization procedures because of decisions by school personnel in providing students for testing. Careful monitoring of the student sampling procedure is a necessity.

Answer keys. An answer key should be developed concurrently with assigning items to forms. Needless time was spent going back through the five forms to match questions with the original numbers to find the correct answers from the original answer key.

Proctor identification. Some phone calls could have been avoided if the proctors had badges or letters of identification. School personnel would call the Colorado Department asking for identification of the proctors if the principal was not at the school when the proctors arrived. Written identification could have avoided these calls.

Item development. Achievement items should have been piloted before submission to a statewide sample in order to correct problems of language level, clarity and administrative feasibility. This piloting could have been done on a classroom basis in schools contacted by CDE personnel.

Staff development. Objections about assigning items to forms could have been avoided by gaining understanding as to the technical requirements of multiple-matrix sampling. Concepts of item sampling should have been developed among CDE staff along with the development of objectives and items.

Analysis of Data

This project was funded to field test Common Status Measures in the State of Colorado concurrently with that state's pilot program in assessment. The analysis of the data will be directed toward a determination of educational needs in Colorado. Plans regarding the schedule of operations and the use of findings are described below.

Lists of results. Listings of the proportion of correct, incorrect, and omitted responses to each individual test item will be presented on these units of observation: The school, district, and total State. Such listings will not be for public release as they do not in themselves constitute comprehensible documents. These lists would be used by the State Department personnel: (a) to compute percentage of return of tests, and (b) to compare with other test information collected under Colo. Rev. St. 123-39-2 and other state laws.

Contingency tables. A second operation will provide numerous cross-tabulations of responses to items according to several sub-groups identified in the general school population and the total school population. A hypothetical table giving such a cross-tabulation follows:

(Hypothetical Data)

Responses to item #2 of the Grade 3 Health Test

	Male		Female		Sex Omitted		All Respondents	
	No.	%	No.	%	No.	%	No.	%
Correct	180	86	130	65	12	80	322	75.8
Incorrect	20	9	58	29	2	13	80	18.8
Omitted	10	5	12	6	1	7	23	5.4
All Responses	210	49.4	200	47.1	15	3.5	425	100.0

Index of item difficulty. Along with proportions of correct, incorrect and omitted responses, a single index of item difficulty will be tabulated. We will examine item difficulty measurements for students in the following categorizations: urbanism, Title I target school, Title III innovative program school, by school district, sex, race, whether or not another language is spoken in the home, the father's occupation. This more refined analysis can be used to examine questions such as whether the students in Title I target schools perform significantly different from those who attend schools with similar demographic characteristics but without Title I programs.

Mean score estimate. The analysis outlined above is based on individual items. Regarding pupil performance, a mean score estimate will be given for each of the various sub-groups indicated in item #3 above. Also a mean score estimate for all students by subject by grade will be given for the entire school population on all items for each subject within a given grade level.

This analysis will indicate whether or not there are certain groups whose level of performance is significantly deficient. Once needful groups are identified, educational planners can begin to make appropriate changes to remedy the situation.

Indicators of test quality. The quality of tests themselves is, of course, an extremely important piece of information. How test results can be used for planning is based on reliability and validity of the tests. Therefore, an item by item correlation for each subject for each grade level will be performed. Subject by subject correlation (for example, the correlation of math and science) within grade levels and subject by Common Status Measure for adjacent grade levels will also be performed.

Other operations. Data collected in Colorado on the Common Status Measures will be compared with similar data collected on a national sample. The analysis will indicate how the Colorado schools compared with nation-wide results.

Also, examples of objective-referenced items will be drawn to illustrate problems and correction of these problems. Logical consistency with goals and objectives, appropriate language level and other problems of the assessment will be so documented.

Finally, preliminary inspection of the findings will be undertaken to identify areas of educational need. For each academic subject, every test item corresponded to an explicit educational objective. Given adequate item-performance, the analysis described above will indicate which objectives are or are not being achieved in Colorado. The discrepancy between a stated objective and its achievement will define educational need in Colorado.

Use of Findings

Reports of the 1970 Colorado Evaluation project will be aimed at two distinct and non-overlapping audiences. First, technical reports of procedures

and findings will be presented in Statistical Tables with a minimum of verbal explanation. This report will be made available to professional staff of the Colorado Department of Education.

Secondly, a Narrative Report will give a journalistic account of the program and the more salient features of the statistical table. This will be distributed to the general public, including teachers, administrators, parents, members of the State Legislature and other interested parties. This report may be used by these persons (1) to help plan for needs identified in the report and (2) to replicate the procedures or adapt them for use in local districts or other states.

Thirdly, a video tape explaining several aspects of the testing will accompany the final written reports. Included in the tape are analysis and interpretation of data from the testing, description of various vocational education activities in grade 11, description of pupils sampled, and recommendations along with related interviews and classroom activity.

A P P E N D I X A

CONTENT AREA

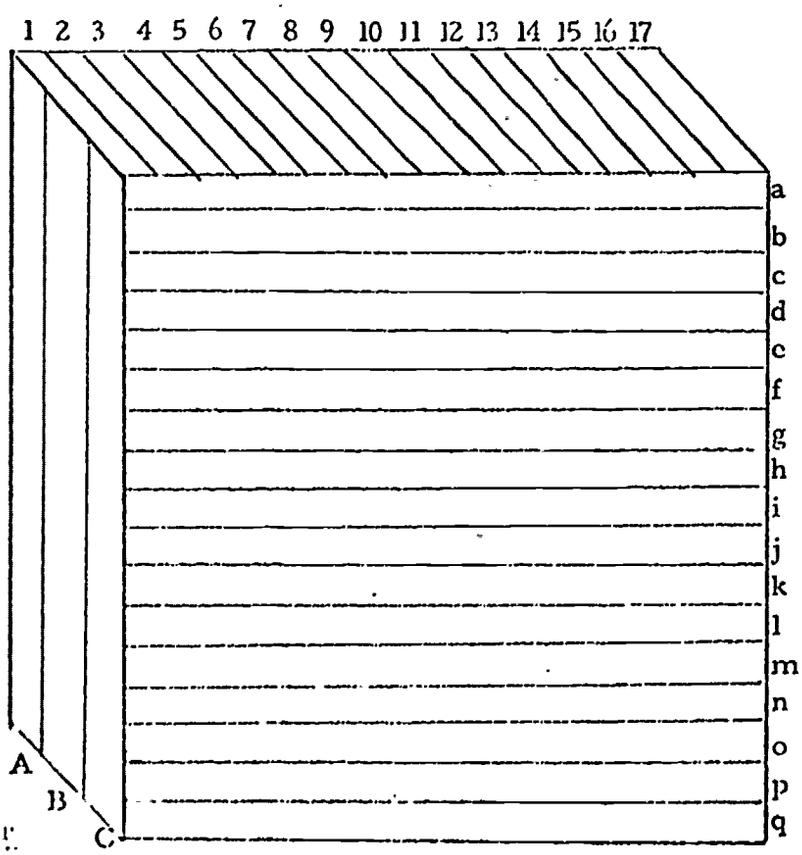
Sampled by Objectives-Referenced Items

Figure 1

OVERVIEW OF VARIABLES

Basic Educational Outcomes

1. Knowledge of Science info, skills, concepts.
2. Knowledge of Mathematics info, skills, concepts.
3. Knowledge of Social Studies info, skills, concepts.
4. Ability to read rapidly with comprehension.
5. Ability to communicate in Writing.
6. Ability to Spell correctly.
7. Knowledge and appreciation of Music.
8. Ability to draw and to appreciate Art.
9. Knowledge of Health skills and concepts.
10. Physical proficiency. (S already being measured)
11. Proficiency in and knowledge of Home Economics.
12. Proficiency in and knowledge of one or more Industrial Arts.
13. Cognizance of Occupational Opportunities.
14. Interest in School, School Subjects, and Education.
15. Value of Self, Family, Society.
16. Ability and initiative to solve real and pressing problems.
17. Ability and desire to participate in group work.



Student Behavior
A. Cognitive
B. Affective
C. Psychomotor

Program

Curricular:
a. Science
b. Math
c. Social Studies
d. Reading
e. Eng. Comp., Grammar, Lit.
f. Spelling
g. Music
h. Art
i. Health, Safety, Recreation
j. Physical Education
k. Home Economics
l. Voc. Ed/ Industrial Arts
m. Foreign Languages

Co-curricular:
n. Guidance
o. Health
p. Psychological
q. Social
r. Library
s. Food
t. Transportation

In the Context of--
Student and family information:
Age/Sex/Race or Ethnic Origin/Enrolled in this school 3 years ago/Second language when in home/ I. Q. /Occupation of head of household/Education of mother.

A P P E N D I X B

DISTRICTS AND SCHOOLS

PARTICIPATING

District Denver

Elementary Schools

Alcott
Ash Grove
Ashley
Barrett
Belmont
Boettcher
Bradley
Brown
Carson
Colfax
Columbine
Cory
Crofton
Doull
Ebert
Ellis
Elmwood
Emerson
Fairmont
Fairview
Force
Gilpin
Goldrick
Gust
Harrington
Knapp
Lincoln
McMeen
Montbello
Montclair
Munroe
Palmer
Pitts
Rosedale
Sabin
Sherman
Smith
Steck
Steele
Swansea
Thatcher
University Park
Washington Park
Whiteman
Wyatt

Junior High Schools

Baker
Byers
Cole
Gove
Grant
Hill
Horace Mann
Kepner
Kunsmiller
Lake
Merrill
Morey
Rishel
Skinner
Smiley

Senior High Schools

Abraham Lincoln
East
George Washington
John F. Kennedy
Manual
North
South
Thomas Jefferson
West

District Jefferson R-1

Elementary Schools

Allendale
Belmar
Central Lakewood
Coal Creek
Columbine Hills
Daniels
Edgewater
Fairmount
Foster
Fruitdale
Green Gables
Hackberry Hill
Jucchem
Lasley
Lumberg
Martenson
Miller
Molholm
Mountain View
North Lakewood
Patterson
Pennington
Prospect Valley
Red Rocks
Secrest
South Alameda
Stober
Vanderhoof
Welchester
West Jefferson

Junior High Schools

Alameda
Arvada
Bell
Belmont
Carmody
Creighton
Drake
Dunstan
Everitt
Evergreen
Golden
Ken Caryl
Lakewood
Manning
North Arvada
Oberon
West Jefferson
Wheat Ridge

Senior High Schools

Alameda
Arvada
Arvada West
Bear Creek
Golden
Jefferson
Lakewood
Wheat Ridge
Evergreen

District Adams 50 Westminster

Elementary Schools

Baker
Berkeley
Clara B. Metz
Gregory Hill
Sunset Ridge
Tennyson Knolls
Westminster

Junior High Schools

Clear Creek
Hodgkins
Scott Carpenter
Shaw Heights

Senior High Schools

Ranum
Westminster

District Adams 14

Elementary Schools

Central
Dupont
Rose Hill
Oneida

Junior High Schools

Adams City
Kearney

Senior High School

Adams City

District El Paso 2

Elementary Schools

Pikes Peak Park
Stratmoor Hills

Senior High School

Harrison

District Adams 27J

Elementary Schools

Northeast

Junior High School

North Brighton

Senior High School

Brighton

District Otero R-1

Elementary Schools

Columbian

Senior High School

La Junta

District Douglas Re-1

Elementary Schools

Castle Rock

Junior High School

Douglas County

Senior High School

Douglas County

District Weld RE-8

Elementary Schools

Leo Wm. Butler

Intermediate

Fort Lupton

Senior High School

Fort Lupton

District Gunnison RE1J

Elementary Schools

Blackstock

Senior High School

Gunnison

District Huerfano Re-1

Elementary Schools

Washington Hill

Senior High School

Walsenburg

District Clear Creek Re-1

Elementary Schools

Idaho Springs

High School

Idaho Springs

District Routt Re-2

Elementary Schools

Steamboat Springs

Junior High School

Steamboat Springs

District Teller Re-2

Elementary Schools

Woodland Park

Senior High School

Woodland Park

District Larimer R-3

Elementary Schools

Estes Park

High School

Estes Park

District Baca Re-4

Elementary Schools

Springfield

Senior High

Springfield

District Dolores Re-1

Elementary Schools

Seventh Street

Senior High

Dolores County

District Prowers Re-1

Elementary Schools

Granada

High School

Granada

District Grand 1-(J)

Elementary Schools

West Grand

High School

West Grand

District Routt Re-1

Elementary Schools

Edison

High School

Hayden

District Elbert C-1

Elementary Schools

Elizabeth

High School

Elizabeth

District Saguache Re-1

Elementary Schools

Mountain Valley

High School

Mountain Valley

District Alamosa Re-22J

Elementary Schools

Sangre de Cristo

High School

Sangre de Cristo

District Park 1

Elementary Schools

Platte Canyon

High School

Platte Canyon

District Morgan Re-20

Elementary Schools

Weldon Valley

High School

Weldon Valley

District Logan Re-5

Elementary Schools

Peetz

High School

Peetz

District Las Animas 88

Elementary Schools

Kim

High School

Kim

District Elbert C-2

Elementary Schools

Kiowa

High School

Kiowa

District Weld Re-10

Elementary Schools

Briggsdale

High School

Briggsdale

District Washington 101

Elementary Schools

Lone Star

High School

Lone Star

APPENDIX C

INSTRUCTIONS TO TEST PROCTORS

PROCTOR INSTRUCTION

Denver - 12th Grade Achievement and 11th Grade CSM

A. You will have 3 classes of 12th graders:

1. You will use all of 1 class for 12th grade Math and PE
2. You will use all of another class for 12th grade Health and Language Arts
3. You will use all of a third class for Music

B. You will have 1 class of 11th graders. You will use all of this class for 11th grade Common Status Test.

Note: When these tests are complete PEESS/CDE will randomly delete tests from the above classes to get down to the matrix number agreed upon for testing.

Denver - 9th Grade Achievement

A. You will have 2 classes of 9th graders:

1. You will randomly assign 15 or 16 students from 1 class to 9th grade Math and PE.

2. You will randomly assign 15 or 16 of the remaining students from this class to Health and Language Arts.

3. You will randomly select 15 or 16 ninth graders from another class to Music. Take these students to the music testing room.

B. The random selection procedure you will use is as follows:

1. Get a class roster of the classes you will be using. The students in the class should be listed alphabetically and numbered sequentially, e.g., 1. Adams, 2. Butts, 3. Clump ....40. Zotts.

2. Use the attached table of random numbers to select the number of the student to take the test. Repeat the procedure until you have the total number of students you need, e.g. . 15 or 16.

3. Start anywhere on the table. The first number is your first student, e.g., #17, look on the class roster and the student listed as #17 is your first student. Repeat this process by moving down the columns until you have all the students you need.

   Note: If a number is repeated, skip it and move to the next number. Also, if you reach a number larger than the class size maximum, skip it and move to the next number.

4. Start the whole process over for each class, e.g., 15-16 students selected for Math and PE; 15-16 students selected for Health and Language Arts, and 15-16 students for Music.

PROCTOR INSTRUCTIONS

Denver Metropolitan Elementary

A. At each school you will test one third grade class using 15 students from that class. Select and assign the students as follows:

1. Randomly select 5 students for 3rd grade science and math
2. Randomly select 5 students for 3rd grade language arts and health
3. Randomly select 5 students for 3rd grade physical education

B. At each school you will test one 4th grade class using 5 students from that class. Select and assign the students as follows:

1. Randomly select 5 students for the 4th grade Common Status Measures.

C. At each school you will test one 6th grade class using 15 students from that class. Select and assign them as follows:

1. Randomly select 5 students for 6th grade science and math
2. Randomly select 5 students for 6th grade language arts and health
3. Randomly select 5 students for 6th grade physical education

D. Random selection procedures are as follows:

1. Get a class roster of the classes you will be using. The students in the class should be listed alphabetically and numbered sequentially, e.g., 1. Adams, 2. Butts, 3. Clump ... 40. Zotts.

2. Use the attached table of random numbers to select the number of the student to take the test. Repeat the procedure until you have the total number of students you need, e.g., 5 or 15.

3. Start anywhere on the table, the first number is your first student, e.g., No. 17, look at the class roster and the student listed as No. 17 is your first student. Repeat this process by moving down the columns until you have all the students you need. If a number is repeated, skip it and move to the next number. If you reach a number larger than the class size maximum, skip it and move to the next number.

4. Start the whole procedure over for each class, i.e., 3, 4 and 6.

PROCTOR INSTRUCTIONS

Music Proctors - Denver Elementary Metropolitan

A. You will have one class of 3rd graders. Select and assign them as follows:

1. Randomly select 5 students from this class for the 3rd grade test

B. You will have one class of 6th graders. Select and assign them as follows:

1. Randomly select 5 students from this class of 6th graders to take the 6th grade test.

C. Random selection procedures to be followed are:

1. Get a class roster of the classes you will be using. The students in the class should be listed alphabetically and numbered sequentially, e.g., 1. Adams, 2. Butts, 3. Clump ...40 Zotts.

2. Use the attached table of random numbers to select the number of the student to take the test. Repeat the procedure until you have the total number of students you need, e.g., 5.

3. Start anywhere on the table, the first number is your first student, e.g., No. 17, look on the class roster and the student listed as No. 17 is your first student. Repeat this process by moving down the columns until you have all the students you need. If a number is repeated, skip it and move on to the next number.

4. Start whole process over for each class, i.e., 3rd and 6th.

PROCTOR INSTRUCTIONS

El Paso - 9th grade

A. You will have two classes of 9th graders. Assign them as follows:

1. Randomly select 15 students from one class to take math and physical education.
2. Randomly select 15 students from those remaining in this class to take health and language arts.
3. From another class, randomly select 15 9th graders to take the music test.

B. Random selection procedures are as follows:

1. Get a class roster of the classes you will be using. The students in the class should be listed alphabetically and numbered sequentially, e.g., 1. Adams, 2. Butts, 3. Clump ..., 40. Zotts.

2. Use the attached table of random numbers to select the number of the student to take the test. Repeat the procedure until you have the total number of students you need, e.g., 15.

3. Start anywhere on the table, the first number is your first student, e.g., No. 17, look at the class roster and the student listed as No. 17 is your first student. Repeat this process by moving down the columns until you have all the students you need. If a number is repeated, skip it and move to the next number. If you reach a number larger than the class size maximum, skip it and move to the next number.

4. Start the whole process over for each class, i.e.:

15 students for 9th grade math and physical education

15 students for 9th grade health and language arts

15 students for 9th grade music

PROCTOR INSTRUCTIONS

Rural Areas

A. You will be selecting students in groups of 5, from any grade you are testing. Most frequently, these 5 students will be taking two tests during the testing period, e.g., math and health or science and physical education or health and language arts.

   Music will always be given separately from the other tests.

B. At most, during any hour of testing, you will have 15 students in the testing room.

C. Random student selection procedures to be followed:

   1. Get a class roster of the classes you will be using. The students in the class should be listed alphabetically and numbered sequentially, e.g., 1. Adams, 2. Butts, 3. Clump ...40. Zotts.

   2. Use the attached table of random numbers to select the number of the student to take the test. Repeat the procedure until you have the total number of students you need, e.g., 5. 10 or 15.

   3. Start anywhere on the table, the first number is your first student, e.g., No. 17, look at the class roster and the student listed as No. 17 is your first student. Repeat this process by moving down the columns until you have all the students you need. If a number is repeated, skip it and move to the next number. If you reach a number larger than the class size maximum, skip it and move to the next number.

   4. Start the whole process over for each class, i.e., 3, 4, 6, 9, 11 or 12.

APPENDIX

A PAGE OF RANDOM NUMBERS

This is a portion of page 22 which was drawn at random from H. Burke Horton's *Random Decimal Digits* (Interstate Commerce Commission, 1949). It is included here to assist students in pursuing the exercises.

1	*2*	*3*	*4*	*5*	*6*	*7*
02946	96320	31881	56217	17623	47141	27821
85697	62000	87957	07258	45051	5[illegible]410	92081
25731	68126	52097	23123	73700	5[illegible]739	06111
47820	32353	95941	72169	58371	03905	05865
70693	99339	40571	41186	04981	17531	97372
47526	26722	31615	83565	45639	02485	43905
70190	85732	19711	92951	98832	3[illegible]188	24080
86819	50400	50889	05193	63638	0[illegible]619	90906
41614	39074	23103	02656	77580	87772	86877
17930	26191	53836	53692	67125	98175	00912
24619	31815	25736	75231	83808	94097	71829
79899	34061	54308	59353	56162	53166	97392
76801	49594	81952	30397	52728	15101	72070
62567	08180	61873	63162	44873	25502	01571
49723	15275	09359	11211	67352	31526	23197
42658	70183	89157	57676	35370	11915	16569
65089	35569	79392	14937	06081	74957	87787
02996	38119	72307	71127	53178	60207	43519
75153	86376	63852	60557	21211	77299	74967
14192	49525	78844	13664	98964	61125	33536
32059	11518	86264	74496	81196	23996	56572
81716	86304	96764	57211	71561	11989	92189
45315	50183	62059	09611	36371	29325	37189
27510	10769	69021	46721	31182	22856	18721
81782	04769	36716	82519	98272	43969	12129
19975	48316	13029	78902	75689	16722	88553
98356	76855	19769	52843	64201	95212	31320
29768	17811	31756	68910	16571	42305	56300
88011	27583	78147	25057	93552	74362	39651
91491	19258	17396	16592	18907	79869	24607
56957	05072	53018	07356	42709	82291	20435
50915	31924	89621	17195	81618	15125	48087
49531	93771	80290	84622	31113	35733	15218
99683	58162	15316	39751	77600	15175	67115
86017	22264	91618	85979	42009	78916	45210
77339	61005	83583	87011	02955	81318	16136
61711	37233	57412	26090	93811	95216	71212
15232	45027	15832	62924	11509	95553	02747

A P P E N D I X D

MATRIX OF DISTRICTS AND SUBJECT AREAS SAMPLED

(Place pages end to end for complete matrix)

Distribution of Tests According to
District, Content-Area and Grade-level

	Grade	Washington 101 No. Tests	Weld RE10	Elbert 200	Elbert C2	Las Animas 63	Logan Re5	Morgan Re20	Park 1	Alamosa Re22J	Saguache Re1	Elbert C1	Routt Re1
Science	K-5				5		5			5		5	
	3-5				5		5			5		5	
	6-5				5		5			5		5	
	9-0			No.	0		0			0		0	
	12-0			Grade Tests	0		0			0		0	
Math	K			5		5			5		5		
	3			5		5			5		5		
	6			5		5			5		5		
	9		No.	5		5			5		5		
	12		Grade Tests	5		5			5		5		
Language Arts	K-0		0					0	0				0
	3-5		5					5	5				5
	6-5		5					5	5				5
	9-5		5					5	5				5
	12-5		5					5	5				5
Health	K-0					0		0			0		0
	3-5					5		5			5		5
	6-5					5		5			5		5
	9-5			No.		5		5			5		5
	12-5			Grade Tests		5		5			5		5
Physical Education	K-0				0		0			0		0	
	3-5				5		5			5		5	
	6-5				5		5			5		5	
	9-5				5		5			5		5	
	12-5			Grade-to Tests	5		5			5		5	
Music	K			0		0			0		0		
	3			5		5			5		5		
	6			5		5			5		5		
	9			5		5			5		5		
	12			Grade-to Tests		5			5		5		
Common Status	4-5		5					5	5				5
	11-5		5					5	5				5

Otero R-1	Adams 27J	El Paso 2	Adams 14	Adams 50	Jefferson R-1	Denver 1		TOTALS
	5	15	20	40	150	250	= 530	
	5	15	20	40	150	250	= 530	
	5	15	20	40	150	250	= 530	= 1590
	0	0	0	0	0	0	= 0	
	0	0	0	0	0	0	= 0	
5	5	15	20	40	150	250	= 530	
5	5	15	20	40	150	250	= 530	
5	5	15	20	40	150	250	= 530	= 2650
5	5	15	20	40	150	250	= 530	
5	5	15	20	40	150	250	= 530	
	0	0	0	0	0	0	= 0	
	5	15	20	40	150	250	= 530	
	5	15	20	40	150	250	= 530	= 2120
	5	15	20	40	150	250	= 530	
	5	15	20	40	150	250	= 530	
0	0	0	0	0	0	0	= 0	
5	5	15	20	40	150	250	= 530	
5	5	15	20	40	150	250	= 530	= 2120
5	5	15	20	40	150	250	= 530	
5	5	15	20	40	150	250	= 530	
	0	0	0	0	0	0	= 0	
	5	15	20	40	150	250	= 530	
	5	15	20	40	150	250	= 530	= 2120
	5	15	20	40	150	250	= 530	
	5	15	20	40	150	250	= 530	
0	0	0	0	0	0	0	= 0	
5	5	15	20	40	150	250	= 530	
5	5	15	20	40	150	250	= 530	= 2120
5	5	15	20	40	150	250	= 530	
5	5	15	20	40	150	250	= 530	
	5	15	20	40	150	250	= 530	
	5	15	20	40	150	250	= 530	= 1060

GRAND TOTAL = 13,[illegible]0

	Grand 1(J)	Prowers Rel	Dolores Rel	Baca Re4	Larimer R-3	Teller Re2	Routt Re2	ClearCreek Rel	Huerfano Rel	Gunnison Rel(J)	Weld Re5	Douglas Rel
Grand 1(J)		5 5 5 0 0			5 5 5 0 0		5 5 5 0 0			5 5 5 0 0		5 5 5 0 0
Prowers Rel	5 5 5 5 5			5 5 5 5 5		5 5 5 5 5			5 5 5 5 5		5 5 5 5 5	
Dolores Rel	0 5 5 5 5			0 5 5 5 5				0 5 5 5 5	0 5 5 5 5			
Baca Re4	0 5 5 5 5		0 5 5 5 5									
Larimer R-3		0 5 5 5 5				0 5 5 5 5		0 5 5 5 5			0 5 5 5 5	
Teller Re2					0 5 5 5 5		0 5 5 5 5			0 5 5 5 5		0 5 5 5 5
Routt Re2	0 5 5 5 5			0 5 5 5 5		0 5 5 5 5			0 5 5 5 5		0 5 5 5 5	
ClearCreek Rel			5 5	5 5								
Huerfano Rel								5 5				
Gunnison Rel(J)												
Weld Re5												
Douglas Rel												

A P P E N D I X E

PUPIL CHARACTERISTIC ITEMS

Elementary School Pupil Characteristic Items

Name of Student: _____

School: _____

Name of Teacher: _____

Date: _____

Time of Day: _____

To the proctor: Please answer the following questions with the aid of the student and/or school personnel. The aid of school personnel in answering item number four may be especially needed. Pupil's records should be checked to verify his responses.

1. What is this pupil's sex?

   ( ) Male ( ) Female

2. Indicate below if this pupil is a member of any of the following racial or national origin groups?

   ( ) American Indian
   ( ) Negro
   ( ) Oriental
   ( ) Spanish-surnamed American (Persons of Cuban, Mexican, or Puerto Rican descent)
   ( ) None of those listed

3. Is a language, other than English, regularly spoken in the pupil's home?

   ( ) Yes ( ) No

4. In the box below, please write the usual occupation of the person who is the primary supporter of this pupil's family. If you don't know, write "Don't Know" in the box below.

   [ ]

   Please indicate below the most appropriate option describing the occupation you have written in the box above.

   ( ) Farm worker
   ( ) Farm manager or owner
   ( ) Unskilled worker, laborer, or domestic worker
   ( ) Semi-skilled worker
   ( ) Skilled worker
   ( ) Sales agents and representatives
   ( ) Technical
   ( ) Manager or foreman
   ( ) Official
   ( ) Professional
   ( ) Don't know

A P P E N D I X F

Content of Data Cards

Subject area

Grade level number

Form numbers - A, B, C, D, E, F

School code number and district code number

Pupil responses to test items (3 to 30 items)

Pupil characteristics:

- Student's name code
- Student's sex
- Student's national origin group
- Language other than English (yes or no)
- Occupation (10 classifications)

Title I school

Title III school

Neither

Both