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ABSTRACT

Hawaii's testing program for 1971-72 is described, and test results are provided. Following an introduction and a glossary of technical terminology, narrative summaries of all the tests administered are provided. These tests are: California Test of Mental Maturity; California Achievement Test--Reading; SCAT; STEP--Reading, Mathematics, Writing, Science, Social Studies, and Listening; and Differential Aptitude Test. In each narrative, the following information is given: purpose of the test, population taking the test, date of the test administration, and a summary of results. Appendices provide specific results for each test and State and national norms. (KM)

SUMMARY REPORT OF STATEWIDE TESTING PROGRAM 1971-1972

Evaluation Report No. 81

OFFICE OF INSTRUCTIONAL SERVICES • EVALUATION SECTION, TESTING UNIT
DEPARTMENT OF EDUCATION • STATE OF HAWAII • OFFICIAL • TAC 73-5991 • OCTOBER 1972

The Honorable John A. Burns
Governor, State of Hawaii

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FOREWORD

The academic year of 1971-72 was notable, in part, for an increase in interest and concern regarding standardized group testing in Hawaii's public schools. This "closer look" at our testing policies and practices came from various groups: school administrators at all levels -- local, district and state; interested citizens, state legislators, members of community organizations, teachers and counselors, not to mention those most closely involved, the students themselves.

The history of group testing, not yet a century old in American education, reveals that controversy and debate appear to be inherent in the nature of the activity. As one aspect of the behavioral sciences -- still in their infancy when compared to the physical and natural sciences -- there is every reason to believe that challenge and change will continue to be a part of the testing scene.

Thus, all of us -- laymen and professional educators -- should view criticisms constructively, and as an integral phase of our unending search for ways and means of improving the measurement of educational outcomes for our students and their teachers.

Both the Senate and the House of the Sixth Legislature passed Resolutions requesting the Department of Education to revise its methods of reporting on the statewide testing program by providing more descriptive material about the tests and writing the reports in a clear, accurate style so as to be understood by the general public.

It is hoped that this report in content and format will provide teachers, school administrators, legislators and all citizens concerned with education in Hawaii with readily accessible information about the statewide testing program.

The Testing Service of the Office of Instructional Services will welcome any comments or requests for clarification.

Shiro Amioka

SHIRO AMIOKA
Superintendent of Education

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PART I. INTRODUCTION

It is generally agreed that standardized group testing in schools is a supplement to, not a substitute for, making judgments related to the educational enterprise. The questions then arise: Judgments about what? For whom? To say that standardized testing is intended to aid our students through improved instructional and counseling programs may be a good, general, philosophical statement: but it is not very helpfully descriptive. Specifically, why do we use standardized commercially-published, assessment instruments? What definite purposes can they serve?

- INDIVIDUALIZING INSTRUCTIONAL PROGRAMS

  Test scores can assist the teacher in determining a student's level of achievement in a particular school subject and thus enable that teacher to provide instructional materials and methods of an appropriate level for this student. This is particularly important in subject areas where later learnings depend on earlier ones. For example, in arithmetic it would seem useless to try to teach multiplication to a pupil who has not learned to add. In the event that test results and other observations reveal a number of pupils with similar learning "lags," they may be grouped for instruction according to their needs. Thus, standardized tests aid in making decisions concerning placement of students in an appropriate level of instruction. The other side of the placement coin, of course, is that students who reveal above-average mastery of a subject area can be provided enrichment in their school work.

- DIAGNOSING LEARNING PROBLEMS OF INDIVIDUAL STUDENTS

Although related to the placement function described above, a refined testing instrument will also assist the teacher in identifying with relative accuracy the specific step or steps in the development of a skill in which the student needs remediation. To use arithmetic again for an example, if the student cannot add, is it because of his lack of understanding the "carrying over" of numbers when computing a problem involving two or more digit numbers? Through such analyses of gaps in the learning processes, the teacher's and student's time can be more profitably used to achieve mastery of the task at hand, whatever the subject area may be.

- PROVIDING EFFECTIVE GUIDANCE AND COUNSELING

Through proper use of information derived from such standardized measurements as aptitude tests, scholastic ability estimates and occupational interest inventories, the counselor can provide students with a very meaningful source of supplementary information for self-appraisal and realistic career and educational planning.

- ASSESSING INSTRUCTIONAL PROGRAMS

When combined with other information concerning the student population in a particular school, such as socio-economic trends, mobility of families, teacher-student ratio, attendance pattern, and other local community conditions, standardized test results can be helpful as an aid in assessing the effectiveness of a particular instructional program in any school subject. For example, how does the achievement of pupils in a

social studies course using the "inquiry method" of learning compare with students provided with traditional teaching methods?

- ASSISTING PARENTS WITH A BETTER UNDERSTANDING OF THEIR CHILDREN

When appropriately presented in teacher/counselor-parent conferences, standardized test information may aid parents in developing more realistic insights concerning their children and their aspirations for them.

- EVALUATING A SCHOOL, A DISTRICT, A SYSTEM

How good a job the schools are doing is rightfully the concern of citizens, legislators, parents, school administrators, teachers and students. Methods of reporting to these various "consumers" as to the efficiency and effectiveness of the educational enterprise is a responsibility of management.

For many years standardized test data have been the main source of information for those concerned with evaluating an educational program. The prevailing, and almost "one-shot" basic consideration was, "How do we compare with national norms?" Being "up to" or "better than" national norms seemed to have a comforting sound that assured everybody that all was well on the educational scene.

Recent changes and innovations in our school program in response to the unrest characteristic of our times reasonably raise the question as to the utility of standardized test scores alone to give us a "yardstick" for measuring the effectiveness of our educational programs. New models

for evaluation of tax-supported functions of all types are evolving that may provide more accurate assessments of how well public agencies -- including schools -- are fulfilling their objectives. Hence, we may soon find that different ways of assessing school "output" will tend to remove standardized (norm-referenced) testing from the limelight it has held so long in serving the needs of accountability.

For example, far more meaningful than how a school's standardized test scores compare to a national norm may be how the school's scores compare with other schools having similar characteristics. Or, how well do the students demonstrate mastery of an established standard for the various knowledge and skills involved in a particular subject such as reading, writing, and mathematics? As these new and more sophisticated evaluation techniques are refined, standardized testing may best find its contribution to education in the area for which it was originally conceived and developed; notably, the identification of individual differences that enable student and teacher to deal more effectively with the growth and development of the student as a total person.

PART II.
GLOSSARY OF TECHNICAL TERMS USED IN THIS REPORT

Unavoidably, any discussion of standardized tests involves technical terms that are not used in our everyday vocabulary. While this report attempts to keep "technical jargon" at a minimum, certain terminology is used of necessity. Therefore, definitions of technical words used in this report are defined below.

Test Titles

SCAT - School and College Ability Test; used for estimating a student's capacity to learn.

STEP - Sequential Tests of Educational Progress; survey examinations in Reading. Writing, Mathematics, Science, Social Studies and Listening.

DAT - Differential Aptitude Test; used for estimating a student's potential in seven abilities related to occupational choices.

CTMM - California Test of Mental Maturity; used to estimate a student's ability to learn.

CAT-R - California Achievement Test in Reading; used for measuring a student's level of achievement in reading.

Test and Measurements Terminology

NORMS - Statistics that supply a frame of reference by which meaning may be given to test scores. Norms are based on the actual performance of students of various ages and grade levels. Since they represent average or typical performance, they should not be regarded as standards or as universally desirable levels of attainment. The

"Normal Curve" concept illustrated on page 8 indicates how test scores of a typically normed test are distributed.

GRADE EQUIVALENT - The grade level for which a given score is the estimated average. Most appropriately used for elementary achievement tests, the grade-equivalent score is expressed in terms of grade and month of grade. Thus, 5.7 would mean the seventh month in the fifth grade.

PERCENTILE - One of the 99 point scores that divide a ranked distribution of groups, each of which contains 1/100 of the scores. Thus, a score falling at the 35th percentile is regarded as equaling or surpassing 35 per cent of the persons in the group on which the test was normed, and such that 65 per cent of the performances of the norm group exceed this score.

MEDIAN - The middle score in the distribution of ranked scores; the point that divides the group into two equal parts; the same as the 50th percentile.

MID-PERCENTILE - SCAT-STEP scores are best reported by "percentile bands," for example, for STEP-Reading a student may receive a score of 56-67. This is to allow for the standard error of measurement inherent in the test. It cannot be known absolutely where the student's "true" score lies between these two numbers; however, the approximate mid-point between these two numbers is most likely the closest to the student's "true" score. This approximate mid-point is called the mid-percentile.

QUARTILE - One of three points that divide the students into four equal groups. Q_1 (the 25th percentile), sets off the lowest fourth of the group; Q_2 is the middle or same as the 50th percentile; Q_3 (the 75th percentile) sets off the top fourth.

RAW SCORE - Usually the number of right answers the student has made on a test.

CONVERTED SCORE - A "translation" of the raw score to allow for establishing a system of standard scores. Statistical information based on converted scores is more accurate than that based on raw scores.

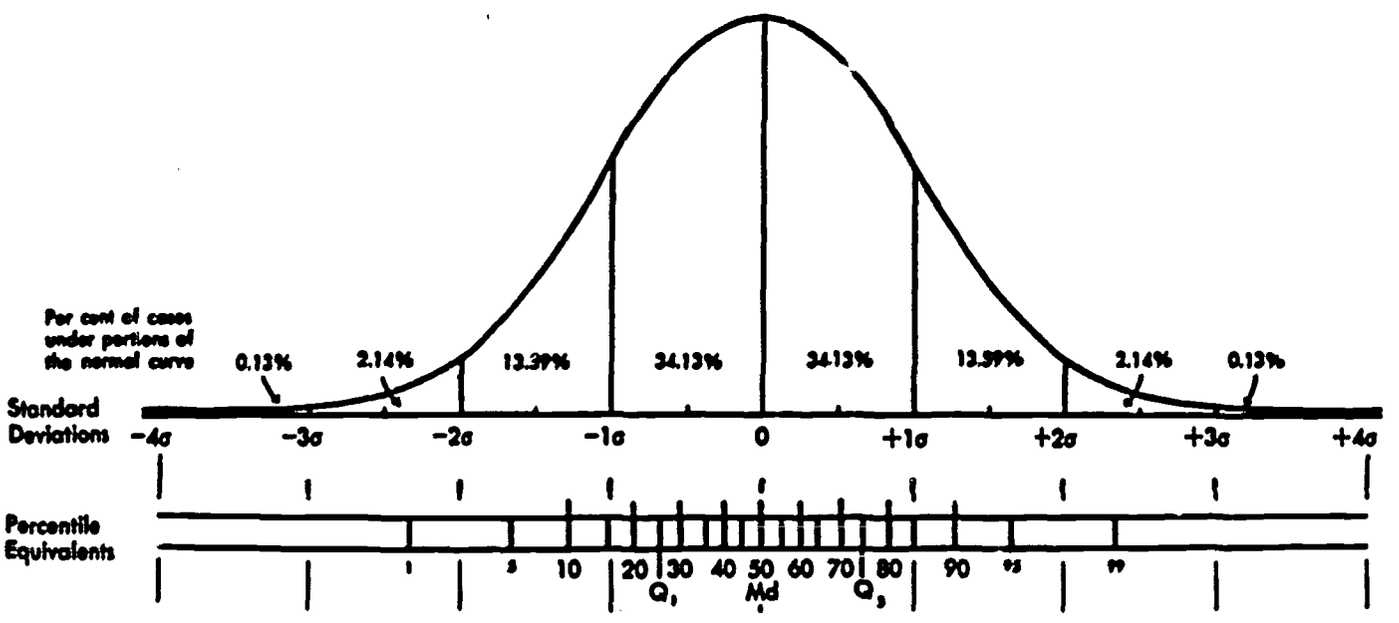
I.Q. - "Intelligence Quotient." This is a number originally intended as an index of brightness of a person expressed as a ratio of his mental age to his chronological age. In the present state of the art of testing, it may be regarded as a type of standard score with the average lying between 90-109, inclusive.

VALIDITY - The extent to which a test really measures what it says it will measure.

RELIABILITY - The extent to which a test is consistent in measuring whatever it does measure; dependability, stability, trustworthiness.

STANDARD ERROR of MEASUREMENT - An indication of how closely a student's score compares with his "true" score. For example, if the standard error is 3.0, there are two chances in three that the score lies within 3 points either way of his true score.

THE NORMAL CURVE OF DISTRIBUTION
OF STANDARDIZED TEST SCORES



PART III.
NARRATIVE SUMMARIES OF EACH TEST ADMINISTERED IN THE 1971-72 STATEWIDE TESTING PROGRAM

On the following sixteen pages, information regarding the various tests in the Hawaii Statewide Testing Program is presented in summary form for ready reference and with a minimum of technical terminology.

The reader requiring more complete statistical data will find comprehensive tabulations in the appendix.

Summary of the Test Results for the
California Test of Mental Maturity (CTMM)
Primary Level I

Purpose of the test: To provide information about a student's capacities that are basic to learning. The Primary Level is specifically intended to provide evidence of a child's readiness to undertake various types of school tasks through the measurement of four types of mental functioning: logical reasoning, numerical reasoning, verbal concepts and memory. Thus, teachers and parents may be provided with one source of information leading to a better understanding of the individual needs of the child.

Who took the test? 14,448 second graders.

When was the test given? April 1972.

Summary of test results: In all seven Hawaii school districts the second grade students' scores on the CTMM match for all practical purposes the "national norms" provided by the publisher. The average I.Q. for the seven districts varies from 98 to 103, with an overall state average of 102. Thus, it is seen that a typical Hawaii second grader falls within the range of 90-109, usually regarded as average for large groups of students.

In comparing the district averages for 1972 with previous years, there has been no substantial change in the performance on the CTMM of the second graders since the adoption of the test into the statewide testing program in 1965. Hence, it would appear that Hawaii second graders represent a normal population in the traits measured by the test.

Summary of the Test Results for the
California Achievement Test - Reading (CAT-R)
Upper Primary Level, Form W

Purpose of the test: The CAT-R samples the student's reading skills in vocabulary development and comprehension. The vocabulary test consists of four parts -- Word Form, Word Recognition, Meaning of Opposites and Picture Association. The comprehension test covers two areas -- Following Directions and Interpretation. These two sub-tests estimate a student's ability to comprehend directly stated facts and to make deductions and inferences.

The CAT-R is used primarily for diagnostic analyses of a student's reading ability which will enable the teacher to determine problem areas requiring corrective action.

Who took the test: 14,306 second graders.

When was the test given? April 1972.

Summary of test results: While for the past six years, state and district averages indicate that the average Hawaii second grader is from two to four months above the national norms for the CAT-Reading, the averages for the 1971-72 academic year are one to two months higher than the averages for the previous year (1970-71). This may be explained by the fact that strict adherence to standard scoring procedures for the 1972 test administration resulted in the invalidation of approximately two thousand tests. These voided tests were very likely those of students with relatively low reading skill inasmuch as the invalidation reflected inability to understand and/or follow directions for taking the test.

Summary of the Test Results for the
School and College Ability Test (SCAT)

Purpose of the test: To provide estimates of the student's verbal and mathematical ability and thus give an indication of his capacity to meet the demands of academic work. The verbal score measures how well a student understands the meaning of words and comprehends written material. The quantitative score reveals how well a student can handle number computation and use reasoning in solving number problems.

Who took the test?

15,143	fourth graders
14,315	sixth graders
13,450	eighth graders
12,872	tenth graders
10,540	twelfth graders

When was the test given? October 1971.

Summary of test results: The state, district and school averages are reported by standard scores and "mid-percentile" scores. The use of mid-percentile averages has certain limitations in that it does not allow for the lack of precision that exists in any standardized test score. Reference is made here to the concept of "standard error of measurement" (see Glossary of Technical Terms). When this is considered, a difference of as much as five points, in some instances, above or below the national "mid-percentile" norm cannot be viewed as a substantial difference.

With this limitation in mind, it is observed that for the total SCAT state averages, the fourth and sixth grades scores are the same as the

publisher's average mid-point percentile; whereas, the eighth, tenth and twelfth grades are below the publisher's mid-point averages.

For the verbal SCAT scores, the eighth grade average is the same as the publisher's; while the fourth, sixth, tenth and twelfth grades are below the publisher's mid-point averages.

The quantitative SCAT scores for grades four, six and twelve are at or above the publisher's mid-point percentile averages; grades eight and ten are below. Thus, test data indicate that Hawaii students generally are more competent in the mathematical area than in the verbal.

Comparisons of state averages described above with those of the 1970-71 academic year reveal virtually no change in the pattern for state averages.

Summary of Test Results for the
Sequential Tests of Educational Progress (STEP)
Reading

Purpose of the test: STEP-Reading provides estimates of reading comprehension in five major skills: recall of material read; identifying main ideas in a written selection and drawing inferences from it; analyzing the author's purpose and his attitudes; analyzing various aspects of the style in which a selection is written; criticizing the ideas presented in a written passage.

Who took the test?

15,143	fourth graders
14,315	sixth graders
13,450	eighth graders
12,872	tenth graders
10,540	twelfth graders

When was the test given? October 1971.

Summary of results: The sixth grade state average for reading was the same as the publisher's: 51st mid-point percentile. Grades four, eight, ten and twelve are below the publisher's average with grades ten and twelve indicating a 10 and 8 point drop, respectively, below the publisher's average.

Summary of Test Results for the
Sequential Tests of Educational Progress (STEP)
Mathematics

Purpose of the test: The aim of STEP-Mathematics is to estimate the extent to which the important objectives of mathematics in general education have been achieved. Specifically the test deals with such areas as basic numeric concepts and operations (addition, subtraction, multiplication, division, fractions, decimals, per cent, etc.); the nature and use of symbols; function and relation such as graphs, ratio, proportion, algebraic processes; deductive and inferential problem solving; statistics, such as averages, median, sampling.

Emphasis and content on areas cited above vary according to the maturity of the student for whom each level of the test is designed.

Who took the test?

15,143	fourth graders
14,315	sixth graders
13,450	eighth graders
12,872	tenth graders
10,540	twelfth graders

When was the test given? October 1971.

Summary of test results: The state average for grade four matches the national norm as in the past (51st mid-point percentile); however, grades six, eight, ten and twelve are below the national average, with grade six substantially below.

In addition, it appears that in comparing mathematics achievement with the quantitative SCAT scores for the same groups, only the fourth grade was achieving according to expectations estimated by the SCAT.

Summary of Test Results for the
Sequential Tests of Educational Progress (STEP)
Writing

Purpose of the test: To estimate a student's full range of skills involved in the process of good writing. This involves proficiency in logical organization of ideas, facts, and events; correctness in sentence structure, punctuation, spelling, and word choice; critical thinking, effectiveness and appropriateness of writing style.

Who took the test?

15,143	fourth graders
14,315	sixth graders
13,450	eighth graders
12,872	tenth graders
10,540	twelfth graders

When was the test given? October 1971.

Summary of test results: Except for grade ten, whose state average for the writing test is identical to the publisher's average, grades four, six, eight and twelve are below the national norms, with grade six substantially below by eleven mid-percentile points. However, on the verbal section of the SCAT, grade six compared favorably with the national norm. The remaining grades indicate scores in STEP-Writing in keeping with their averages on the SCAT-Verbal. The average STEP-Writing scores for 1971-72 are essentially the same for the various grades as the averages for the previous year (1970-71).

Summary of the Test Results for the
Sequential Tests of Educational Progress (STEP)
Science

Purpose of the test: STEP-Science is designed to estimate a student's ability to use scientific knowledge to solve problems. Specifically the test covers such science reasoning abilities as identifying and defining scientific problems; suggesting and checking tentative solutions (hypotheses); selecting procedures for testing suggested solutions, interpreting scientific data and drawing conclusions from them; applying critical judgment to statements made by others; reasoning quantitatively and symbolically. Test items measuring these abilities are suitable for the various grade levels.

Who took the test?		
	14,711	fifth graders
	13,857	seventh graders
	13,146	ninth graders
	10,678	eleventh graders
	8,529	twelfth graders

When was the test given? February 1972.

Summary of results: The state average for fifth graders in science (43rd percentile) compares favorably with the publisher's average percentile (48th percentile); however, the remaining grades - seven, nine, eleven and twelve - are substantially below the publisher's averages. These below-average scores range from seven to thirteen points on the percentile scale.

The twelfth grade test averages must be considered in the light of the facts that there was a large increase in absenteeism for the 1972 test administration (approximately one thousand fewer seniors took the test than in previous years). Also, the examiners of twelfth grade groups report that "many" seniors indicated negative test-taking attitudes through such behaviors as marking answers at random and not following directions attentively. Thus, the test averages for the twelfth grade may not be an accurate reflection of the general level of achievement in science for these students.

Summary of Test Results for the
Sequential Tests of Educational Progress (STEP)
Social Studies

Purpose of the test: STEP-Social Studies test attempts to sample the understandings and abilities which effective citizens should possess. The designers of this test developed an extensive list of abilities involved in critical thinking and analysis of social concepts as well as a list of eight understandings in the geographic, political, social, and economic areas which a social studies test should strive to assess.

Who took the test?

14,711	fifth graders
13,857	seventh graders
13,146	ninth graders
10,678	eleventh graders
8,529	twelfth graders

When was the test given? February 1972.

Summary of results: While grades seven and eleven approximate the publisher's mid-point percentile norms (falling seven and six points below, respectively), the fifth, ninth and twelfth grade averages indicate a substantial below-average drop. Regarding the performance of the twelfth grade, the reader is referred to the comment concerning twelfth grade absenteeism and test attitude in the summary statement for STEP-Science, page 18.

With the exception of grades eleven and twelve, the averages for social studies indicate a decline from five to eight percentile points in comparison to the averages for the year 1970-71.

Summary of the Test Results for the
Sequential Tests of Educational Progress (STEP)
Listening

Purpose of the test: STEP-Listening was designed to estimate a student's skill in understanding, interpreting, applying, and evaluating what he listens to. The material read to the students by the examiner includes directions, simple explanatory information, exposition, narration, argument and persuasion, and aesthetic material -- both prose and poetry.

Who took the test?

14,711	fifth graders
13,857	seventh graders
13,146	ninth graders
10,678	eleventh graders
8,528	twelfth graders

When was the test given? February 1972.

Summary of test results: The consistently low performance of Hawaii students on STEP-Listening since the test was incorporated into the Statewide Testing Program in 1966 was again revealed in the 1972 administration by an increased decline in the state averages for the grades tested.

Research is required to determine the cause(s) of the consistently low performance of Hawaii students across all grade levels. Validation can then be made of the assertions expressed by personnel at school, district and state levels about the inappropriateness of the test, inconsistent procedures in the standardized administration of the test, and the negative attitudes of the students taking the test.

Briefly stated, the question of the usefulness of the test in providing accurate information about the listening skills of Hawaii students needs to be answered before meaningful conclusions about the test scores can be made.

Summary of Test Results for the
Differential Aptitude Test (DAT)

Purpose of the test: To sample seven different aptitudes in order to provide the student with reliable information for occupational and educational planning with the assistance of his parents, teachers, and counselors.

Specifically, the test provides estimates of the student's capacities in

1. Verbal Reasoning: thinking and reasoning with words.
2. Numerical Ability: thinking and reasoning with numbers.
3. Abstract Reasoning: thinking and reasoning with diagrams and symbols not expressed as words or numbers.
4. Clerical Speed and Accuracy: marking quickly and accurately comparisons of lists of words and numbers.
5. Mechanical Reasoning: understanding common concepts and laws related to machinery, appliances, and tools.
6. Space Relations: visualizing a completed object by looking at drawings of plans on flat paper.
7. Language usage: using English words correctly in both spelling and grammar.

The emphasis in the application of DAT scores is their use as an aid in realistic career and educational planning for the individual student. Separate norms are provided for boys and girls since research indicates

sex differences in various capacities such as mechanical reasoning and clerical speed and accuracy.

Who took the test? 6,792 ninth grade boys

6,658 ninth grade girls

When was the test given? November 1971.

Summary of results: Group averages for the DAT are not particularly meaningful or useful since the basic purpose of the test is to provide the individual student (and his parents, teachers and counselors) with one source of information for self-understanding. Counselors at the intermediate school level should be skilled in the proper use of DAT Individual Student Profiles.

Therefore, DAT trends reflected by state averages may be a matter of interest although of very limited value for the evaluation of academic outcomes.

State averages for both boys and girls indicate performances at or above the publisher's national norms in Abstract Reasoning, Space Relations and Clerical Speed and Accuracy. For Verbal Reasoning, Numerical Ability and Language Usage, state averages for both groups are below the publisher's norms.

CONCLUSION

The preceding narrative summaries provide a basis for certain generalizations. In the main, state averages for tests that estimate learning ability -- the CTMM and SCAT -- are the same as in the previous two years. They reflect a student population generally similar to that used for establishing the national norms. Thus, from these estimates of learning ability, the conclusion may be drawn that our Hawaii children are reasonably typical of their mainland counterparts insofar as academic aptitude is concerned.

Concerning the achievement tests, the STEP reading, mathematics and writing state averages for 1971-72 are, with very few exceptions, the same as the previous year. As in the past, the state averages are generally on the "low-average" side when compared to national norms. The situation is not so "comfortable" -- so to speak -- when taking an over-all look at the achievement levels for STEP science and social studies tests. The downward trend observed for the 1970-71 scores appears to have continued in science for grade 9 and in social studies for grades 5, 7 and 9. Grades 11 and 12 remained at their relatively low position in comparison to the national norms.

Several speculations may be ventured in explaining declines in test scores. Hawaii is not unique in showing a gradual decline in test averages since 1969. The situation appears to be nationwide. Some authorities in educational testing and measurements attribute the downward trends to curriculum changes, thereby implying that the content of the tests may not be as applicable as it once was. Changes in student characteristics are also cited as a possible

cause of dropping test scores. Attitudes toward school, societal unrest, changing value systems have all been considered in formulating hypotheses for explaining the gradual decline in school achievement as measured by standardized tests. As further research is focused on these developments, specific causes may emerge in due time. On the other hand, in these rapidly changing times a reversal of present trends may occur.

As mentioned in the introductory section of this report, new ways of assessing educational outcomes are being developed. Major test publishers as well as educational research centers are responding to the needs of all concerned with and interested in the evaluation of the quality of our schools throughout the nation. These new methods may be helpful in restoring standardized testing to its proper perspective in the total educational effort.

PART IV. APPENDIX

The statistical summaries presented in the following tables are intended for the use of professional educators, research specialists and others who may find them functional in evaluating general trends in educational outcomes related to the academic areas tested.

Two frames of reference are provided in which to view state and district averages:

1. Publisher's Norms. These are sometimes referred to as "national norms," and as such, purport to reflect a representative sampling of all students in the nation for a particular grade. Although publishers of reputable tests apply very high standards to their norming procedures, none will claim perfection in representing all cultural strata. Furthermore, "updating" norms to meet changing educational and social conditions presents a continual challenge to the test publisher.
2. Hawaii State Norms. These data indicate the distribution of test scores for all Hawaii students at the various grade levels. These norms may provide more meaningful bases for interpreting test results in that they reflect the performance of students who experience similar curricula, school organization, and geographical environment.

The reader is again cautioned about the casual interpretation and use of test averages out of the context of meaningful research. To use test averages without due consideration of the multiplicity of variables which are involved in measuring school outcomes may lead to erroneous conclusions which standardized tests were not designed to support.

Appendix A

Summary of California Short-Form Test of Mental Maturity (CTMM)
Level 1, 1963 Revision, 1964 Norms
Grade 2, Administered February 1972, Mean Scores by State and Districts

		Language Factors				Non-Language Factors				Total Mental Factors			
District	Cases	Raw Score	I.Q.	%ile	S.D. of I.Q.	Raw Score	I.Q.	%ile	S.D. of I.Q.	Raw Score	I.Q.	%ile	S.D. of I.Q.
State	14,448	34	99	50	13.3	37	104	69	13.3	71	102	58	13.5
Honolulu	3,888	34	100	50	14.2	38	105	73	13.8	72	103	58	14.3
Central	2,726	35	101	54	12.4	38	105	73	12.6	73	103	62	12.5
Leeward	2,966	33	98	46	13.0	36	103	62	12.8	70	100	54	12.9
Windward	2,137	35	101	54	13.1	37	104	69	13.0	73	103	62	13.2
Hawaii	1,190	34	98	50	13.0	36	103	62	13.5	70	101	54	13.4
Maui	887	32	96	42	13.1	35	100	58	13.8	68	98	50	13.4
Kauai	654	33	97	46	13.3	36	102	62	13.9	69	99	54	13.7
Publisher's Mean		34	100	50	16.0	33	100	50	16.0	68	100	50	16.0

Appendix B
State of Hawaii Norms by I.Q.

California Short-Form Test of Mental Maturity (CTMM)
Grade 2 - 14,448 Cases - February 1972 (1971-72)

%ile	Language Factors	Non-Language Factors	Total Mental Factors
99	129	133	131
98	126	129	128
97	124	127	126
96	122	126	125
95	121		124
94	120	124	122
93	119	123	121
92	118	122	
91			120
90	117	121	119
89	116		118
88	115	120	
87	114	119	117
86		118	116
85	113		
84			115
83	112	117	
82	111	116	114
81			
80		115	113
79	110		
78		114	112
77	109		
76		113	111
Q_3 75	108	112	110
74			
73	107	112	110
72			
71	106		109
70		111	
69			
68	105	110	108
67			
66			107
65	104	109	
64			
63			106
62	103	108	
61			
60		107	105
59	102		
58			
57			104
56		106	
55	101		
54		105	103
53			
52	100		
51			
Median 50	99	104	102

%ile	Language Factors	Non-Language Factors	Total Mental Factors
49		104	
48			
47			101
46	98		
45		103	
44			100
43		102	
42	97		
41			99
40			
39		101	
38	96		
37			98
36			
35		100	
34			97
33	95		
32		99	
31			
30	94		96
29		98	
28			
27			
26	93	97	95
Q_1 25	92	96	94
24			
23		96	
22	91		94
21			
20	90	95	
19			93
18	89		92
17	88		
16	87	94	91
15			90
14	86	93	89
13	85	92	88
12	84	91	87
11	83	90	86
10	82	89	85
9	81	88	84
8	80	87	83
7	79	85	82
6	77	83	81
5	76	82	79
4	74	79	76
3	72	75	74
2	69	71	70
1	64	64	64
Hawaii Mean	99	104	102
Publ.'s Mean	100	100	100

Appendix C

Summary of California Achievement Test-Reading (CAT-R)
Upper Primary, Form W, 1957 Edition, 1963 Norms
Grade 2, Administered April 1972, Mean Scores by State and Districts

		Vocabulary				Comprehension				Total			
District	Cases	Raw	G.P.	%ile	S.D. of G.P.	Raw	G.P.	%ile	S.D. of G.P.	Raw	G.P.	%ile	S.D. of G.P.
State	14,306	29	3.2	69	.92	24	3.0	62	.83	53	3.1	66	.85
Honolulu	3,780	30	3.2	73	.90	27	3.2	73	.81	57	3.2	73	.83
Central	2,744	29	3.2	69	.92	24	3.0	62	.82	53	3.1	66	.84
Leeward	2,922	27	3.0	62	.90	23	2.9	62	.80	50	2.9	62	.82
Windward	2,124	30	3.2	73	.94	25	3.1	66	.86	55	3.1	69	.87
Hawaii	1,245	27	3.0	62	.93	22	2.9	58	.82	49	2.9	62	.85
Maui	883	27	3.0	62	.92	22	2.9	58	.82	49	2.9	62	.84
Kauai	608	27	3.0	62	.95	23	2.9	62	.84	50	2.9	62	.85
Publisher's Mean	1,216	24	2.7	50	.7	20	2.7	50	.7	44	2.7	50	.7

Appendix D

State of Hawaii Norms

California Achievement Test-Reading (CAT-R), UP, Form W

Grade 2 - 14,306 Cases - Spring 1972 (71-72)

By Grade Placement

%ile	Vocab-ulary	Compre-hension	Total	%ile	Vocab-ulary	Compre-hension	Total
99	4.7	4.5	4.6	49	3.2	2.9	3.0
98		4.4	4.4	48			
97	4.6	4.2		47			
96		4.1	4.3	46	3.1		2.9
95			4.2	45			
94	4.4			44		2.8	
93		4.0	4.1	43			
92				42	3.0	2.7	
91	4.2		4.0	41			2.8
90		3.9		40			
89				39	2.9		
88	4.0			38			
87		3.8	3.9	37		2.6	2.7
86				36	2.8		
85				35			
84	3.9		3.8	34		2.5	2.6
83				33	2.7		
82		3.7		32			
81	3.8			31		2.4	2.5
80				30	2.6		
79			3.7	29			
78		3.6		28	2.5		2.4
77	3.7			27			
76				26		2.3	
Q_3 75	3.7	3.6	3.6	Q_1 25	2.5	2.3	2.4
74	3.7	3.6	3.6	24	2.4		2.3
73		3.5		23		2.2	
72				22			
71	3.6		3.5	21	2.3		2.2
70				20			
69				19	2.2		
68		3.4		18		2.1	2.1
67				17			
66			3.4	16	2.1		
65				15		2.0	
64	3.5	3.3		14	2.0		2.0
63				13			
62			3.3	12		1.9	
61				11	1.9		1.9
60	3.4			10			
59		3.2		9	1.8		1.8
58				8		1.8	
57	3.3		3.2	7	1.7		
56				6	1.6	1.7	1.7
55				5			
54		3.1		4	1.5	1.6	
53	3.2		3.1	3	1.4		1.6
52				2	1.3		1.5
51		3.0		1	1.2	1.5	1.4
Median 50	3.2	3.0	3.1				
				Hawaii Mean	3.1	2.9	3.0
				Publ.'s Mean	2.7	2.7	2.7

Appendix E

Summary of School and College Ability Test (SCAT)

For Grades 4, 6, 8, 10 & 12, Administered October 1971, Mean Scores by State and District

			Verbal			Quantitative			Total		
District	Grade	Cases	Conv.S.	Mid-%ile	S.D.	Conv.S.	Mid-%ile	S.D.	Conv.S.	Mid-%ile	S.D.
State	4	15,143	237	46	8	246	62	6	247	46	5
	6	14,315	251	51	12	260	47	10	259	51	9
	8	13,450	263	50	13	277	41	15	271	45	12
	10	12,872	270	42	15	287	44	18	278	42	14
	12	10,540	279	42	16	292	51	21	285	44	16
Honolulu	4	4,075	238	55	9	246	62	6	248	64	5
	6	3,874	252	56	13	262	55	10	260	59	9
	8	3,717	264	56	14	279	46	16	273	52	13
	10	4,014	272	46	16	291	54	18	281	48	14
	12	3,555	281	47	16	298	63	21	289	54	16
Central Oahu	4	2,907	238	55	8	246	62	6	248	64	5
	6	2,730	253	56	12	260	47	9	260	59	8
	8	2,526	266	61	13	278	46	14	273	52	11
	10	2,202	273	46	15	288	49	18	280	48	14
	12	1,338	282	51	16	293	51	20	287	49	16
Leeward Oahu	4	2,847	236	46	8	245	51	6	246	46	4
	6	2,559	249	45	12	259	39	9	257	42	8
	8	2,393	260	45	13	274	36	15	268	38	11
	10	1,851	265	29	14	281	32	17	273	26	13
	12	1,358	274	33	16	285	34	21	280	32	16
Windward Oahu	4	2,282	238	55	9	246	62	6	248	64	5
	6	2,290	252	56	12	260	47	10	259	51	9
	8	1,984	263	50	14	277	41	15	271	45	12
	10	1,933	272	46	16	288	49	18	280	48	15
	12	1,622	279	42	17	291	47	20	285	44	16

Appendix E - SCAT Summary, October 1972 (cont'd)

District	Grade	Cases	Verbal			Quantitative			Total		
			Conv.S.	Mid-%ile	S.D.	Conv.S.	Mid-%ile	S.D.	Conv.S.	Mid-%ile	S.D.
Hawaii	4	1,385	237	46	9	245	51	6	247	46	5
	6	1,306	250	51	12	258	39	9	257	42	9
	8	1,358	261	45	13	275	36	14	269	38	11
	10	1,340	268	38	15	284	40	18	276	37	14
	12	1,267	277	38	16	291	47	22	283	38	17
Maui	4	1,027	236	46	8	245	51	6	246	46	4
	6	963	249	45	12	258	39	9	257	42	8
	8	886	261	45	13	274	36	14	269	38	11
	10	912	266	34	14	283	36	16	275	31	13
	12	833	276	38	15	287	38	21	281	32	17
Kauai	4	570	236	46	8	245	51	6	247	46	4
	6	593	247	39	11	258	39	9	256	42	8
	8	586	259	39	12	274	36	13	268	38	10
	10	620	266	34	14	282	36	18	274	31	14
	12	567	274	33	15	287	38	20	281	32	15
Publisher's	4	3,065	238	55	9	244	51	6	247	46	5
	6	2,211	252	56	13	261	47	10	259	51	9
	8	4,494	263	50	14	280	52	14	272	52	11
	10	6,471	273	46	15	288	49	17	281	48	13
	12	3,838	282	51	15	292	51	18	287	49	14

Appendix F

Summary of Sequential Tests of Educational Progress (STEP)

For Grades 4, 6, 8, 10 & 12, Administered October 1971, Mean Scores by State and Districts

			Reading			Mathematics			Writing		
Districts	Grade	Cases	Conv.S.	Mid-%ile	S.D.	Conv.S.	Mid-%ile	S.D.	Conv.S.	Mid-%ile	S.D.
State	4	15,143	241	46	13	237	51	8	240	45	12
	6	14,315	256	51	18	247	36	12	253	36	15
	8	13,450	269	45	19	259	43	14	264	47	18
	10	12,872	281	39	19	267	39	17	276	49	18
	12	10,540	290	40	20	275	42	18	285	42	19
Honolulu	4	4,075	242	50	13	238	62	8	241	45	13
	6	3,874	258	54	18	249	42	12	254	40	15
	8	3,717	272	54	19	262	56	15	267	51	19
	10	4,014	284	49	19	270	49	17	280	58	18
	12	3,555	294	48	19	279	51	17	289	53	19
Central Oahu	4	2,907	242	50	13	238	62	8	241	45	13
	6	2,730	259	54	17	249	42	11	255	40	15
	8	2,526	272	54	18	261	50	13	267	51	18
	10	2,202	284	49	18	269	43	16	279	53	17
	12	1,338	294	48	19	276	47	17	289	53	18
Leeward Oahu	4	2,897	238	43	12	236	51	7	238	39	12
	6	2,559	254	46	16	245	31	11	251	33	15
	8	2,393	265	39	18	257	38	14	261	40	17
	10	1,851	275	30	19	263	28	16	272	39	17
	12	1,358	284	26	20	270	33	19	279	27	19
Windward Oahu	4	2,282	242	50	14	237	51	8	240	45	13
	6	2,290	257	51	18	248	42	12	253	36	16
	8	1,984	268	45	19	259	43	14	262	44	18
	10	1,933	280	39	20	265	35	17	270	37	18
	12	1,522	290	40	21	273	37	19	283	39	19

Appendix F - STEP Summary, October 1971 (cont'd)

District	Grade	Cases	Reading			Mathematics			Writing		
			Conv.S.	Mid-%ile	S.D.	Conv.S.	Mid-%ile	S.D.	Conv.S.	Mid-%ile	S.D.
Hawaii	4	1,385	240	46	13	237	51	8	239	39	13
	6	1,306	255	46	17	245	31	12	252	36	15
	8	1,358	267	42	19	258	43	14	263	44	17
	10	1,340	278	35	19	265	35	17	275	43	18
	12	1,267	288	35	20	274	42	18	283	39	19
Maui	4	1,027	239	43	12	236	51	7	238	39	11
	6	963	254	46	17	245	31	11	250	33	15
	8	886	267	42	19	257	38	14	262	44	17
	10	912	276	32	18	264	35	16	273	39	17
	12	833	285	26	20	272	37	18	280	33	18
Kauai	4	570	239	43	12	236	51	7	238	39	11
	6	593	252	42	16	244	31	11	249	28	14
	8	586	266	42	17	256	38	13	261	40	17
	10	620	277	32	17	264	35	16	274	43	17
	12	567	286	30	19	272	37	17	281	33	16
Publisher's	4	638	243	50	14	237	51	8	242	52	13
	6	464	257	51	18	250	48	12	259	48	16
	8	925	270	50	17	260	50	14	266	51	17
	10	1,312	284	49	18	269	43	17	276	49	16
	12	790	294	48	17	276	47	16	287	48	17

Appendix F - STEP Summary, February 1972 (cont'd)

District	Grade	Cases	Science			Social Studies			Listening		
			Conv. S.	Mid-%ile	S. D.*	Conv. S.	Mid-%ile	S. D.	Conv. S.	Mid-%ile	S. D.
State	5	14,711	252	43	13.2	245	34	10.2	261	29	14.5
	7	13,857	262	42	13.0	257	43	12.7	268	33	14.3
	9	13,146	271	43	14.1	265	37	16.1	277	34	17.0
	11	10,678	276	33	13.3	274	43	14.2	284	35	17.0
	12	8,529	280	48	13.7	276	41	15.9	287	31	17.4
Honolulu	5	3,926	253	43	13.4	246	39	10.5	262	35	14.6
	7	3,679	264	50	13.5	259	50	13.4	269	33	15.0
	9	3,719	273	52	14.8	267	45	16.8	280	44	17.7
	11	3,366	277	33	13.5	277	49	14.6	286	40	17.8
	12	2,564	282	55	13.4	279	47	15.9	290	46	17.6
Central Oahu	5	2,761	254	48	12.3	247	39	9.9	263	35	13.3
	7	2,697	264	50	12.2	260	56	12.2	270	39	13.2
	9	2,516	273	52	13.7	268	52	15.8	280	44	15.9
	11	1,757	277	33	12.7	277	49	14.0	285	35	16.3
	12	1,334	281	48	13.3	279	47	16.0	290	46	16.6
Leeward Oahu	5	2,827	249	32	13.0	243	28	9.9	256	24	14.7
	7	2,495	259	31	12.2	255	38	12.1	266	29	14.3
	9	2,123	269	36	13.0	262	31	14.6	274	29	16.9
	11	1,319	273	23	12.8	271	33	13.5	280	22	16.1
	12	872	276	32	12.8	270	25	14.4	281	19	17.1
Windward Oahu	5	2,359	253	43	13.8	246	39	10.7	263	35	14.4
	7	2,148	261	36	13.2	257	43	13.0	269	33	14.2
	9	1,838	270	43	14.6	265	37	16.1	277	34	16.4
	11	1,532	275	28	13.6	274	43	13.7	284	35	16.8
	12	1,252	279	39	14.9	277	41	16.7	289	40	17.7

*Based on converted scores.

Appendix F - STEP Summary, February 1972 (cont'd)

District	Grade	Cases	Science			Social Studies			Listening		
			Conv. S.	Mid-%ile	S. D. *	Conv. S.	Mid-%ile	S. D.	Conv. S.	Mid-%ile	S. D.
Hawaii	5	1,289	251	38	13.3	244	34	10.2	259	26	14.2
	7	1,317	260	36	12.9	255	38	12.5	266	29	14.1
	9	1,436	271	43	14.1	263	31	15.8	276	34	17.1
	11	1,299	276	33	13.2	273	39	13.8	283	27	16.8
	12	1,167	281	48	13.5	275	35	15.2	287	31	16.6
Maui	5	976	250	38	13.6	244	34	10.6	259	26	14.0
	7	929	261	36	12.9	256	43	12.3	268	33	14.8
	9	850	269	36	14.3	261	26	14.9	272	24	16.1
	11	810	275	28	13.3	272	39	13.6	280	22	17.3
	12	772	278	39	13.1	272	30	14.0	283	21	16.9
Kauai	5	573	250	38	13.1	244	34	9.9	257	24	14.8
	7	592	260	36	11.5	255	38	11.3	266	29	14.2
	9	664	269	36	12.6	261	26	14.3	273	24	15.4
	11	595	276	33	12.2	272	39	12.9	284	35	15.9
	12	568	279	39	12.9	274	35	14.5	284	27	15.7
Publisher's	5	1,520	254	48	13	251	53	11	266	48	15
Mean	7	1,643	264	50	12	259	50	13	275	50	15
	9	2,866	273	52	12	268	52	13	282	50	15
	11	1,736	280	46	13	277	49	13	290	54	15
	12	1,700	283	55	12	280	52	15	293	52	15

*Based on converted scores.

Appendix G

State of Hawaii Norms - Grade Four - 15,143 Cases
School and College Ability Test (SCAT) 5A and
Sequential Tests of Educational Progress (STEP) 4A for September 1971

	SCAT			STEP		
Percentile	Verbal	Quantitative	Total	Reading	Mathematics	Writing
99	262	263	262	279	260	274
98	258	261	259	275	257	269
97	256	258	258	270	256	266
96	254	257	257	268	253	264
95	252		256	266	252	262
94	251			265	251	261
93		256	255	263		260
92	250	255		261	250	259
91	249		254			258
90		254		259	249	
89	248			257		257
88	247	253	253	256	247	255
87				255		
86	246	252			246	254
85						
84	245		252	254		253
83				253	245	
82	244					251
81				252		
80		251	251	251	244	250
79						
78				250		
77	243	250				249
76				249	242	
Q3 75	242	249	250	248	241	248
74		249	250	248		
73						
72				247	241	247
71						
70						
69	241			246		
68					240	246
67			249	245		
66	240					
65		248		244		
64						244
63				243		
62					238	
61						
60	239	247				
59			248	242		243
58						
57	238			241		
56					237	
55				240		
54		246				241
53						
52				239		
51						
Median 50	237	245	247	238	236	239

Appendix G - SCAT-STEP State Norms (cont'd)
Grade 4, September 1971

	SCAT			STEP		
Percentile	Verbal	Quantitative	Total	Reading	Mathematics	Writing
49	237					239
48						
47		245		237		
46						
45	236					
44				236		
43						237
42					234	
41	235	244		235		
40						
39			246			
38				234		
37	234					
36						235
35					232	
34				233		
33		243				
32						
31						
30			245	232		233
29	233					
28					231	
27		242		231		
26						
Q1 25	232	241	244	230	230	230
24	232					
23				230		230
22						
21			244			
20	231	241				
19				229		
18						228
17						
16	230		243	228		
15		240				
14						
13				227		225
12	228					
11						
10		238	242			
9	227					
8						
7			241			
6	225					
5						
4						
3						
2						
1	224	237	240	226	230	223
Hawaii Mean	237	246	247	241	237	240
Publisher's Mean	238	244	247	243	237	242
Publisher's Median	238	245	247	243	237	242

Appendix H

State of Hawaii Norms by Converted Scores

Sequential Tests of Educational Progress (STEP) 4A

Grade 5 - Administered February 1972 - 14,711 Cases

%ile	Sci.	Soc. St.	List.	%ile	Sci.	Soc. St.	List.
99	280	271	294	49		245	
98	277	268	288	48			261
97	275	266	286	47	252	244	
96		265		46			260
95	273	263	284	45	251		
94		262		44			259
93	271		282	43			
92		261	280	42	250	243	
91		260		41			
90	269		279	40	249		258
89		259		39		242	
88			278	38			257
87	267	258		37	248		
86		257		36			256
85	266		276	35			
84		256		34		241	255
83			275	33	247		254
82	264	255		32			
81				31	246	240	253
80		254	274	30			
79				29	245	239	
78	263		273	28			
77		253		27	244		252
76				26			
Q_3 75	262	252	271	Q_1 25	243	238	251
74				24			
73				23	242	238	250
72	261		270	22			249
71				21		237	
70		251	269	20	240		248
69	260			19			
68			268	18	239	236	247
67		250		17			
66	259			16	238	235	246
65		249	267	15			245
64				14	237	234	
63	258		266	13			244
62				12	235		243
61				11		233	242
60	257	248	265	10	234		
59				9		232	240
58			264	8	232		239
57	256	247		7		231	238
56				6	230	230	237
55	255			5			235
54				4	228	229	234
53			263	3	226	228	233
52	254	246		2		227	231
51	253		262	1	223	226	228
Median 50	253	245	261				

Hawaii Mean	252	245	261
Publ.'s Mean	254	251	266
Publ.'s Median	256	251	267

Appendix I

State of Hawaii Norms - Grade Six - 14,315 Cases
School and College Ability Test (SCAT) 4A and
Sequential Tests of Educational Progress (STEP) 4B for September 1971

	SCAT			STEP		
Percentile	Verbal	Quantitative	Total	Reading	Mathematics	Writing
99	282	285	281	298	274	284
98	279	282	278	295	270	280
97	277	280	276	292	269	279
96	276	279	275			
95	273	277	274	289	267	278
94		276	273		266	276
93	272	275		286		
92	270		272		265	275
91	269	274		283		
90	268	273	271		264	274
89				280		
88	266	272	270		263	272
87						
86	265	270	269	278	261	270
85	264					
84					260	
83	263	269	268	276		269
82						
81	262		267	274	259	267
80		268				
79			266		258	
78	261			271		266
77		267				
76	260		265		257	265
Q_3 75	259	266	264	269	256	264
74	259	266				
73			264		256	264
72				267		
71						262
70	258	265	263			
69				265	254	
68	257					261
67			262	263		
66	256				253	260
65		264				
64				261		
63	255				252	259
62			261	260		
61	254	262				258
60					251	
59	253		260	259		
58						257
57				257		
56	252	261			250	256
55			259	256		
54	251					
53					249	254
52			258	255		
51						253
an 50	250	260	257	254	247	252

Appendix I - SCAT-STEP State Norms (cont'd)
Grade 6, September 1971

	S C A T			S T E P		
Percentile	Verbal	Quantitative	Total	Reading	Mathematics	Writing
49	250				247	
48				253		252
47						
46	249		257		245	251
45						
44	248	259		252		
43						250
42			256		244	
41	247			251		249
40						
39				250		248
38	246	257	255		243	
37				249		
36						247
35	245			248	241	
34			254			
33						246
32	244	256		247		
31					240	
30			253	246		244
29	243					
28				245	239	
27						243
26	242	254		244		
Q_1 25	241	253	252	243	238	241
24					238	241
23						
22	241			242		
21					236	240
20		253	251	241		
19	240					
18				240		238
17					235	
16				239		
15	239		250	238		236
14		251			233	
13				237		
12				236		
11	237		249		231	234
10		248		235		
9			248			232
8	236			234		
7			247	233		
6	234	246		232		229
5				231		
4		244	246	230		227
3				229		
2				227		
1	232	242	245	226	230	225
Hawaii Mean	251	260	259	256	247	253
Fisher's Mean	252	261	259	257	250	259
Fisher's Median	250	262	259	257	251	259

Appendix J

State of Hawaii Norms by Converted Scores
Sequential Tests of Educational Progress (STEP) 3A
Grade 7 - Administered February 1972 - 13,857 Cases

	%ile	Sci.	Soc. St.	List.		%ile	Sci.	Soc. St.	List.
	99	292	289	303		49		257	268
	98	290	287	299		48			
	97	286	283	297		47	261		
	96	285	281	294		46		256	267
	95			292		45			
	94	283	279			44	260	255	266
	93	281	277	290		43			
	92			289		42			
	91	280	276	288		41	259	254	265
	90			286		40			
	89	278	274	286		39		253	
	88	277		285		38			264
	87		272			37	258	252	
	86	275		284		36			
	85		271			35			263
	84			282		34	256		
	83	274				33			
	82		270	281		32		251	262
	81	273				31			
	80		268	280		30	255		261
	79	272				29		250	
	78			279		28			
	77		267			27		249	260
	76	271		278		26	253		
Q3	75	270	266	277	Q1	25	252	248	258
	74					24		248	
	73	270		277		23			
	72		265			22	252	247	257
	71	269		276		21			
	70		264			20			256
	69					19		246	
	68	268		275		18	250		
	67		263			17		245	255
	66			274		16			
	65	267				15	248		253
	64		262			14		243	
	63			273		13			252
	62	266	261			12	246	242	
	61					11			251
	60			272		10		241	
	59	265	260			9	244		249
	58					8		240	
	57		259	271		7			248
	56	264				6	242	239	246
	55			270		5			245
	54		258			4	240	238	243
	53	263				3		236	242
	52			269		2		235	240
	51					1	237	234	236
Median	50	262	257	268					

Hawaii Mean	262	257	268
Publ.'s Mean	264	259	275
Publ.'s Median	265	260	276

Appendix K

State of Hawaii Norms - Grade Eight - 13,450 Cases
School and College Ability Test (SCAT) 3A and
Sequential Tests of Educational Progress (STEP) 3A for September 1971
Converted Scores

		SCAT			STEP		
	Percentile	Verbal	Quantitative	Total	Reading	Mathematics	Writing
	99	295	316	299	306	293	307
	98	290	311	297	303	289	304
	97	289	308	295	302	285	297
	96	287	306	293	300	283	
	95	286	305		299	282	295
	94	285	303	291	298		293
	93	284	302	290		281	291
	92	283	300	289	296	279	
	91	282		288			289
	90	281	299	287	295	277	
	89		297				287
	88	280		286	293	276	
	87	279	296	285	292	275	285
	86						
	85	278	294	284	290	274	284
	84						
	83	277	292	283	289		282
	82			282		273	
	81	276	291		288		
	80					272	281
	79	275		281	287		
	78		289				280
	77	274				270	
	76		288	280	285		
Q_3	75	273	286	279	284	269	278
	74			279	284		
	73	272	286	278			277
	72				283	268	
	71						
	70	270	284	277			276
	69				281	266	
	68	269					
	67		282	276	280		275
	66						
	65	268		275		265	
	64				279		273
	63	267	281				
	62			274	277	264	
	61						271
	60	266			276		
	59		279				
	58			273		263	268
	57				274		
	56	265		272			
	55		277		273		266
	54	263					
	53			271	271	261	
	52						265
	51	262	275	270	270		
Median	50	261	273	269	268	260	263

Appendix K - SCAT-STEP State Norms (cont'd)
Grade 8, September 1971

	SCAT			STEP		
Percentile	Verbal	Quantitative	Total	Reading	Mathematics	Writing
49					260	263
48				268		
47	261		269			
46		273		267		261
45			268			
44	260				259	
43			267	265		259
42						
41				263		
40	259	272				
39						257
38			266	262	257	
37						
36	257		265	260		
35						255
34		270				
33	256			259		
32					254	253
31						
30			264	257		
29	255					
28		268	263	255		
27						251
26					252	
Q_1 25	253	266	262	254	250	250
24						250
23			261			
22		266		252		
21	252				250	
20			260			
19				250		248
18						
17						
16	250	264		249	247	246
15			259			
14				247		
13	248					
12			258			244
11		261		245	244	
10			257			
9	246			244		242
8			256		238	
7	244	258		242		
6			255			240
5	242		254	240	233	
4		255	253	238		237
3				236		
2						
1	239	252	252	234	230	234
Hawaii Mean	263	277	271	269	259	264
Publisher's Mean	263	280	272	270	260	266
Publisher's Median	263	281	272	271	261	266

Appendix L

State of Hawaii Norms by Converted Scores
Sequential Tests of Educational Progress (STEP) 3B
Grade 9 - Administered February 1972 - 13,146 Cases

	%ile	Sci.	Soc. St.	List.
	99	310	307	317
	98	306	304	315
	97	302		312
	96	299	298	
	95	296	295	308
	94			306
	93	294	292	304
	92		290	
	91	291		302
	90		288	
	89	289		300
	88		286	298
	87			
	86	287	284	296
	85			
	84	285		295
	83		282	
	82			
	81	284	280	293
	80			
	79			292
	78	282	278	
	77			290
	76		276	
Q_3	75	280	274	289
	74	280		
	73		274	
	72			288
	71	278	273	
	70			286
	69			
	68		271	285
	67	277		
	66			
	65		270	284
	64			
	63	275	268	283
	62			
	61			282
	60	274	267	
	59			
	58			281
	57		266	
	56	272		280
	55		265	
	54			279
	53			
	52	271	264	278
	51			
Median	50	270	263	277

	%ile	Sci.	Soc. St.	List.
	49	270	263	
	48			276
	47		262	
	46			275
	45	269		
	44		261	274
	43			
	42	268	260	273
	41			
	40			272
	39	267	259	
	38			271
	37		258	
	36			
	35	266		
	34		257	270
	33			
	32	265	256	269
	31			
	30		255	268
	29	264		
	28			267
	27		254	266
	26	263		
Q_1	25	262	253	265
	24			
	23	262	253	264
	22			
	21	261	252	263
	20			262
	19		251	
	18	260		261
	17		250	
	16			260
	15	258	249	259
	14			
	13	257	248	258
	12			257
	11	256	247	
	10		246	255
	9	254		254
	8		245	
	7	252	244	253
	6			252
	5	250	242	251
	4	248	241	249
	3	246	240	248
	2	244	239	247
	1	242	236	244

	Sci.	Soc. St.	List.
Hawaii Mean	271	265	277
Publ.'s Mean	273	268	282
Publ.'s Median	273	268	283

Appendix M

State of Hawaii Norms - Grade Ten - 12,872 Cases
School and College Ability Test (SCAT) 2A and
Sequential Tests of Educational Progress (STEP) 2A for September 1971
Converted Scores

	SCAT			STEP		
Percentile	Verbal	Quantitative	Total	Reading	Mathematics	Writing
99	307	328	311	322	300	317
98	303	323	308	318	297	313
97	300	321	306	316	295	311
96	298	319	304	314	294	309
95	296			312		306
94	295	317	302	311	291	
93	293	315		309	290	304
92	292		300		289	
91		313	298	307		300
90	291				287	
89	290	311	297	305	286	299
88	289		296			
87				304	285	297
86	288	309	295	302		
85	287		294		284	
84		308		301		295
83	286				283	
82			293			293
81	285	306	292	299		
80					282	
79	283	304	291	298		292
78	282					
77			290	296	280	290
76		302				
Q_3 75	281	300	289	295	278	289
74					278	289
73	280	300	288			
72			287	294		
71	279				277	287
70		298		292		
69			286			
68	277		285	291		286
67		297			275	
66	276					
65				290		284
64		295	284			
63	275		283	289		
62					274	283
61		293		287		
60	274		282			
59						281
58		291	281	286		
57	272				272	
56				285		280
55		289	280			
54	271			284		
53			279			
52		288				278
51	270			283	270	
Median 50	268	286	278	282	268	277

Appendix M - SCAT-STEP State Norms (cont'd)
Grade 10, September 1971

	SCAT			STEP		
Percentile	Verbal	Quantitative	Total	Reading	Mathematics	Writing
49		286		282		277
48			277			
47	268					
46		284		280		275
45					268	
44		283	276	279		
43	267		275			274
42				278		
41		281				
40	265		274			271
39				276		
38		279	273		265	
37				275		
36	264		272			268
35		277		273		
34						
33			271	272		266
32		276				
31	262		270	270	263	
30						
29		274	269			264
28				269		
27	260		268			
26		272		267		262
Q_1 25	258	271	267	265	260	260
24				265	260	
23	258	271	267			
22			266	263		260
21						
20		269	265	262		
19	256					258
18			264		256	
17				260		
16		267	263			
15	254			259		256
14			262			
13		266		257	251	
12			261			254
11	252		260	255		
10		264				
9	250		259	254		251
8					242	
7		262	258	252		250
6	248		257			
5			256	250		248
4	246	260	255	248		
3	243	258	254	247		
2			253			
1	241	255	252	245	230	247
Hawaii Mean	270	287	278	281	267	276
Publisher's Mean	273	288	281	284	269	276
Publisher's Median	275	289	281	285	271	277

Appendix N

State of Hawaii Norms by Converted Scores
Sequential Tests of Educational Progress (STEP) 2A
Grade 11 - Administered February 1972 - 10,678 Cases

%ile	Sci.	Soc. St.	List.
99	308	309	321
98	305	305	318
97	302	303	316
96	300	301	314
95	298	299	312
94		298	
93	297	297	310
92	295	295	
91			308
90	294	294	
89			306
88		292	
87	292		304
86		291	
85	290		303
84		290	
83			301
82	289	288	
81			300
80		287	
79	287		298
78		286	
77			297
76	286		
Q_3 75	284	285	295
74			
73			
72	284	283	294
71			
70			
69		282	293
68	282		
67			
66		280	292
65			
64	281		290
63			
62		279	
61			289
60			
59	279	278	288
58			
57			
56			287
55		277	
54	277		
53			286
52		275	
51			284
Median 50	276	274	283

%ile	Sci.	Soc. St.	List.
49	276		
48		274	283
47			
46			
45	274	272	282
44			
43			281
42		271	
41			
40	273		280
39			
38		270	278
37			
36			
35		268	277
34	271		
33			
32			276
31		267	
30			
29	269		274
28			
27		265	273
26			
Q_1 25	267	264	272
24	267	264	272
23			
22			270
21		262	
20	265		
19			269
18			
17		261	267
16	263		
15		259	
14			266
13			
12		258	264
11			262
10			
9	259	256	261
8			
7			259
6	257		257
5		253	
4	255	252	255
3	252	250	253
2		248	251
1	249	247	243

Hawaii Mean	276	274	284
Publ.'s Mean	280	277	290
Publ.'s Median	281	277	289

Appendix C

State of Hawaii Norms - Grade Twelve - 10,540 Cases
School and College Ability Test (SCAT) 2B and
Sequential Tests of Educational Progress (STEP) 2B for September 1971
Converted Scores

	SCAT			STEP		
Percentile	Verbal	Quantitative	Total	Reading	Mathematics	Writing
99	316	335	319	326	308	326
98	311	331	316		305	321
97	308		315	323	303	
96		328	313	321	302	318
95	306	325	312		300	316
94	304		311	319		
93		323	309		299	314
92	302			317	297	
91	301	321	308			312
90			306		296	
89	300			315		
88		319			295	310
87	298		305			
86			304	313	294	307
85	297	317	303			
84	296				292	
83			302	311		305
82	295	315			291	
81			301			
80	294			309		302
79		313	300		290	
78	293		299			300
77				307	288	
76	292	311				
Q_3 75	291	309	298	305	287	298
74	291		297	305		298
73		309				
72	290				286	
71			296	304		296
70	289	307	295			
69						
68	288				285	294
67		305	294	302		
66	287		293			
65					284	293
64	286	303		301		
63			292			
62	285		291		283	
61		301		299		291
60	284					
59			290		282	
58	283	299	289	297		290
57						
56	282					
55		297	288	296	280	289
54						
53	280		287	295		
52		295			278	
51	279					287
Median 50	278	293	286	293	277	286

Appendix O - SCAT-STEP State Norms (cont'd)
Grade 12, September 1971

Percentile	SCAT Verbal	SCAT Quantitative	SCAT Total	STEP Reading	STEP Mathematics	STEP Writing
49	278	293	285			
48					277	286
47				292		
46	277	291	284			
45			283	290		284
44	276	290			275	
43				289		283
42	275		282			
41		288	281	288		
40					273	281
39	274	286		286		
38			280			
37	273		279	285		280
36		284			271	
35	271			284		
34		282	278			278
33				283		
32	270		277			
31		280	276	282	269	277
30	269					
29		279	275	280		275
28						
27	267	277	274	279	267	
26						274
Q_1 25	266	275	273	278	264	271
24	266	275				271
23			272	276		
22		273	271	275	264	
21	265					268
20		272		273		
19	263		270			
18		270	269	271	262	
17			268	269		
16	262	268	267			264
15				268		
14		266	266	266	258	262
13	260		265			
12		264		264		260
11			264	263		
10	258	262	263	261	254	
9			262			258
8	256	260	261	259		
7			260	257	247	257
6	255	258	259	255		255
5			258	254	237	
4	253		257	252		252
3	251		256	250		250
2	249		254	248		249
1	247	255	253	245	230	247
Hawaii Mean	279	292	285	290	275	285
Publisher's Mean	282	292	287	294	276	287
Publisher's Median	283	293	287	296	278	287

Appendix O - STEP 2B State Norms (cont'd)
Grade 12, February 1972, 9,529 Cases

	%ile	Sci.	Soc. St.	List.
	99	313	312	327
	98	310	309	322
	97	307	306	319
	96	305	305	317
	95	303	303	
	94		302	315
	93	302		
	92	300	300	313
	91		299	
	90	298		311
	89		298	
	88	297		309
	87		296	
	86		295	307
	85	295		
	84		294	305
	83	294		
	82		293	303
	81			
	80	292	291	
	79			302
	78		290	
	77			300
	76	291		
Q_3	75	289	289	299
	74			299
	73		288	
	72	289		
	71		286	297
	70			
	69		285	
	68	287		296
	67		284	
	66			
	65	286		295
	64		283	
	63			
	62		282	293
	61	284		
	60		280	292
	59			
	58			
	57	283	279	291
	56			
	55		278	290
	54			
	53	281	277	
	52			289
	51			
Median	50	279	275	287

	%ile	Sci.	Soc. St.	List.
	49			287
	48	279		
	47		274	
	46			286
	45			
	44		273	285
	43	278		
	42		272	
	41			284
	40			
	39	276	270	282
	38			
	37			
	36		269	281
	35	275		
	34			280
	33		268	
	32			
	31			279
	30	273	266	
	29			277
	28			
	27		265	276
	26	272		
Q_1	25	270	264	275
	24		264	
	23			
	22		262	274
	21	270		
	20			272
	19		261	
	18	268		271
	17			
	16		259	
	15			270
	14	266		268
	13		258	
	12			267
	11	264		
	10		257	265
	9	262		263
	8		255	
	7			262
	6	260	254	260
	5			258
	4	258	252	256
	3	256	251	254
	2	253	249	252
	1	251	247	248

	Sci.	Soc. St.	List.
Hawaii Mean	280	276	287
Publ.'s Mean	283	280	293
Publ.'s Median	281	280	291

Appendix P

Summary of Differential Aptitude Test, Form L
Grade Nine - Administered November 1971
Mean Scores by State and Districts

Category	Sex	State RS*	State Pct*	State SD*	Honolulu RS	Honolulu Pct	Honolulu SD	Central RS	Central Pct	Central SD	Leeward RS	Leeward Pct	Leeward SD	Windward RS	Windward Pct	Windward SD	Hawaii RS	Hawaii Pct	Hawaii SD	Maui RS	Maui Pct	Maui SD	Kauai RS	Kauai Pct	Kauai SD	Publisher's RS	Publisher's Pct	Publisher's SD
Verbal Reasoning	M	18	40	9	19	40	10	20	45	10	16	30	9	18	40	9	16	30	9	16	30	9	16	30	9	22	55	10
	F	18	40	10	19	45	8	20	45	10	16	35	9	18	40	10	18	40	10	16	35	9	16	35	9	22	55	10
Numerical Ability	M	17	35	8	19	45	9	17	35	8	15	30	8	16	30	8	16	30	8	16	30	8	15	30	7	21	50	8
	F	18	40	8	19	45	8	18	40	8	16	30	7	18	40	8	18	40	8	17	35	7	16	30	7	20	50	8
Abstract Reasoning	M	28	40	11	31	50	11	30	45	11	26	35	11	28	40	11	27	35	11	25	30	12	27	35	11	29	40	11
	F	29	40	11	30	45	11	30	45	11	27	35	12	29	40	11	29	40	11	26	35	11	26	35	12	20	40	11
Space Relations	M	28	55	12	30	60	12	29	55	12	26	50	11	28	55	12	27	50	12	25	45	11	25	45	11	28	55	12
	F	26	60	11	28	65	12	27	60	11	24	55	10	26	60	11	27	60	11	24	55	10	24	55	10	25	55	11
Mechanical Reasoning	M	41	30	9	42	35	9	42	35	9	39	25	9	41	30	9	41	30	9	39	25	9	40	30	8	45	50	10
	F	35	40	8	35	40	8	36	45	7	34	40	7	36	45	8	34	40	8	33	35	7	33	35	7	37	50	8
Cler. Speed & Accuracy	M	43	70	15	46	80	15	44	75	15	42	65	16	42	65	14	42	65	13	36	40	12	41	60	13	38	50	12
	F	50	75	16	53	85	17	51	80	15	49	75	16	51	80	15	51	80	15	42	45	11	49	75	14	43	50	13
Language - Spelling	M	58	45	16	60	50	16	59	45	16	56	40	16	56	40	15	58	45	16	58	45	16	54	35	15	61	50	15
	F	66	45	16	68	45	16	66	45	16	63	35	16	64	40	16	69	50	16	67	45	16	67	45	17	69	50	15
Language - Grammar	M	20	35	8	21	40	8	21	40	7	18	25	7	19	30	7	20	35	7	19	30	7	19	30	7	25	50	10
	F	23	30	8	24	35	9	24	35	8	21	25	8	23	30	9	24	35	8	22	30	8	23	30	8	29	50	10
Verbal Reas. & Num. Abil.	M	35	35	16	38	45	17	37	40	16	31	25	15	34	35	16	32	30	15	31	25	15	31	25	14	43	50	17
	F	36	40	16	39	45	17	39	45	16	33	35	16	36	40	16	36	40	17	33	35	15	33	35	14	42	50	17
Number of Cases	M	6,792			1,850			1,265			1,159			957			729			504			328		2,400+		
	F	6,658			1,923			1,268			1,070			980			698			383			336		2,350+		
Total - Male & Female		13,450			3,773			2,533			2,229			1,937			1,427			887			664		4,750		

*RS = Raw Score *Pct = Percentile *SD = Standard Deviation

Appendix G

Differential Aptitude Test (DAT), Form L

Grade 9 -- Boys Cases--6,767 November 1971

By Raw Score

	%ile	Verb. Reas.	Num. Abil.	Abs. Reas.	Space Rela.	Mech. Reas.	Cler. Spd. & Accuracy	Lang. - Spelling	Lang. - Grammar	Verb. Reas. & Num. Abil.
	99	43	37	46	56	60	90	94	39	75
	98	40	35	45	54	58	79	91	37	72
	97	39			53	57	74	89	36	69
	96	37	34	44	51		71	87	35	67
	95	36	33		50	56	68	86	34	66
	94	35	32	43	49	55	65	85	33	64
	93	34			48		63	84	32	63
	92		31		47	54	62	83		61
	91	33	30		46		60	82	31	60
	90	32		42	46	53	59	81	30	58
	89	31	29		45		58	80		57
	88				44		57	79		56
	87	30	28	41		52	56	78	29	55
	86				43			77		54
	85	29	27		42	51	55	76	28	
	84			40						53
	83	28	26		41		54	75	27	52
	82					50		74	26	51
	81	27			40		53	73		50
	80		25	39	39		52	72	26	49
	79	26								
	78		24		38	49		71		48
	77	25					51	70		47
	76			38	37				25	
Q3	75	24	23	37	36	48	50	69	24	46
	74				36					45
	73	23						68		
	72		22	37	35	47	50		24	44
	71							67		43
	70	22						66		
	69		21		34		49			42
	68			36		46		65	23	41
	67	21			33					
	66		20				48	64		40
	65	20			32					39
	64			35			47	63		
	63		19		31	45			22	38
	62							62		
	61	19					46	61		37
	60		18	34	30					36
	59					44			21	
	58	18			29			60		35
	57						45			
	56		17	33	28			59		34
	55	17				43				
	54							58		33
	53				27		44		20	
	52	16	16	32		42		57		32
	51				26					
	an 50	15	15	31	25	41	43	56	19	31

Appendix Q - DAT, Form L, Boys (cont'd)
Grade 9, 6,767 Cases, November 1971

%ile	Verb. Reas.	Num. Abil.	Abs. Reas.	Space Rela.	Mech. Reas.	Cler. Spd. & Accuracy	Lang. - Spelling	Lang. - Grammar	Verb. Reas. & Num. Abil.
49			31			43	56		
48	15	15		25	41			19	30
47						42	55		
46			30						
45				24					29
44	14						54		
43		14	29		40	41		18	28
42				23		40	53		
41									27
40			28		39				
39	13					40	52		
38		13		22					26
37			27			39		17	
36					38		51		
35			26						25
34				21		38			
33	12	12	25		37		50		
32									24
31			24			37		16	
30			23	20			49		
29					36	36			23
28			22						
27	11	11					48		
26			21	19	35			15	22
Q1 25	10	10	20	18	34	35	47	14	21
24			19						
23					34	34			
22			18	18			46		21
21	10		17			33			
20		10	16		33		45	14	
19						32			20
18			15	17			44		
17					32	31			
16			14				43	13	
15	9	9	13			30			19
14				16	31		42		
13			12			29	41		
12					30	28			18
11				15		27	40	12	
10	8	8	11		29		39		
9						26	38		17
8			10	14	28	25	37	11	
7					27	24	36		16
6	7	7	9			22	35		
5				13	26	20	33	10	15
4		6	8		25	18	31		
3	6		7	12	24	13	29	9	14
2	5	5	6	11	22	9	26	8	13
1	4	4	5	10	20	5	21	7	11
Mean	18	17	28	28	41	43	58	20	35
's Median	21	20	31	26	45	30	60	25	42
's Mean	22	21	29	28	45	38	61	25	43

Appendix Q - DAT, Form L, Girls (cont'd)
Grade 9, 6,633 Cases, November 1971

	%ile	Verb. Reas.	Num. Abil.	Abs. Reas.	Space Rela.	Mech. Reas.	Cler. Spd. & Accuracy	Lang. - Spelling	Lang. - Grammar	Verb. Reas. & Num. Abil.
	99	44	36	46	53	52	99	96	45	77
	98	42	35		51	50	93	95	42	74
	97	40	34	45	49	49	86		41	71
	96	39	33		48		80	93	39	69
	95	38		44	46	48	78	92		67
	94	37	32			47	76	91	38	66
	93	36	31		45		74	90	37	65
	92			43	44	46	73	89		64
	91	35	30		43		71		36	62
	90	34			42	45	70	88	35	61
	89	33		42			69	87		60
	88		29		41	44	67		34	59
	87	32			40		66	86		58
	86	31	28	41			65	85	33	57
	85				39	43			32	56
	84	30	27				64	84		55
	83				38		63		32	
	82	29		40		42		83		54
	81		26		37		62		31	53
	80	28					61	82		52
	79				36				30	51
	78	27	25	39		41	60	81		50
	77				35					
	76	26					59	80		49
Q3	75	25	24	38	34	40	58	79	29	48
	74	25		38		40	58			48
	73				33			78		47
	72	24	23				57		28	46
	71				32			77		
	70			37			56			45
	69	23				39				44
	68		22		31		55	76	27	
	67	22								43
	66			36	30			75		42
	65		21			38	54		26	
	64	21						74		41
	63				29		53			
	62	20		35				73		40
	61		20		28				25	39
	60					37	52	72		
	59	19								38
	58			34	27					
	57		19					71		37
	56	18				36	51		24	
	55				26			70		36
	54		18	33				69		
	53	17								35
	52				25				23	
	51			32				68		34
Median	50	16	17	31	24	35	50	67	22	33

Appendix Q - DAT, Form L, Girls (cont'd)
Grade 9, 6,633 Cases, November 1971

	%ile	Verb. Reas.	Num. Abil.	Abs. Reas.	Space Rela.	Mech. Reas.	Cler. Spd. & Accuracy	Lang. - Spelling	Lang. - Grammar	Verb. Reas. & Num. Abil.
	49	16	17		24			67		33
	48							66		
	47			31					22	32
	46				23					
	45	15	16			34	49	65		31
	44			30				64		
	43						48		21	30
	42				22			63		
	41	14		29						
	40		15			33	47	62		29
	39									
	38			28	21		46	61		28
	37	13							20	
	36			27		32		60		27
	35		14							
	34			26	20		45	59		
	33									26
	32			25					19	
	31	12				31	44	58		
	30		13	24	19			57		25
	29									
	28			23			43	56	18	
	27			22						24
	26	11		21	18	30	42	55		
Q1	25	10	12	20	17	29	41	54	17	23
	24			20			41	54		23
	23			19					17	
	22					29		53		
	21			18	17		40	52		22
	20	10		17						
	19		11	16			39	51	16	
	18			15		28				21
	17				16		38	50		
	16			14			37	49		
	15	9				27			15	20
	14		10	13			36	48		
	13			12	15			47		
	12					26	35	46		19
	11			11			34		14	
	10	8	9		14		33	45		
	9					25		44		18
	8			10			32	43	13	
	7	7			13	24	31	42		17
	6		8	9			30	41	12	
	5			8	12	23	28	40		16
	4	6	7			22	26	39	11	15
	3			7	11	21	24	36	10	14
	2	5	6	6	10	20	19	34	9	13
	1	4	5	5	9	19	5	29	8	12
Mean		18	18	29	26	35	50	66	23	37
Tbl.'s Median		21	20	31	23	37	43	69	28	41
Tbl.'s Mean		22	20	29	25	37	43	69	29	42