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ABSTRACT
        This is an interpretive manual designed to accompany
the Test of Proficiency in English as a Second Language, a
comprehensive test assessing production and perception skills in
written and spoken English and intended for use in Grades 4-6 in
Bureau of Indian Affairs schools. The manual is divided into three
sections. Section one discusses English proficiency and the ways in
which information from test results is best incorporated into
decisions affecting individuals and Groups. Section two contains the
information about TOPESL, TOPESL scores, and the norms population
necessary for interpretation of scores and differences between
scores. Section three contains detailed information about the
development of TOPESL, and about the development of statistical
information for TOPESL. Statistical data are presented in tables, and
appendices list participating schools. (Author/AM)

INTERPRETIVE MANUAL

for

TEST OF PROFICIENCY IN ESL

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Introduction

The Test of Proficiency in English as a Second Language (TOPESL) is a comprehensive test assessing skills in the production and perception of written and spoken English intended for use in grades four, five and six. The test is designed for use in Bureau of Indian Affairs' schools. It consists of three separately administered sections, English Structure (ES), Listening Comprehension (LC) and Oral Production (OP). Accompanying the test itself are a separate administrative manual and this interpretive manual. The administrative manual gives detailed information about the administration and scoring of TOPESL. This interpretive manual is divided into three sections. Section I contains a discussion of English proficiency and provides a discussion of the ways in which information from test results is best incorporated into decisions affecting individuals and groups. Section II contains the information about TOPESL, TOPESL scores, and the norms population, which is necessary for interpretation of scores and differences between scores. Section III contains detailed information about the development of TOPESL, and about developing statistical information for TOPESL.

For TOPESL as with any standard test, familiarity with basic testing concepts is a necessary qualification for the interpretation of scores.* Persons not familiar with the theoretical and practical limitations on the accuracy of test scores, tend to give too much significance to any obtained score. As will be noted repeatedly below, there is a margin of error in the use of any test results which cannot be ignored. For this reason, other pertinent information should be used in conjunction with test scores wherever possible. It should be noted, however, that although there is a non-negligible margin of error present in measurement with standardized tests, this margin is far smaller than it is for most other forms of assessing human performance.

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*Persons interested in obtaining additional information on these "basic testing concepts" should refer to texts such as: Lee J. Cronbach. Essentials of Psychological Testing (2nd edition), Harper & Row, 1960; Robert L. Ebel. Measuring Educational Achievement, Prentice-Hall, Inc., 1965; Henry E. Garrett. Statistics in Psychology and Education (5th edition), Longmans, Green and Co., 1961; David P. Harris. Testing English as a Second Language, McGraw-Hill Book Co., 1969. In addition, some extremely useful information on testing can be found in the test packet containing a series of brochures available free from the Educational Testing Service, Princeton, New Jersey. (An exceptionally useful brochure in the ETS packet is number 1, Locating Information on Educational Measurement: Sources and References which contains an annotated bibliography.)

English Proficiency

There are many kinds of skills that are frequently classified to-
gether under the broad heading "English." These include writing, spelling,
punctuation, phonics, reading, and correct usage, among others. These are
typically the aspects of the use of language which must be taught to chil-
dren who have learned English at home as their first language. They are
skills dealing for the most part with written standard English and the
correspondences between the spoken and written forms of the language. These
writing conventions are not the aspects of English with which TOPESL is
primarily concerned. TOPESL is concerned with the knowledge of English
structure, the way words go together to form sentences in English. It is
thus not concerned with where commas go, or the distinction between "lie" an
and "lay," or whether "English" should be capitalized. Rather, it is con-
cerned with knowing, for example, that the answer to a "what" question is
usually a noun phrase and not "yes" or "no."

Purpose

The scores from these tests are intended to provide users with both
placement and group diagnostic information. The information provided by
the test should be considered an adjunct to the teachers' knowledge and not
a replacement for it. Where in individual cases, interpretations of test
scores yield conclusions greatly at variance with teachers' judgments,
extenuating circumstances should be sought. Perhaps the child marked in
the wrong section of the answer sheet, or was ill or worried about personal
problems.

Though TOPESL scores come from students' performance in three basic
areas requiring a broad knowledge of English, TOPESL does not provide an
exhaustive sampling of all aspects of English proficiency. Though vocabu-
lary is doubtless an element in language proficiency, there is no specific
vocabulary section to TOPESL. Similarly, though pronunciation is a notice-
able aspect of spoken language, no attempt is made to assess this in TOPESL.
These areas, though not assessed by TOPESL sections, are none the less
important in overall language proficiency. Further, pronunciation assess-
ment routines were not included in TOPESL because: (1) judging pronunciation
deviations from standard English dialects is frequently extremely difficult
for people who have not had specific training in phonetics and (2) "mispro-
nounced" grammatically correct utterances seem to be less of a problem in
communication than the respective statuses of encoder and decoder, situational
context and the like.

Decision Making with Tests

Information from tests has no intrinsic value; it is useful only as an aid in decision making. For test results to be best utilized, they should be part of the total input to a decision rule. A decision rule is the process of choosing the kinds of information to be used, determining the relative value to be assigned to each kind of information, and finally specifying what is to be done with the information. The advantage of decision rules is that they explicitly state what weight or value is to be assigned to each of the types of available information. Decision rules can be formulated to operate with a minimum of information, e.g., taking every person over eight years of age would be such a rule which could operate with minimal information. With increased amounts of information available more complex decision formulae are useful. For example, in a given school where two levels of instruction in English structure are available to students from three classrooms, a hypothetical rule might be as follows: Add together the standard score from each of the sections of TOPESL and divide by 100. Add 4 points for an A, 2 points for a B, and 1 point for a C grade in English the previous year. Subtract one half point for each year in school. Give non-readers two points. Then exempt the top third from any English structure courses, put the second third in the upper level, and the last third in the lower level of English structure. This rule is not offerred as a suggestion for actual use, but only to illustrate the statement of such a rule. Any actual rule must take into account local considerations, such as number of special classes available, consistency in grading, etc. Should a decision formula give what seem to be incorrect results, the kinds of information put in or the relative weight of the categories of information should be changed.

The decisions using test results can be classified in several ways with respect to: (1) who makes the decisions--teachers, education specialists, principals or supervisors; (2) where the decisions are made--in the classroom, in the school, or in the district; or (3) who is affected by the decisions--individuals or groups. Decisions involving individuals are usually made at the local level and involve placement, diagnosis of problems, and determination of whether individuals are performing to potential. Poor knowledge of English may be responsible for performance below potential or under-achievement. Decisions affecting groups may be local or non-local and involve deciding the number of courses needed, how much time should be devoted in the curriculum, grouping strategies, the evaluation of programs and so on.

Decisions affecting groups are in one sense simpler to make. Any testing instrument makes some misclassifications and, as discussed in greater detail below, these are quantified by the standard error of measurement. Since the misclassifications in general are normally distributed, with sizeable groups they tend to cancel each other out. Because of this tendency, there need be less concern with error of measurement in decisions affecting

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groups than in decisions affecting individuals. Let us consider first,
local decisions about groups, then non-local decisions about groups, and
finally decisions about individuals.

Locally-made decisions involving groups can be further separated to
within classroom and within school. The within school decisions (usually
made by language arts specialists and principals in consultation with
teachers) involve determining how many levels of English instruction are
necessary, now much time should be devoted to it and what strategies should
be followed for grouping. Various grouping strategies might be to put to-
gether in the same classes, people of the same interest level, or the same
cognitive level, or the same level in knowledge of English. Other informa-
tion would be necessary for implementing interest level or cognitive level
grouping, but TOPESL scores along with other information about English pro-
ficiency would serve to group individuals according to their ability level
in English.

Much the same kinds of considerations are involved in the within-
classroom decisions made by the classroom teacher. If the school curriculum
is not departmentalized, all the groups established will be taught by the
same teacher, but the same criteria apply to making the decisions.

Non-local decisions by supervisors and curriculum planners will deter-
mine how much of the curriculum should be devoted to the study of English
structure and the extent to which teacher training should emphasize the
teaching of English. Included will be the extent to which English special-
ists need to be assigned to larger schools and available to smaller ones.
Additional use of test information at the administrative level will include
the evaluation of effectiveness of different English programs at various
schools. This will entail establishing regular testing programs, and
specific procedures to evaluate results obtained from them.

Decisions involving individuals will almost always be made within the
classroom or the school. Here, because the unit of focus is the individual
rather than a group, misclassifications or discrepancies between obtained
and "correct" or "true" scores cannot cancel out. The standard error of
measurement (SE_m) thus becomes of greater importance. By chance, a person
with any given true score will have an obtained score differing from his
true score by more than one SE_m about one in three times, and by more than
two SE_m about one in twenty times. On the test of English structure, where
the SE_m is 4.6 in raw score units, in general one out of three persons with
a true score of 35 would get an obtained score higher than 39 or lower than
31. Because of this uncertainty in individual score assignment, which is
present in any test, care must be exercised in use of scores in individual
placement. To facilitate use of the SE_m, Section II reports the data for
various grades in the usual percentiles and, also in intervals or bands two
SE_m wide.

Because of the range of error in individual score assignment, all available and pertinent information in addition to test scores should be included in the placement-decision formulae, such as, previous grades, teacher evaluations, scores on standardized tests, etc. Where three or more independent sources of information are available, errors in score assignment to individuals will tend to cancel out.

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SECTION II

Section I of this interpretive manual provided a statement of test pur-
poses and considers the use of test results in decision making. Section II
provides a brief discussion of TOPESL and the information necessary to
interpret raw scores. This information includes: reliability information--
how consistent the test is in its score assignments to individuals; error
of measurement data--with what degree of confidence an individual's score
can be expected to fall in a given interval; validity information--what
evidence there is that the test will actually accomplish the purposes for
which it was designed; recommended uses of TOPESL scores; use of norms
tables--how the performance of given classes of pupils is distributed; and
a description of the population on which the norms were based. TOPESL con-
sists of three basic types of testing instruments: (1) a written test of
English structures; (2) a listening comprehension test; and (3) an oral
production test.

There are two parallel forms of the written test, each of which con-
tains sixty-two multiple choice items. One type consists of a question
stem which can be answered with one of the choices; e.g., "What does Tommy
read in class?" "(a) Yes, he does; (b) Likes books; (c) School books."
The second type consists of an incomplete stem which can be completed with
one of the choices, e.g., "The _____ in this room is awful." "(a) heat;
(b) hot; (c) hotly."

The listening comprehension test consists of aural stimuli, recorded
on tape, and three types of multiple choice responses: (a) choosing the
correct picture of three which has been described on the tape; (b) identi-
fying factual information which was actually given in a recorded conver-
sation; and (c) using information contained in a recorded conversation in
order to infer the correct choice.

The third part of the test battery consists of an oral production test.
In this test the student is shown several sets of pictures--each set contain-
ing four pictures. Each picture in each of the sets varies slightly from
the others along some criterial attribute. The student is then shown a test
picture which is identical to one of the four in the set. Two responses
are required of the student. First he must point to the picture in the set
which matches the test picture. Then he must tell the examiner how that
particular picture differs from the others in the set.

In order to aid teachers in evaluating the children's oral responses,
and to standardize evaluation throughout all of the schools, a correction
matrix was designed, (see Table A). On the far left hand side of the matrix
is a series of grammatical categories. Each category represents a structure
elicited by one of the sets of pictures. Seven require simple sentences and
seven require complex sentences in order to describe the picture correctly,
e.g., a simple response to one item is "The boys are washing their faces."

SCHOOL: _____

GRADE: _____

DATE: _____

EXAMINER: _____

		Name				
1	Preposition	1	1	1	1	1
2	Subject + Verb	3	3	3	3	3
3	Subject - Object Differentiation: One boy - Another boy	2	2	2	2	2
4	Plural Pronoun Agreement: They - Their	4	4	4	4	4
5	Pronoun Gender Agreement: She - Her	3	3	3	3	3
6	Fluency	4	4	4	4	4
7	Present Progressive Tense: Be + ing	1	1	1	1	1
8	Article Presence: A / The	1	1	1	1	1
	Complexity	4	4	4	4	4
9	Plural Noun: Their Books	2	2	2	2	2
	Complexity	4	4	4	4	4
10	Count / Mass Noun: A Letter / Mail	2	2	2	2	2
	Complexity	4	4	4	4	4
11	Fluency	2	2	2	2	2
	Complexity	4	4	4	4	4
12	Present Progressive Tense: Be + ing	2	2	2	2	2
	Complexity	4	4	4	4	4
13	Verb Tense: Fall	2	2	2	2	2
	Complexity	4	4	4	4	4
14	Quantifier: Many / A Lot Of	4	4	4	4	4
	Complexity	3	3	3	3	3
	TOTAL SCORE :					

A response using a complex sentence, as in the second half of the oral production test is, "The girl is watching the children read their books." Along the rows opposite each category is a number from one to four which the teacher crosses out if the response is wrong or leaves alone if the answer is right. For each subject tested, the teacher simply adds the column of numbers beneath the child's name, which have not been crossed out.

The different grammatical categories are assigned numbers ranging from one to four because previous administrations and statistical analyses of the pre-tests showed that certain categories are more predictive of success or failure on the total test. The most predictive items are scored four points and so on down to the least predictive items which are scored one point only. All the teacher has to do is listen for one specific grammatical aspect, e.g., in item four plural pronoun agreement, and then allow or disallow the number of points for that category only. In other words, even if part of the child's response is grammatically incorrect, he still receives total credit if the part of the response being evaluated for that particular item is correct. For example, for item number five, where the category being evaluated is pronoun gender agreement, the response, "The girl are pointing to her mouth." would receive full credit, even though there is an error in number agreement.

The objectives of the test battery are threefold. The first is to identify the Amerindian child who needs special training in English versus the child who does not and to determine the placement of the former in the proper level of intensity of training in English. The second purpose is to provide the classroom teacher with specific linguistic information for each child in each language group which could be used as a diagnostic guide for teaching methods or materials. Potentially a third objective is to provide a means of assessing the relative merit of various English programs. These objectives require that certain decisions be made which can be classified as placement, diagnostic and evaluative decisions.

Reliability and Error of Measurement

For the test of English structure, two kinds of reliability information are reported, internal consistency estimates from item homogeneity (KR-20) and parallel forms correlation (Pearson product-moment). These are reported in Table 1. Since internal consistency of the test could be spuriously high due to the effects from speededness (see Table 15), the error of measurement for the English structure test has been computed on the basis of the parallel forms figure. Because the listening comprehension test is paced by the accompanying taped stimuli, the effects of speededness are negligible and internal consistency figures are appropriately used in estimating reliability and computing the error of measurement for it, as reported in Table 1.

For the oral production test, the use of internal consistency estimates from item homogeneity to determine reliability must be justified, because

TABLE 1

Reliabilities and SE_m's

Written Parallel Forms		r	N	M	SD
Form A	A-B	.89	251	34.2	13.7
Form B	B-A	.90	251	33.7	13.3
Combined		.895		34.0	13.5

Form A	KR-20	N	M	SD
Total Sample	.96	291	38.6	15.4
Choctaw	.97	38	31.5	17.4
Eskimo	.97	53	39.1	16.3
Hopi	.95	49	51.6	10.7
Navajo	.94	151	35.9	13.3

Form B	KR-20	N	M	SD
Total Sample	.95	281	38.6	14.2
Choctaw	.95	39	31.6	14.3
Eskimo	.94	51	38.6	13.2
Hopi	.90	46	52.9	7.8
Navajo	.94	145	35.9	13.0

LC	KR-20	N	M	SD	SE_m
Total Sample	.85	571	20.8	5.7	
Choctaw	.89	104	19.8	6.6	
Eskimo	.87	104	21.1	5.9	
Hopi	.82	94	24.4	4.4	
Navajo	.81	295	19.7	5.2	
All Tested 4,5,6		5,112	19.6	5.5	2.15

OP*	KR-20	N	M	SD	SE_m
Total Sample	.73	182	---	--	--
All Tested		1,660	43.5	11.5	5.85

*Numbers too small for breakdown by group.

the score on the oral production test is not simply the number of items correct, but rather is the sum of a set of weights given to the items. For a discussion of the weighting and the justification see Section III. It should be noted here that the SE_m reported in Table 1 is not exactly equal to $s\sqrt{1-r}$, but that it is sufficiently close to give an index for proper interpretation of scores for decisions involving individuals.

For all three sections of the test the SE_m used in computing the percentile bands is based on all four combined language groups. Where, because of differences in homogeneity in individual groups the size of the variance may be changed, the percentile bands may be somewhat more or less than two SE_m wide.

Validity

The three sections of TOPESL, English structure, listening comprehension and oral production are intended to include a sufficient cross-section of the basic skills involved in understanding and speaking English to provide content validity for TOPESL. Content validity is primarily obtained by having persons quite knowledgeable in the subject matter area cooperate in the selection of techniques and production of items, (see Section III for details on this aspect) but it is best demonstrated by showing how well the appropriate skills actually are sampled.

In the test of English structure, sentences and question reply exchanges are presented in written form and students must make judgments of grammaticality about them. The grammaticality judgments consist of picking which of the three alternatives corresponds most closely with standard English. Of 86 initial grammatical categories tried out, 28 remain after the item validation and selection procedures on the present 62 item test. The items are written so that no outside information about the content of the item is necessary because only one response is grammatically possible. In general, even though particular vocabulary items may be unknown it will still be possible to select the correct answer from grammatical considerations alone. Because the English structure items are presented in written form only, there is some confounding with reading ability.

While the emphasis in the English structure section is on the form of the language, the listening comprehension section emphasizes the content. The listening comprehension items require that a sentence or brief conversation be understood and an answer given which requires (1) recognizing a pictorial representation of that content, (2) recalling part of that content, or (3) making a simple inference on the basis of that content. The tasks of recognizing pictorial representation, recall and inference may be separate from comprehension of English, yet some response mode is necessary, and by coupling the comprehension task with three different response modes the effects of confounding from any particular task may be

reduced. Though the listening comprehension items are presented aurally, i.e., both the stem and choices, some minimal reading skill is required of pupils to determine which choice is being read and to mark their response on the answer sheet.

The oral production section requires the student to be able to express himself sufficiently in English to be able to distinguish one picture from three others to the satisfaction of the examiner and to use correctly the different grammatical categories being tested in specific items.

Construct validity for TOPESL is indicated in three ways, correlation with other measures which require language facility, through the inclusion of a subcriterion scale on the test of English structure, and through correlation of test results with amount of English contact as estimated by school administrators.

Two earlier forms of the test of English structure, used in item validation studies, PL I and PL II, correlated as shown in Table 2 with existing standardized tests, teacher grades, and teacher ratings. It should be noted that within each information type, teacher evaluations or standard test scores, PL I and PL II correlated quite highly with purer language measures than with arithmetic scores.

The subcriterion scale consists of 16 written test items which had a strong discrimination power with Amerindian children but did not with Anglos. Discrimination scores, expressed as "phi" $[\phi = (x^2/n)]$, are measures of the degree to which each item differentiates "top" performers in terms of the total test scores. The higher the discrimination score for any given item the better the item separates high achievers from low achievers. See Section III for a full discussion of the development of the subcriterion scale and a listing of the subcriterion items. The subcriterion scale provided a basis for determining a validity index in item selection for the English structure test. The assumption involved in the use of the subcriterion scale is that items which do discriminate among persons learning English as a second language, but not among native speakers, are true measures of knowledge of English.

School administrators in each of the areas sampled for the norming administration of TOPESL were asked to evaluate the extent to which English was used outside of the school on the three point scale: (1) no English contact outside of school, (2) some, including access to television, (3) frequent English contact. No correlation between English contact and test scores were obtained for two language groups, Choctaw and Hopi, as there was no variation on that variable. However, data is available for 49 of the 54 schools tested. The significant positive correlation between English contact ratings and scores on TOPESL as reported in Table 3 would indicate that TOPESL does in fact measure English proficiency. Where English contact is higher, a generally higher level of English proficiency can be expected, and the positive correlations indicate that TOPESL was successful in indicating this difference.

TABLE 2

Average correlations of PL I and PL II with teachers' ratings and school performance. Fall 1969.

	CHOCTAW				ESKIMO				HOPI				NAVAJO			
	r	N	M	SD	r	N	M	SD	r	N	M	SD	r	N	M	SD
PL I			54	20			54	18			63	19			67	15
PL II			56	20			56	17			65	17			68	17
Teacher Ratings Comp.	.59	130	2.8	1.0	.06	97	3.4	0.9	.20	99	3.1	0.7	.45	82	3.2	0.8
Prod.	.65	131	2.7	1.0	.17	99	3.3	0.8	.23	99	3.0	0.7	.45	82	3.2	0.7
Teacher Grades Arith.	.35	121	2.0	1.0	.13	96	2.4	0.9	.33	99	2.6	0.9	.11	101	2.8	0.9
Read.	.39	121	2.6	1.1	.24	96	2.4	0.8	.38	99	2.8	0.8	.17	101	3.0	0.8
Eng.	.34	121	2.3	1.0	.33	96	2.5	0.8	.30	99	2.5	0.7	.28	101	3.0	0.7
Reading Comp.	.71	55	4.6	1.3	.80	75	4.2	1.3	.82	126	3.9	1.2	.66	99	3.5	1.5
Arithmetic Reasoning	.50	53	5.0	1.1	.78	74	4.4	1.3	.74	126	4.0	1.3	.52	99	3.6	1.5
Mechanical English	.74	54	5.2	1.3	.74	72	4.4	1.5	.74	126	4.3	1.4	.50	98	4.0	1.5

TABLE 3

Correlations of amount of English contact outside of school with TOPESL section scores. No values for Choctaw and Hopi as there was no variation in English contact for those groups.

	ESKIMO		NAVAJO	
	3	4,5,6	3	4,5,6
English Structure	.33**	.25**	.26**	.14**
Listening Comprehension	.44**	.15**	.15**	.12**
Oral Production	.48**	.40**	.03^{ns}	-.03^{ns}
Number of Schools	23	23	26	26
Number of Pupils	236	600	1,382	4,122
English Contact M	2.25	2.17	2.14	2.25
SD	.65	.67	.83	.83

** - significant at .01   ns - not significant

Recommended Uses

For decisions involving individuals recommended uses of TOPESL scores are: (1) aiding in determining if a student is performing to potential; (2) individual placement; and (3) diagnosis of relative strength in various aspects of English.

Determination of performance to potential is aided by determining if an individual scores below levels which indicate little or no knowledge of English. On the English structure and listening comprehension sections, which are both multiple choice tests, an individual may get a raw score somewhat above zero by chance alone, even if he doesn't know the answer to any question. Because of the variation of chance scores, a score must be several points above the average chance score, before it is truly indicative of any knowledge of English at all. These chance scores are ES 432, LC 399, OP 382 in standard scores. See the following paragraph for a discussion of the origin of these figures. Where children score at or below these chance levels it may be assumed that they are significantly limited by their lack of knowledge of English and that this alone could account for failure to perform well in other subject areas. Conversely, a score at the level of performance of native English speakers would indicate that English was not a bar to performance in other areas. It must be noted that a low score on the English structure section alone, would be more properly considered as indicative of inability to read than lack of proficiency in English.

Individual placement should be decided by a decision procedure which incorporates local information and local situational factors as well as

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TOPESL scores. Pertinent information from local sources would usually include grades, ratings by teachers, and scores on other standard tests. Local situational factors generally would determine the number of levels of placement actually available and would include such considerations as class sizes, time available for English structure instruction, number of teachers conversant with English structure techniques, quality and quantity of English structure materials available. Where local decision procedures have not yet been established and for non-local determination of the general level of English proficiency in groups of schools the following guidelines are suggested.

RECOMMENDATIONS	ES	LC	OP	AVG ST
Intensive instruction in English structure	0-432	0-399	0-382	0-407
Moderate instruction in English structure	433-538	400-525	383-548	408-527
No special English structure instruction	539 and above	526 and above	549 and above	528 and above

The first cutting score represents a point high enough to include 90 percent of the chance distribution for the ES and LC sections. The second cutting score represents a point 3.25 SE_m above the first cutting score for all three sections, so that the middle section is 3.25 SE_m wide. For the ES section the second cutting score is also the point corresponding to the tenth percentile of native speaker performance on an earlier form of the test of English structure. For the OP section, since there are no chance scores to provide a bottom cutting score and since data on native speaker performance has not yet been gathered to provide a top cutting score, a band 3.25 SE_m wide was established which covers approximately the same range as do the ES and LC cutting scores. Generally more than one section score will be available. A convenient way of combining them is to take the average standard (AVG ST) score, the cutting points for which are also indicated.

Diagnostic information on individuals is obtained by comparing section percentile scores, using the appropriate reference group. For example, of three Navajo fifth graders with standard scores and percentile scores of:

	ES		LC		OP	
	STD	%-ile Band	STD	%-ile Band	STD	%-ile Band
Pupil 1:	460	28-50	507	32-60	496	26-67
Pupil 2:	566	64-83	435	18-38	513	30-73
Pupil 3:	524	50-70	562	52-82	409	11-30

The first shows quite balanced performance across the three English skills, while the second shows possible deficiency in understanding spoken English and the third possible deficiency in producing English. It should be noted in comparing section scores, that the stability of a difference between two scores is less than that of one score taken alone. For this reason, comparison of section scores should be done using the percentile bands to take into account the SE_m. A student's performance on two sections of the test should not be considered different unless the percentile scores do _not_ overlap.

For decisions involving groups, recommended use of TOPESL scores are: (1) diagnosis of group difficulties; (2) planning of curricula; and (3) evaluation of programs.

The source of information for group diagnosis is item data on the ES section. While the number of items per category is not high enough to give reliable diagnostic information about individuals, useful information about group performance on particular categories can be obtained from item statistics. Item statistics can be used in two ways. One is to use the information provided in Tables 7 through 11 directly. Table 7 gives the categorization of the items on the ES section. Table 8 and 9 are based on combined group and give rank order of difficulty (ROD), the difficulty score, p, (percent of the sample selected for item analysis marking the correct answer to the item) and an estimate of the percent of the population actually knowing the right answer, p', based on distribution of responses to the item. Tables 10 and 11 give p and p' for individual language groups. These figures provide information about the relative difficulties for various groups of the categories assessed by the ES section. For example item number 45 on form B of the ES section, which tests frequency adverb modifers, has a p' of .38 for total group, .08 for Choctaw, .30 for Eskimo, .91 for Hopi and .14 for Navajo, indicating that it is a difficult category for all groups for which data is provided except the children in Hopi schools. Item number 19 on form B which examines comparative modifiers, is about equally difficult for all groups with p' scores of .77 for total group, .71 for Choctaw, .84 for Eskimo, .74 for Hopi and .73 for Navajo.

A second use of item statistics is to compare the performance of classes on test items with the performance of the appropriate norms group. For example if a class at a Navajo school has a difficulty score of .27 for item number ten, which for children at Navajo schools in general has a difficulty score of .89, it may be concluded that that particular class has more trouble with questions containing verbs with separable particles (like "look up the word" or "look the word up") than the population from which they come. Therefore, time should be spent teaching such constructions. Calculation for this kind of use of item information are extremely simple, and only involve determining the percent of persons selecting the right answer to each question. This is then compared to the p score reported for that item for the appropriate reference group. Since these figures are for

grades four, five and six combined, classes which are all fourth or fifth or sixth may be expected to differ systematically from these, in that fourth graders score lower and sixth graders higher. Because there is some chance fluctuation in item statistics, differences between class difficulty scores and the reported difficulty scores should be greater than .20 to be considered meaningful.

Use of Norms Tables

Norms tables are provided for individual language groups, Choctaw, Eskimo, Hopi, Navajo and, in addition, for combined groups, for grades three, four, five and six. The tables are arranged so that conversion from raw to standard scores can be accomplished at the same time that percentile scores and percentile bands are obtained. Numbers on which tables are based, means and standard deviation are given at the bottom of each.

The score conversion is based on combined scores for all fourth, fifth and sixth graders tested. The mean of the standard scores is 500 and the standard deviation is set at 100. There were two reasons for choosing this score conversion scale. First, it has been in use for sometime, and many people are familiar with it. Second, because the standard scores vary around 500, they are not easily confused with IQ scores. Through the use of both standard scores and percentile scores by group, two simultaneous comparisons are allowed. The percentile scores for each group show relative standing for that grade and group, and the standard scores show whether the individual is above or below average for all children tested in grades four, five and six irrespective of grade. For example, a Hopi sixth grader with a raw score of 49 on the ES test would be almost one SD above average (standard score 594 is mean of 500 + .94 SD) for all children tested, and yet in the 35th percentile of his reference group. This means that 65 percent of his reference group scored higher than he did. Similarly an Eskimo fourth grader with a raw score of 19 on the LC test would be barely average for all children tested (standard score of 489 is mean of 500 less .11 SD) and yet in the 68th percentile for his reference group which means that only 32 percent of his reference group scored higher on the LC test.

The combined group tables are the recommended reference for all groups not sampled and for groups sampled, but for whom no percentile data are given because the numbers of persons on whom data was available was too low to compute percentiles. Specifically, there are no percentile data given for Choctaw and Hopi on the OP section.

Percentiles based on fewer than 200 persons are apt not to accurately reflect the true distribution of ability within the reference group, and so should be used with caution. This advisement applies to OP data for Eskimo schools, to all data for Hopi and Choctaw schools. Though the percentile

data for these groups must be used advisedly, they are provided here as they do give an idea of general ability level and distribution within the groups in Fall 1970 when data for the norms tables was obtained.

To provide an additional basis of comparison, it is recommended that norms based strictly on local groups be established. This is strongly advised for all groups for which no norm data are provided here and for groups for which the data given here are based on considerably fewer than 200 persons. The development of norms for local groups is a straight-forward procedure which involves calculating midpoint percentiles from frequency distributions of scores of groups of 200 or more.

As an example of the use of the norms tables, consider a fifth grade Eskimo who had the following raw scores. ES 39, LC 18, OP 49. Looking in the norms tables for Eskimo schools for fifth graders, it's found that these raw scores correspond to standard scores of ES 524, LC 471, OP 548 and percentile bands of ES 31-52, LC 22-36, OP 34-83. Since these bands all overlap somewhat, it cannot be concluded that this student's abilities differ on the skills assessed by the various sections of TOPESL.

Description of the Norms Sample

The population for the norms consisted of all Amerindian children in grades three, four, five and six in school on the ten days following the twenty-fifth day of instruction in the Fall of 1970, in the schools selected. Schools were selected on the basis of a stratified sampling schema which took into consideration: whether schools were boarding or day, school size, school accessibility, language group of school population, and availability of teachers for workshops held in Summer 1970. These workshops were given to train teachers in the administration and scoring of the OP section of TOPESL. Because only schools with Choctaw, Eskimo, Hopi and Navajo speakers were selected and because consideration of availability of teachers was involved, the sample cannot be said to be strictly representative of the total population of BIA schools. However the 6,977 pupils tested constitute 43 percent of the 16,040 enrolled in Bureau schools in grades three, four, five and six in 1970, and of the 37 listings by tribe in Statistics Concerning Indian Education, the four language groups tested account for 83 percent of the total BIA school population.

For purposes of description, schools participating in the norming administration were classified into the following categories:

Total Enrollment:	5 sizes - 0-74	15-149	150-299	300-600	600+
Accessibility:	3 degrees - remote		difficult	easy	
English Contact:	3 degrees - none		some	frequent	

The sampling of schools within the five size strata is indicated in Table 4.

TABLE 4

Comparison of School Sizes in Sample
and in BIA School Population

Size	No. in Population			No. in Sample			Percent Sampled
	Boarding	Day	Total	Boarding	Day	Total	
0-74	8	75	83	0	12	12	.145
75-149	7	34	41	1	6	7	.17
150-299	17	21	38	4	7	11	.29
300-599	17	4	21	6	1	7	.33
600+	28	4	32	15	2	17	.53
Totals	77	138	215	26	28	54	.25

As can be seen from Table 4 large schools are over-represented in the sample
obtained, with a corresponding under-representation of small schools.
Because the correlation of school size with test scores varies for different
language groups, as reported in Table 5, that table should be examined to
determine the effect of this over-representation of large schools, in par-
ticular cases.

TABLE 5

Correlation of School Size with TOPESL Section Scores

	ES	LC	OP	# of Schools	# of Pupils	Mean Size	SD Size
Choctaw 3	.55**	.06^{ns}	.39**	2	68	4.2	.96
Choctaw 4,5,6	.29**	.13^{ns}	-.34**	2	196	4.2	.98
Eskimo 3	.22**	.40**	.43**	23	236	2.3	1.2
Eskimo 4,5,6	.22**	.14**	.31**	23	600	2.2	1.1
Hopi	------------ No Variation in School Size -------------						
Navajo 3	.13**	.08*	.07*	26	1,382	4.5	.63
4	.07*	.04^{ns}	-.01^{ns}	26	1,502	4.5	.63
5	.12**	.08*	-.06*	26	1,344	4.5	.63
6	.05^{ns}	.08*	-.19**	26	1,310	4.7	.45

ns not significant   * significant .05   ** significant .01

Table 6 provides a complete listing by number of the constitutions of the norms sample considering the characteristics: school size, school accessibility, English usage, grade, sex, age and language group. The schools which participated in the norming administration are listed in Appendix II.

TABLE 6

Numbers in Sample

Grade	Total	School Size					School Access.		
		1	2	3	4	5	1	2	3
3	1,802	71	96	210	592	833	523	856	423
4	1,894	74	99	189	524	1,008	500	936	458
5	1,648	52	99	141	474	882	397	796	455
6	1,633	65	57	121	428	962	393	726	514
	6,977	262	351	661	2,018	3,685	1,813	3,314	1,850

Grade	English Usage			Sex		Language			
	1	2	3	M	F	Choc.	Esk.	Hopi	Nav.
3	424	636	742	914	885	68	236	110	1,388
4	440	579	875	829	1,001	78	232	81	1,503
5	377	497	774	849	793	52	189	57	1,350
6	306	469	858	783	846	66	179	76	1,312
	1,547	2,181	3,249	3,375	3,525	264	836	324	5,553

Grade	Age						
	8	9	10	11	12	13	14
3	332	792	404	136	51	7	10
4	24	272	832	458	166	42	13
5	3	7	208	749	455	142	47
6	2	1	11	216	751	445	179
	361	1,072	1,455	1,559	1,403	636	249

TABLE 7

CLASSIFICATION OF WRITTEN ITEMS

	Form A	Form B
V. Verb		
1. Auxilliary		
a) Agreement w/reply	A23, A26, A37, A57	B23, B24, B46
b) Do in question	A5, A48	B14
c) Replacive	A45	B16, B41, B47, B52
d) Modal	A27	B11
e) Passive	A20, A42, A60	B30, B36, B62
2. Complement		
a) Infinitive	A3	B9
b) Inf. without to	A32, A41	B18, B28
c) Gerund	A36	A37
3. Order in question with separable particle	A7, A10, A11	B12, B20
4. Tense		
a) Agreement w/adverb	A33, A49, A54, A56, A59	B34, B44, B55, B56, B60
b) Past as conditional	A31, A46, A62	B17, B49, B22
c) Sequence of	A2	B50
M. Modifier		
1. Comparative	A21, A22, A30, A34, A38	B25, B38, B19, B27, B15, B23
2. Adjective		
a) Selection	A8	B4
b) Numeral	A52	B43
3. Adverbial		
a) Negative	A9	B26
b) Intensifier	A12	B10
c) Frequency	A15, A44	B45
d) Time	A17	B5
e) Locative Phrase	A53	B54
N. Nominal		
1. Relative pronoun	A4, A13, A18	B1, B6, B42
2. Direct object pronoun	A14, A35	B40
3. Reflexive	A24	B2
4. Possessive pronoun	A47, A50, A55, A58	B31, B48, B33, B61
5. Noun selection	A29	B3
C. Conjunction		
1. Coordinate	A1, A6	B8, B53
2. Subordinate	A40, A43, A61, A16, A19, A39	B29, B39, B59, B58, B35, B51, B32
Q. Question reply	A25, A51	B7, B57
W. Word order in relative clause	A28	B13

TABLE 8

Statistics for Combined Groups

English Structure: Form A

Item #	Category	p	p'	r_{pbi}	ROD	Matched Item	Item #	Category	p	p'	r_{pbi}	ROD	Matched Item
A 1	C1	.33	.81	.39	61	B 8	A 32	V2b	.60	.36	.36	26	B 18
A 2	V4c	.35	.74	.31	60	B 50	A 33	V4a	.60	.40	.35	27	B 34
A 3	V2a	.61	.66	.38	55	B 9	A 34	N1	.63	.49	.54	31	B 27
A 4	N1	.61	.73	.45	57	B 1	A 35	N2	.63	.50	.47	32	B 40
A 5	V1b	.60	.64	.46	54	B 14	A 36	V2c	.61	.47	.49	29	B 37
A 6	C1	.62	.72	.46	58	B 53	A 37	V1a	.61	.45	.37	30	B 24
A 7	V3	.75	.58	.36	45	X	A 38	M1	.48	.30	.55	18	B 21
A 8	M2a	.76	.62	.52	47	B 4	A 39	C2	.47	.25	.29	14	B 32
A 9	M3a	.75	.59	.51	46	B 26	A 40	C2	.57	.41	.44	23	B 29
A 10	V3	.38	.81	.31	62	B 20	A 41	V2b	.57	.40	.39	22	B 28
A 11	V3	.79	.66	.43	53	B 12	A 42	V1e	.57	.48	.53	24	B 36
A 12	M3b	.68	.45	.50	36	B 10	A 43	C2	.54	.44	.49	19	B 39
A 13	N1	.78	.68	.22	51	B 6	A 44	M3c	.48	.29	.44	17	X
A 14	N2	.83	.75	.35	59	X	A 45	V1c	.55	.51	.45	21	B 16
A 15	M3c	.67	.51	.55	35	B 45	A 46	V4b	.44	.29	.49	11	B 49
A 16	C2	.71	.55	.36	41	B 35	A 47	N4	.47	.29	.57	15	B 31
A 17	M3d	.76	.62	.48	48	B 5	A 48	V1b	.47	.30	.38	16	X
A 18	N1	.79	.71	.55	52	B 42	A 49	V4a	.46	.37	.36	13	B 44
A 19	C2	.77	.67	.54	50	B 51	A 50	N4	.42	.23	.43	6	B 48
A 20	V1e	.65	.41	.30	33	B 30	A 51	Q	.38	.28	.48	3	B 57
A 21	M1	.74	.59	.50	21	B 25	A 52	M2b	.43	.23	.62	7	B 43
A 22	M1	.71	.55	.52	22	B 38	A 53	M3e	.57	.63	.68	25	B 54
A 23	V1a	.76	.53	.55	39	B 23	A 54	V4a	.55	.60	.60	20	B 55
A 24	N3	.71	.53	.55	43	B 2	A 55	N4	.46	.41	.58	12	B 33
A 25	Q	.76	.64	.44	49	B 7	A 56	V4a	.40	.34	.44	5	B 56
A 26	V1a	.65	.46	.41	34	B 46	A 57	V1a	.43	.39	.57	10	X
A 27	V1d	.81	.73	.49	56	B 11	A 58	N4	.43	.41	.72	3	B 61
A 28	N	.69	.55	.52	37	B 13	A 59	V4a	.43	.34	.56	9	B 60
A 29	N5	.69	.56	.51	38	B 3	A 60	V1e	.31	.04	.37	1	B 62
A 30	M1	.70	.59	.54	40	B 19	A 61	C2	.38	.28	.40	4	B 59
A 31	V46	.60	.39	.50	28	B 17	A 62	V4b	.33	.17	.37	2	B 22

TABLE 9

Statistics for Combined Groups

English Structure: Form B

Item #	Category	p	p'	r_{pbi}	ROD	Matched Item
B 1	N1	.80	.70	.34	55	A 4
B 2	N3	.85	.77	.45	60	A 24
B 3	N5	.88	.65	.47	49	A 29
B 4	M2a	.83	.79	.26	62	A 8
B 5	M3d	.78	.63	.23	51	A 17
B 6	M1	.73	.54	.33	43	A 13
B 7	Q	.87	.79	.26	61	A 25
B 8	C1	.75	.58	.54	45	A 1
B 9	V2a	.78	.66	.50	50	A 3
B 10	M3b	.75	.42	.43	46	A 12
B 11	V1d	.83	.73	.45	58	A 27
B 12	V3	.79	.66	.39	54	A 11
B 13	M	.79	.65	.35	53	A 28
B 14	V1b	.81	.69	.42	57	A 5
B 15	M1	.79	.64	.22	52	X
B 16	V1c	.63	.41	.43	28	A 45
B 17	V4b	.73	.58	.55	44	A 31
B 18	V2b	.80	.72	.40	56	A 32
B 19	M1	.84	.77	.42	59	A 30
B 20	V3	.75	.42	.50	47	A 10
B 21	M1	.72	.57	.59	42	A 38
B 22	V4b	.58	.32	.38	22	A 62
B 23	V1a	.69	.54	.57	40	A 23
B 24	V1a	.65	.45	.59	31	A 37
B 25	M1	.69	.49	.52	39	A 21
B 26	M3a	.68	.46	.42	36	A 9
B 27	M1	.65	.44	.54	32	A 34
B 28	V2b	.75	.65	.45	48	A 41
B 29	C2	.70	.57	.40	41	A 40
B 30	V1e	.68	.55	.33	37	A 20
B 31	N4	.62	.40	.66	26	A 47

Item #	Category	p	p'	r_{pbi}	ROD	Matched Item
B 32	C2	.68	.53	.35	38	A 39
B 33	N4	.61	.44	.62	25	A 55
B 34	V4a	.67	.53	.54	35	A 33
B 35	C2	.64	.49	.37	30	A 16
B 36	V1e	.64	.48	.56	29	A 42
B 37	V2c	.60	.38	.62	24	A 36
B 38	M1	.65	.54	.58	33	A 22
B 39	C2	.56	.40	.57	19	A 43
B 40	N2	.62	.47	.41	27	A 35
B 41	V1c	.54	.31	.59	18	X
B 42	N1	.65	.57	.60	34	A 18
B 43	M2b	.46	.29	.53	13	A 52
B 44	V4a	.52	.33	.59	17	A 49
B 45	M3c	.49	.38	.57	14	A 15
B 46	V1a	.50	.38	.54	15	A 26
B 47	V1c	.57	.49	.60	21	X
B 48	N4	.56	.48	.61	20	A 50
B 49	V4b	.44	.20	.53	11	A 46
B 50	V4c	.38	.20	.51	6	A 2
B 51	C2	.41	.20	.59	9	A 19
B 52	A1c	.39	.25	.58	8	X
B 53	C1	.37	.19	.53	4	A 6
B 54	M3e	.50	.38	.54	15	A 53
B 55	V4a	.57	.49	.60	21	A 54
B 56	V4a	.37	.27	.55	5	A 56
B 57	Q	.38	.30	.51	7	A 51
B 58	C2	.36	.29	.57	3	X
B 59	C2	.37	.19	.53	4	A 61
B 60	V4a	.42	.43	.68	10	A 59
B 61	N4	.30	.19	.44	2	A 58
B 62	V1e	.27	.10	.56	1	A 60

TABLE 10

English Structure: Form A

Item	Choctaw p	Choctaw p'	Eskimo p	Eskimo p'	Hopi p	Hopi p'	Navajo p	Navajo p'
1	.87	.76	.87	.79	.96	.92	.86	.77
2	.76	.55	.85	.77	.92	.84	.85	.86
3	.74	.53	.87	.71	.92	.86	.79	.66
4	.76	.63	.81	.71	.92	.84	.80	.67
5	.66	.42	.83	.75	.94	.88	.78	.53
6	.71	.53	.79	.71	.94	.90	.82	.72
7	.61	.32	.74	.59	.88	.79	.75	.58
8	.66	.45	.93	.90	.94	.90	.66	.46
9	.76	.62	.66	.50	.94	.90	.72	.45
10	.76	.61	.87	.83	.94	.92	.89	.83
11	.63	.47	.72	.56	.90	.32	.82	.69
12	.63	.42	.70	.52	.90	.82	.61	.31
13	.63	.50	.74	.62	.80	.61	.82	.66
14	.79	.70	.77	.75	.94	.90	.82	.86
15	.58	.35	.57	.31	.88	.82	.66	.45
16	.73	.65	.74	.60	.86	.78	.64	.41
17	.71	.54	.70	.56	.92	.88	.75	.57
18	.71	.59	.79	.69	.88	.32	.78	.65
19	.66	.50	.79	.69	.94	.90	.74	.59
20	.61	.45	.63	.46	.83	.76	.58	.27
21	.55	.31	.74	.53	.94	.90	.72	.55
22	.55	.31	.81	.67	.90	.82	.66	.47
23	.47	.63	.74	.62	.94	.90	.61	.34
24	.53	.40	.68	.49	.98	.96	.67	.42
25	.63	.50	.77	.69	.86	.74	.76	.59
26	.68	.64	.55	.26	.78	.61	.64	.44
27	.76	.73	.79	.73	.94	.90	.78	.64
28	.55	.44	.59	.41	.84	.76	.71	.56
29	.61	.58	.76	.67	.90	.84	.62	.40
30	.61	.63	.70	.60	.78	.61	.72	.59
31	.58	.44	.64	.40	.82	.67	.52	.27

Item #	Choctaw p	Choctaw p'	Eskimo p	Eskimo p'	Hopi p	Hopi p'	Navajo p	Navajo p'
32	.47	.22	.70	.57	.90	.84	.50	.15
33	.58	.48	.66	.47	.92	.86	.48	.20
34	.61	.58	.70	.55	.84	.69	.55	.34
35	.55	.45	.64	.49	.80	.65	.60	.43
36	.45	.27	.72	.69	.90	.82	.52	.29
37	.47	.28	.51	.25	.86	.74	.60	.15
38	.32	.36	.55	.36	.76	.61	.41	.56
39	.47	.39	.42	.11	.82	.69	.37	.08
40	.42	.40	.57	.39	.90	.84	.50	.23
41	.42	.38	.62	.57	.88	.76	.48	.21
42	.37	.41	.57	.53	.82	.72	.54	.41
43	.37	.53	.57	.38	.82	.69	.49	.18
44	.29	.26	.43	.83	.82	.67	.43	.30
45	.42	.74	.64	.59	.90	.80	.44	.28
46	.32	.50	.57	.40	.76	.62	.33	.41
47	.34	.45	.51	.26	.74	.56	.40	.18
48	.34	.50	.57	.43	.92	.90	.32	.25
49	.34	.56	.42	.17	.76	.60	.41	.21
50	.26	.38	.34	.12	.65	.46	.40	.22
51	.18	0	.30	0	.51	.21	.40	.29
52	.26	.38	.55	.48	.59	.27	.37	.15
53	.26	.50	.57	.70	.78	.65	.57	.50
54	.24	.43	.57	.64	.80	.67	.54	.23
55	.24	.58	.43	.29	.76	.68	.42	.32
56	.29	.83	.45	.43	.67	.54	.33	.12
57	.16	.17	.43	.35	.69	.54	.42	.35
58	.18	.33	.45	.46	.69	.59	.31	.39
59	.18	.25	.36	.81	.69	.52	.42	.37
60	.24	.58	.38	.19	.63	.37	.21	.24
61	.21	.50	.42	.32	.74	.57	.30	.09
62	.26	.67	.34	.22	.57	.33	.27	.11

TABLE 11

English Structure: Form B

Item #	Choctaw p	Choctaw p'	Eskimo p	Eskimo p'	Hopi p	Hopi p'	Navajo p	Navajo p'
1	.59	.38	.82	.74	.98	.96	.80	.67
2	.85	.72	.78	.64	.98	.96	.83	.73
3	.72	.56	.73	.55	.94	.89	.75	.63
4	.77	.59	.90	.80	.94	.89	.88	.80
5	.74	.59	.77	.61	.78	.61	.79	.65
6	.59	.33	.55	.24	.78	.59	.81	.69
7	.74	.59	.90	.82	.78	.59	.81	.82
8	.72	.54	.77	.63	.89	.83	.88	.47
9	.69	.49	.78	.65	.91	.85	.70	.63
10	.56	.26	.69	.49	.91	.83	.75	.30
11	.37	.79	.78	.84	.89	.91	.59	.67
12	.39	.69	.77	.63	.94	.76	.79	.63
13	.37	.82	.69	.50	.87	.74	.78	.62
14	.85	.74	.71	.54	.87	.91	.78	.65
15	.72	.54	.65	.36	.96	.89	.79	.67
16	.59	.33	.71	.54	.94	.92	.81	.21
17	.56	.32	.80	.72	.98	.96	.52	.47
18	.60	.71	.78	.70	.98	.96	.66	.67
19	.82	.71	.86	.64	.95	.74	.80	.73
20	.77	.66	.73	.50	.94	.87	.83	.47
21	.72	.61	.78	.68	.94	.89	.70	.42
22	.54	.38	.55	.24	.74	.54	.63	.28
23	.64	.53	.73	.58	.94	.89	.56	.41
24	.54	.44	.61	.42	.80	.65	.62	.43
25	.62	.46	.75	.62	.91	.83	.61	.35
26	.56	.35	.65	.14	.89	.80	.61	.34
27	.51	.35	.71	.52	.96	.91	.65	.27
28	.54	.42	.63	.38	.91	.82	.57	.71
29	.74	.61	.69	.55	1.00	1.00	.80	.42
30	.59	.46	.67	.53	.32	.65	.66	.49
31	.49	.23	.65	.45	.98	.96	.53	.25

Item #	Choctaw p	Choctaw p'	Eskimo p	Eskimo p'	Hopi p	Hopi p'	Navajo p	Navajo p'
32	.56	.43	.49	.47	.89	.80	.70	.55
33	.44	.21	.67	.51	.91	.85	.53	.32
34	.56	.52	.65	.47	.89	.80	.63	.43
35	.49	.42	.59	.39	.74	.56	.68	.50
36	.36	.21	.75	.67	.91	.85	.59	.36
37	.36	.35	.69	.52	.94	.87	.52	.24
38	.51	.48	.75	.63	.89	.81	.57	.42
39	.46	.43	.55	.38	.85	.76	.49	.27
40	.44	.41	.65	.46	.72	.46	.63	.48
41	.51	.62	.61	.40	.94	.89	.39	.08
42	.41	.42	.63	.45	.94	.87	.63	.54
43	.36	.27	.51	.30	.80	.67	.37	.13
44	.33	.19	.49	.21	.78	.67	.50	.37
45	.26	.08	.55	.30	.94	.91	.39	.14
46	.41	.40	.47	.29	.70	.56	.46	.31
47	.39	.36	.59	.47	.83	.77	.52	.42
48	.28	.83	.61	.47	.74	.66	.56	.46
49	.26	0	.41	.09	.83	.75	.38	.09
50	.18	0	.43	.25	.74	.61	.30	.27
51	.28	.20	.49	.36	.72	.52	.32	0
52	.37	.50	.43	.14	.72	.55	.27	.04
53	.28	.30	.57	.48	.83	.77	.43	.38
54	.31	.47	.59	.58	.89	.89	.57	.73
55	.18	.13	.43	.20	.85	.82	.41	.35
56	.18	.21	.33	.25	.70	.55	.34	.23
57	.26	.54	.31	0	.59	.61	.37	.34
58	.28	.64	.31	.10	.76	.70	.28	.11
59	.23	.29	.39	.08	.72	.54	.29	.05
60	.23	.38	.43	.20	.80	.72	.35	.35
61	.23	.36	.39	.15	.61	.49	.17	0
62	.15	.15	.31	.08	.67	.51	.16	0

Norms Tables

The following 20 pages present the raw to standard score conversions, midpoint percentiles and percentile bands for Combined Group, and for Choctaw, Eskimo, Hopi and Navajo schools. The English structure, listening comprehension and oral production percentiles are listed together by grade. The English structure section is referred to in the tables as "Written." Abbreviations used are: Stnd for Standard; Band for Percentile Band; and Mid for Midpoint Percentile. An asterisk (*) indicates that the percentile scores are either less than 1 percent or greater than 99 percent, appropriately as it occurs at the top or bottom of the table.

The number of pupils on whom the percentile figures are based, the mean and standard deviation for each group are given at the bottom of the tables.

COMBINED GROUPS

Fourth Grade

Raw	OPT Mid	OPT Band	OPT Stnd	LC Stnd	LC Band	LC Mid	Written Stnd	Written Band	Written Mid
1			130	164			257		
2			139	182			264		
3			148	200			271		
4			157	218			273		
5			166	226	*- 2	*	235	*- 3	*
6	*	*- 2	174	254	*- 3	1	292	*- 4	1
7	1	*- 3	182	272	*- 4	2	299	*- 5	1
8	1	1- 3	191	290	1- 7	3	306	*- 6	2
9	2	1- 4	200	303	2-11	5	313	*- 7	3
10	2	*- 4	209	326	3-15	8	320	1- 8	3
11	2	*- 4	218	345	5-19	11	327	1-10	4
12	2	*- 5	226	363	8-24	15	334	2-12	5
13	3	1- 6	234	381	11-29	19	341	2-15	6
14	3	1- 7	243	399	15-34	24	348	3-18	8
15	3	1- 8	252	417	19-40	29	355	4-22	9
16	4	2- 9	261	435	24-46	34	362	5-25	11
17	4	2-10	270	453	28-52	40	369	6-30	14
18	5	2-11	278	471	34-59	46	376	7-34	17
19	6	3-12	287	489	40-66	52	383	8-37	20
20	7	3-13	295	507	46-73	59	390	10-41	23
21	8	3-14	303	525	52-79	66	397	12-45	27
22	9	4-15	312	543	59-84	73	404	15-47	32
23	10	4-17	321	562	66-89	79	411	18-50	36
24	10	5-18	330	580	73-93	85	418	22-54	40
25	12	6-19	339	598	79-96	89	425	25-56	43
26	13	7-21	347	616	85-99	93	432	29-58	46
27	14	8-23	356	634	89- *	96	439	35-60	49
28	15	9-24	365	652	93- *	99	446	38-63	52
29	17	10-26	374	670	96- *	*	453	42-65	55
30	18	11-28	382	636			460	45-67	57

Third Grade

OPT Stnd	OPT Band	OPT Mid	LC Stnd	LC Band	LC Mid	Written Stnd	Written Band	Written Mid	Raw
130	*- 3	*	164	*- 2	1	257			1
139	*- 4	1	182	*- 3	2	264	*- 4	*	2
148	*- 5	2	200	1- 3	2	271	*- 5	1	3
157	*- 5	2	213	2- 4	3	273	*- 7	2	4
166	*- 6	2	226	2- 6	3	235	*- 8	3	5
174	*- 7	2	254	3-10	4	292	*-10	4	6
182	*- 8	3	272	3-14	6	299	1-12	5	7
191	*- 9	3	290	4-20	10	306	1-14	6	8
200	1-10	4	308	6-25	14	313	2-17	7	9
209	2-12	5	326	10-32	20	320	3-20	9	10
218	2-13	6	345	14-38	25	327	4-23	11	11
226	2-15	7	363	20-44	32	334	5-26	13	12
234	3-16	8	331	25-52	38	341	7-31	16	13
243	3-18	9	399	32-58	44	348	8-36	18	14
252	4-19	10	417	33-65	52	355	10-41	21	15
261	5-22	12	435	44-73	58	362	12-47	25	16
270	6-23	13	453	52-77	65	369	14-53	28	17
273	7-25	15	471	58-82	73	376	17-59	33	18
237	8-26	16	489	65-86	77	383	20-64	38	19
295	9-28	18	507	73-89	82	390	23-68	44	20
303	10-30	19	525	77-92	86	397	27-72	50	21
312	12-32	22	543	82-94	89	404	31-75	56	22
321	13-34	23	562	86-96	92	411	36-78	62	23
330	15-36	25	580	89-98	94	418	41-80	66	24
339	16-38	26	598	92-99	96	425	46-82	71	25
347	18-39	28	616	94- *	98	432	53-84	74	26
356	19-41	30	634	96- *	*	439	59-85	77	27
365	22-42	32	652			446	64-87	79	28
374	23-44	34	670			453	68-89	82	29
382	25-46	36	636			460	72-90	83	30

COMBINED GROUPS

Fourth Grade

OPT

Raw	Mid	Band	Stnd
31	19	12-30	391
32	21	13-33	400
33	23	15-36	409
34	24	17-39	417
35	26	18-42	426
36	28	19-45	434
37	30	21-49	443
38	33	23-53	452
39	36	24-57	461
40	39	26-61	470
41	42	28-64	478
42	45	30-68	487
43	49	33-72	496
44	53	36-76	504
45	56	39-79	513
46	61	42-82	522
47	64	45-84	530
48	68	49-87	539
49	72	53-89	548
50	76	57-92	557
51	79	61-94	566
52	82	64-96	574
53	84	68-97	583
54	87	72-98	591
55	89	76-*	600
56	92	79-*	609
57	94	82-*	618
58	96	84-*	626
59	97	87-*	635
60	98	89-*	644
61			
62			

OPT: Mean 41.0, SD 12.1, N 594

LC: Mean 18.2, SD 5.4, N 2,051

Written

Stnd	Band	Mid
468	47-69	60
475	51-71	62
482	54-72	64
489	56-74	66
496	58-75	69
503	60-77	70
510	63-78	71
517	65-80	73
524	67-82	74
531	69-83	76
538	71-85	78
545	72-86	80
552	74-87	81
559	75-89	83
566	77-90	84
573	78-91	85
580	80-92	87
587	82-93	88
594	83-94	89
601	85-94	90
608	86-95	91
615	87-96	92
622	89-97	93
629	90-98	94
636	91-98	95
643	92-99	96
650	93-*	97
657	94-*	97
664	94-*	98
672	95-*	98
679	96-*	*
686		

Written: Mean 32.0, SD 12.6, N 1,885

Third Grade

OPT

Stnd	Band	Mid
391	26-49	38
400	28-52	39
409	30-55	41
417	32-58	42
426	34-61	44
434	36-65	46
443	38-67	49
452	39-69	52
461	41-71	55
470	42-73	58
478	44-76	61
487	46-80	64
496	49-83	67
504	52-86	69
513	55-88	71
522	58-90	73
530	61-92	76
539	65-93	80
548	67-95	83
557	69-96	86
566	71-97	88
574	73-98	90
583	76-98	92
591	80-99	93
600	83-*	95
609	86-*	96
618	89-*	97
626	90-*	98
635	92-*	99
644	93-*	*

OPT: Mean 35.0, SD 14.1, N 576

LC: Mean 14.9, SD 5.5, N 1,898

Written

Raw	Stnd	Band	Mid
31	468	75-91	85
32	475	78-91	86
33	482	80-92	88
34	489	82-92	89
35	496	84-93	90
36	503	85-93	91
37	510	87-94	92
38	517	89-94	92
39	524	90-95	93
40	531	90-95	93
41	538	91-96	94
42	545	92-96	94
43	552	92-97	95
44	559	93-97	95
45	566	94-98	96
46	573	94-98	96
47	580	95-98	97
48	587	95-98	97
49	594	96-99	98
50	601	96-*	98
51	608	96-*	98
52	615	97-*	93
53	622	97-*	99
54	629	98-*	99
55	636	98-*	*
56	643		
57	650		
58	657		
59	664		
60	672		
61	679		
62	686		

Written: Mean 22.0, SD 10.0, N 1,736

COMBINED GROUPS

Sixth Grade

Raw	OPT Stnd	OPT Band	OPT Mid	LC Stnd	LC Band	LC Mid	Written Stnd	Written Band	Written Mid
1	130			164			257		
2	139			182			264		
3	148			200			271		
4	157			218			273		
5	166			226			285		
6	174			254			292		
7	182			272			299		
8	191			290	*-2	*	306	*-3	*
9	200			303	*-3	1	313	*-4	1
10	209			326	*-5	2	320	*-5	2
11	218	*-2	*	345	1-6	3	327	*-7	2
12	226	*-3	1	363	2-9	5	334	*-8	3
13	234	*-3	1	381	3-11	6	341	1-10	4
14	243	*-3	1	399	5-14	9	348	1-11	5
15	252	*-3	1	417	6-18	11	355	2-12	6
16	261	*-4	2	435	9-22	14	362	3-14	8
17	270	*-4	2	453	11-27	18	369	3-15	9
18	278	1-4	2	471	14-33	22	376	4-17	10
19	287	1-4	3	489	18-40	27	383	5-19	12
20	295	1-5	3	507	22-48	33	390	6-20	13
21	303	1-5	3	525	27-57	40	397	3-14	8
22	312	2-5	4	543	33-66	48	404	3-15	9
23	321	2-6	4	562	40-76	57	411	4-17	10
24	330	2-6	4	580	48-84	66	418	5-19	12
25	339	3-7	4	598	57-92	76	425	6-20	13
26	347	3-8	5	616	66-97	84	432	8-22	15
27	356	3-9	5	634	76-98	92	439	10-24	16
28	365	4-10	5	652	84-*	97	446	11-26	18
29	374	4-11	6	670	92-*	98	453	12-28	20
30	382	4-13	6	636			460	14-30	22

Fifth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	273			218			157		
5	285			226			166	*-2	*
6	292			254	*-2	*	174	*-2	1
7	299			272	*-3	1	182	*-2	1
8	306	*-3	*	290	*-4	2	191	*-2	1
9	313	*-4	1	308	1-6	3	200	*-2	1
10	320	*-5	1	326	2-8	4	209	*-3	2
11	327	*-5	2	345	3-10	6	218	*-3	2
12	334	*-6	2	363	4-14	8	226	1-3	2
13	341	*-8	3	381	6-19	10	234	1-4	2
14	343	1-10	4	399	8-22	14	243	1-4	2
15	355	1-12	5	417	10-26	19	252	2-5	2
16	362	1-14	7	435	14-30	22	261	2-5	3
17	369	2-16	9	453	19-36	26	270	2-6	3
18	376	3-19	11	471	22-42	30	273	2-6	3
19	383	4-22	13	489	26-49	36	237	2-7	4
20	390	5-24	16	507	30-57	42	295	2-8	4
21	397	6-26	18	525	36-64	49	303	3-10	5
22	404	8-29	20	543	42-72	57	312	3-11	5
23	411	10-32	23	562	49-78	64	321	3-12	6
24	418	12-34	23	580	57-88	72	330	4-13	6
25	425	14-36	25	598	64-91	78	339	4-14	7
26	432	16-38	28	616	72-95	88	347	5-15	8
27	439	19-40	30	634	78-98	91	356	5-16	10
28	446	22-42	33	652	88-98	95	365	6-18	11
29	453	24-44	35	670	91-*	98	374	6-19	12
30	460	26-46	37	636	95-*	*	382	7-22	13

COMBINED GROUPS

Sixth Grade

Raw	OPT Mid	OPT Band	OPT Stnd	LC	Written Stnd	Written Band	Written Mid
31	7	4-15	391		468	15-32	24
32	8	5-17	400		475	17-34	26
33	9	5-19	409		482	19-35	28
34	10	5-21	417		489	20-37	29
35	11	6-23	426		496	22-39	31
36	13	6-25	434		503	24-41	33
37	15	7-28	443		510	26-43	35
38	17	8-30	452		517	28-46	36
39	19	9-33	461		524	30-48	38
40	21	10-37	470		531	32-50	40
41	23	11-40	478		538	34-53	42
42	25	13-46	487		545	35-56	45
43	28	15-48	496		552	37-58	47
44	30	17-53	504		559	39-60	49
45	33	19-58	513		566	41-63	52
46	36	21-62	522		573	43-66	54
47	40	23-68	530		580	46-69	57
48	45	25-72	539		587	48-71	59
49	48	28-78	548		594	50-74	62
50	53	30-82	557		601	53-77	64
51	58	33-86	566		608	56-80	67
52	63	37-90	574		615	58-84	70
53	68	40-94	583		622	60-87	73
54	73	46-97	591		629	63-90	76
55	78	48-*	600		636	66-94	78
56	82	53-*	609		643	69-97	82
57	86	58-*	618		650	71-99	85
58	90	63-*	626		657	74-*	89
59	94	68-*	635		664	77-*	92
60	97	72-*	644		672	80-*	96
61					679	84-*	98
62					686	87-*	99

OPT: Mean 46.8, SD 10.2, N 522
LC: Mean 22.4, SD 4.7, N 1,740
Written: Mean 42.2, SD 13.8, N 1,624

Fifth Grade

Written Mid	Written Band	Written Stnd	LC	OPT Mid	OPT Band	OPT Stnd	Raw
39	29-48	468		14	8-25	391	31
41	32-50	475		15	10-27	400	32
43	34-53	482		16	11-29	409	33
46	36-55	489		18	12-31	417	34
48	38-57	496		19	13-34	426	35
50	40-59	503		22	14-37	434	36
52	42-62	510		25	15-39	443	37
54	44-64	517		27	16-42	452	38
56	46-66	524		29	18-46	461	39
58	48-68	531		31	19-50	470	40
61	50-71	538		34	22-54	478	41
63	53-73	545		37	25-60	487	42
65	55-75	552		39	27-64	496	43
67	57-78	559		42	29-68	504	44
70	59-80	582		46	31-71	513	45
72	62-82	573		50	34-75	522	46
74	64-84	580		54	37-79	530	47
76	66-86	587		60	39-83	539	48
79	68-88	594		64	42-86	548	49
81	71-90	601		68	46-89	557	50
84	73-92	608		71	50-92	566	51
86	75-94	615		75	54-95	574	52
88	78-95	622		79	60-98	583	53
89	80-97	629		83	64-99	591	54
91	82-98	636		86	68-*	600	55
93	84-99	643		89	71-*	609	56
95	86-*	650		92	75-*	618	57
96	88-*	657		95	79-*	626	58
97	90-*	664		98	83-*	635	59
98	92-*	672		99	86-*	644	60
99	94-*	679					61
*	95-*	686					62

Written: Mean 36.4, SD 13.3, N 1,641
LC: Mean 20.3, SD 5.4, N 1,752
OPT: Mean 43.5, SD 11.3, N 538

CHOCTAW

Third Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257	*-13	4	164	*-20	9	130		
2	264	*-16	6	182	3-23	15	139		
3	271	*-18	8	200	9-26	20	148		
4	273	*-20	11	213	15-30	23	157		
5	285	2-22	12	226	20-36	26	166		
6	292	5-24	14	254	23-44	30	174		
7	299	7-26	17	272	26-55	36	182		
8	306	10-28	19	290	30-64	44	191		
9	313	12-29	21	303	36-69	55	200		
10	320	13-31	23	326	44-76	64	209		
11	327	16-32	25	345	55-84	69	218		
12	334	18-35	27	363	64-88	76	226		
13	341	20-37	30	331	69-91	84	234		
14	343	22-40	31	399	76-92	88	243		
15	355	24-43	31	417	84-94	91	252		
16	362	26-47	33	435	88-96	92	261		
17	369	28-52	37	453	91-97	94	270		
18	376	30-60	40	471	92-97	96	273		
19	383	31-66	42	489	94-98	97	287		
20	390	32-69	45	507	96-99	97	295		
21	397	35-72	49	525	97-*	98	303		
22	404	38-75	57	543	97-*	*	312		
23	411	41-78	63	562			321		
24	413	43-81	68	530			330		
25	425	47-84	71	598			339		
26	432	53-88	73	616			347		
27	439	60-90	77	634			356		
28	446	66-93	80	652			365		
29	453	70-95	83	670			374		
30	460	72-96	87	636			382		

Fourth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	273	*- 3	*	218			157		
5	285	*- 3	1	226			166		
6	292	*- 4	1	254			174		
7	299	*- 6	1	272			182		
8	306	*- 8	3	290	*- 7	*	191		
9	313	1- 9	4	303	*-12	4	200		
10	320	1- 9	4	326	*-15	7	209		
11	327	1- 9	5	345	4-18	12	218		
12	334	2-10	7	363	7-21	15	226		
13	341	3-13	8	381	12-24	18	234		
14	343	3-16	9	399	15-28	21	243		
15	355	4-19	9	417	18-34	24	252		
16	362	6-25	10	435	21-39	28	261		
17	369	8-32	11	453	24-50	34	270		
18	376	9-38	14	471	28-62	39	278		
19	383	9-42	18	489	34-67	50	287		
20	390	9-46	22	507	39-70	62	295		
21	397	10-50	29	525	50-76	67	303		
22	404	13-52	36	543	62-83	70	312		
23	411	16-54	40	562	67-88	76	321		
24	418	19-55	44	530	70-95	83	330		
25	425	25-57	48	528	76-99	88	339		
26	432	32-58	52	616	83-*	95	347		
27	439	38-59	53	634	88-*	*	356		
28	446	42-61	54	652	95-*	*	365		
29	453	46-65	56	670			374		
30	460	50-68	58	636			382		

CHOCTAW

Fourth Grade

Raw	OPT Stnd	OPT Band	OPT Mid	LC	Written Stnd	Written Band	Written Mid
31	391				468	53-71	58
32	400				475	54-73	60
33	409				482	55-75	63
34	417				489	57-76	67
35	426				496	58-76	70
36	434				503	59-76	72
37	443				510	62-77	74
38	452				517	65-79	76
39	461				524	68-81	76
40	470				531	71-83	76
41	478				538	73-83	76
42	487				545	75-85	78
43	496				552	75-87	80
44	504				559	76-88	82
45	513				566	76-89	83
46	522				573	77-90	84
47	530				580	79-91	86
48	539				587	81-93	88
49	548				594	83-93	88
50	557				601	83-93	90
51	566				608	85-94	91
52	574				615	87-95	92
53	583				622	88-97	93
54	591				629	89-99	93
55	600				636	90-99	93
56	609				643	91-*	94
57	618				650	92-*	96
58	626				657	93-*	98
59	635				664	93-*	99
60	644				672	94-*	*
61					679		
62					686		
	Mean			Mean 18.6	Mean 29.8		
	SD			SD 5.0	SD 13.5		
	N			N 81	N 76		

Third Grade

Raw	OPT Stnd	OPT Band	OPT Mid	LC	Written Stnd	Written Band	Written Mid
31	391				468	76-96	89
32	400				475	78-96	92
33	409				482	81-97	94
34	417				489	85-98	96
35	426				496	87-98	96
36	434				503	90-98	96
37	443				510	93-98	96
38	452				517	95-98	97
39	461				524	96-98	98
40	470				531	96-98	93
41	478				538	96-98	93
42	487				545	97-98	98
43	496				552	98-*	93
44	504				559	98-*	98
45	513				566	98-*	99
46	522				573	98-	*
47	530				580		
48	539				587		
49	548				594		
50	557				601		
51	566				608		
52	574				615		
53	583				622		
54	591				629		
55	600				636		
56	609				643		
57	618				650		
58	626				657		
59	635				664		
60	644				672		
61					679		
62					686		
	Mean			Mean 8.3	Mean 19.2		
	SD			SD 4.9	SD 10.3		
	N			N 67	N 67		

CHOCTAW

Sixth Grade

Raw	OPT Stnd	OPT Band	OPT Mid	LC Stnd	LC Band	LC Mid	Written Stnd	Written Band	Written Mid
1	130			164			257		
2	139			182			264		
3	148			200			271		
4	157			218			273		
5	166			226			285		
6	174			254			292		
7	182			272	*- 2	*	299		
8	191			290	*- 3	1	306		
9	200			303	*- 4	2	313		
10	209			326			320		
11	218			345	1- 5	3	327		
12	226			363	2- 6	4	334		
13	234			331	3- 7	5	341		
14	243			399	4- 7	6	348		
15	252			417	5- 8	7	355		
16	261			435	6- 9	7	362		
17	270			453	7-11	8	369		
18	278			471	7-13	9	376		
19	287			489	8-16	11	383	*- 4	*
20	295			507	9-17	13	390	*- 5	1
21	303			525	11-20	16	397	*- 6	2
22	312			543	13-25	17	404	*- 7	3
23	321			562	16-32	20	411	*- 8	4
24	330			530	17-48	25	418	1- 8	5
25	339			598	20-64	32	425	2- 9	6
26	347			616	25-80	48	432	3-12	6
27	356			634	32-93	64	439	4-13	7
28	365			652	48-98	80	446	5-14	8
29	374			670	64- *	93	453	6-14	9
30	382			636	80- *	98	460	6-14	11

Fifth Grade

Raw	Written Stnd	Written Band	Written Mid	OPT Stnd	OPT Band	OPT Mid	LC Stnd	LC Band	LC Mid
1	257			130			164		
2	264		*	139			182		
3	271	*- 3	1	148			200	*- 3	2
4	273	*- 4		157			213	*- 4	3
5	285	*- 4		166			226	*- 5	3
6	292	*- 4	2	174			254	2- 6	4
7	299	*- 7	2	182			272	3- 8	5
8	306	*- 8	3	191			290	4- 9	8
9	313	1-13	4	200			308	4-10	9
10	320	2-15	5	209			326	5-11	10
11	327	2-15	6	218			345	8-14	11
12	334	2-15	8	226			363	9-20	14
13	341	3-16	11	234			331	10-24	20
14	343	3-21	14	243			399	11-26	24
15	355	4-26	15	252			417	14-30	26
16	362	6-27	15	261			435	20-34	30
17	369	9-27	16	270			453	24-37	34
18	376	14-28	17	273			471	26-39	37
19	383	14-30	25	237			489	30-44	39
20	390	15-31	26	295			507	34-51	44
21	397	15-34	27	303			525	37-56	51
22	404	16-38	28	312			543	39-62	56
23	411	21-42	30	321			562	44-69	62
24	413	26-44	31	330			530	51-73	69
25	425	27-46	33	339			598	56-82	73
26	432	27-51	37	347			616	62-90	82
27	439	28-54	40	356			634	69-93	90
28	446	30-56	43	365			652	73-95	93
29	453	31-59	44	374			670	82-98	95
30	460	34-61	48	382			636	90- *	98

Fifth Grade

Written / LC / OPT

Raw	Written Stnd	Written Band	Written Mid		OPT Stnd
31	468	38-63	53		391
32	475	42-65	55		400
33	482	44-66	58		409
34	489	46-67	60		417
35	496	50-67	62		426
36	503	54-67	64		434
37	510	56-69	66		443
38	517	59-72	68		452
39	524	61-75	68		461
40	531	63-77	68		470
41	538	65-79	68		478
42	545	67-79	70		487
43	552	67-80	73		496
44	559	67-80	76		504
45	566	68-81	78		513
46	573	69-83	79		522
47	580	72-85	79		530
48	587	75-87	80		539
49	594	77-89	80		548
50	601	79-92	82		557
51	608	79-94	84		566
52	615	80-94	86		574
53	622	80-95	88		583
54	629	81-97	90		591
55	636	83-99	93		600
56	643	85-*	94		609
57	650	87-*	94		618
58	657	89-*	95		626
59	664	92-*	93		635
60	672	94-*	*		644
61	679				
62	686				

Written: Mean 32.0, SD 14.8, N 52
LC: Mean 19.5, SD 6.8, N 52
OPT: Mean, SD, N

Sixth Grade

OPT / LC / Written

Raw	OPT Stnd	Written Stnd	Written Band	Written Mid
31	391	468	6-14	12
32	400	475	7-14	13
33	409	482	7-17	14
34	417	489	7-17	14
35	426	496	9-19	14
36	434	503	11-21	14
37	443	510	12-22	15
38	452	517	13-24	17
39	461	524	13-26	19
40	470	531	14-29	20
41	478	538	15-31	21
42	487	545	15-33	22
43	496	552	18-36	25
44	504	559	19-39	27
45	513	566	21-39	30
46	522	573	22-39	31
47	530	580	24-42	34
48	539	587	26-47	38
49	548	594	29-50	39
50	557	601	31-51	39
51	566	608	33-54	39
52	574	615	36-60	44
53	583	622	39-67	50
54	591	629	39-74	50
55	600	636	39-81	52
56	609	643	42-90	56
57	618	650	47-94	63
58	626	657	50-97	70
59	635	66?	51-99	78
60	644	672	54-*	86
61		679	60-*	93
62		686	66-*	96
			74-*	98

OPT: Mean, SD, N
LC: Mean 24.9, SD 4.4, N 65
Written: Mean 48.6, SD 12.1, N 66

ESKIMO

Fourth Grade

Raw	OPT Stnd	OPT Band	OPT Mid	LC Stnd	LC Band	LC Mid	Written Stnd	Written Band	Written Mid
1	130			164			257	*- 2	*
2	139			182			264	*- 2	1
3	148	*- 2	*	200			271	*- 3	1
4	157	*- 2	1	218			273	*- 3	1
5	166	*- 2	1	226	*- 2	*	285	1- 4	1
6	174	*- 2	1	254	*- 3	1	292	1- 5	2
7	182	*- 3	1	272	*- 4	2	299	1- 6	2
8	191	*- 3	2	290	1- 7	3	306	1- 7	3
9	200	*- 3	2	303	2-11	4	313	1- 9	3
10	209	1- 4	2	326	3-13	7	320	2-11	4
11	218	1- 4	2	345	4-15	11	327	2-14	5
12	226	1- 4	3	363	7-20	13	334	3-17	5
13	234	1- 5	3	381	11-24	15	341	3-20	6
14	243	2- 5	3	399	13-28	20	348	4-21	8
15	252	2- 6	4	417	15-32	24	355	5-23	9
16	261	2- 6	4	435	20-37	28	362	6-25	13
17	270	2- 7	4	453	24-44	32	369	7-26	15
18	278	3- 7	5	471	28-50	37	376	9-29	20
19	287	3- 8	5	489	32-56	44	383	11-33	21
20	295	3- 9	6	507	37-66	50	390	14-35	22
21	303	4-10	6	525	44-74	56	397	17-37	24
22	312	4-11	7	543	50-80	66	404	20-39	25
23	321	4-12	7	562	56-85	74	411	21-41	28
24	330	5-13	8	580	66-90	80	418	23-42	31
25	339	5-14	8	598	74-94	85	425	25-44	34
26	347	6-16	9	616	80-98	90	432	26-48	36
27	356	6-18	10	634	85-99	94	439	29-50	38
28	365	7-20	11	652	90- *	98	446	33-53	40
29	374	7-22	12	670	94- *	99	453		41
30	382	8-24	13	636	98-	*	460		

Third Grade

OPT Stnd	OPT Band	OPT Mid	LC Stnd	LC Band	LC Mid	Written Raw	Written Stnd	Written Band	Written Mid
130			164	*- 2	*	1	257	*- 3	1
139			182	*- 2	2	2	264	*- 4	2
148			200	*- 2	2	3	271	*- 5	2
157			218	1- 3	2	4	273	*- 7	3
166	*- 5	*	226	2- 4	3	5	285	*- 9	3
174	*- 6	1	254	2- 9	3	6	292	1-10	3
182	*- 6	2	272	3-14	4	7	299	2-13	4
191	*- 7	3	290	3-20	9	8	306	2-15	6
200	*- 7	3	308	4-25	14	9	313	2-17	8
209	*- 8	4	326	9-30	20	10	320	3-20	10
218	*- 9	5	345	14-36	25	11	327	4-23	12
226	1-12	6	363	20-41	30	12	334	5-27	14
234	2-15	6	381	25-45	36	13	341	7-30	17
243	3-18	7	399	30-48	41	14	343	9-35	18
252	3-19	7	417	36-56	45	15	355	10-39	21
261	4-20	8	435	41-61	48	16	362	13-43	25
270	5-21	9	453	45-68	56	17	369	15-49	28
273	6-23	12	471	48-72	61	18	376	17-52	33
287	6-24	15	489	56-76	68	19	383	19-56	38
295	7-26	18	507	61-81	72	20	390	23-59	42
303	7-30	19	525	68-85	76	21	397	27-63	46
312	8-32	20	543	72-87	81	22	404	30-66	51
321	9-33	21	562	76-90	85	23	411	35-63	54
330	12-35	23	580	81-94	87	24	413	39-70	58
339	15-36	24	598	85-96	90	25	425	43-72	61
347	18-38	26	616	87-98	94	26	432	48-74	65
356	19-40	30	634	90-99	96	27	439	52-75	67
365	20-41	32	652	94- *	98	28	446	56-77	69
374	21-43	33	670	96- *	99	29	453	59-78	72
382			636	98-	*	30	460	63-79	73

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Fourth Grade

Raw	OPT Stnd	OPT Band	OPT Mid	LC	Written Stnd	Written Band	Written Mid
31	391	8-27	14		468	35-55	44
32	400	9-32	16		475	37-57	46
33	409	10-35	18		482	39-59	49
34	417	11-36	20		489	41-61	51
35	426	12-39	22		496	42-62	54
36	434	13-43	24		503	45-64	57
37	443	14-46	27		510	48-67	58
38	452	16-48	32		517	50-70	60
39	461	18-49	35		524	52-72	62
40	470	20-52	36		531	56-73	64
41	478	22-55	39		538	58-75	66
42	487	24-59	43		545	59-77	68
43	496	27-63	46		552	61-78	70
44	504	32-66	48		559	63-80	72
45	513	35-68	49		566	65-81	74
46	522	36-70	52		573	67-82	76
47	530	39-72	55		580	70-84	78
48	539	43-76	59		587	72-86	79
49	548	46-79	63		594	73-88	80
50	557	48-84	66		601	75-89	81
51	566	49-90	68		608	77-92	82
52	574	52-94	70		615	78-96	84
53	583	55-97	72		622	80-93	86
54	591	59-98	76		629	81-98	88
55	600	63-*	79		636	82-99	90
56	609	66-*	84		643	84-*	95
57	618	68-*	90		650	86-*	97
58	626	70-*	94		657	88-*	98
59	635	72-*	97		664	89-*	*
60	644	76-*	98		672		
61					679		
62					686		
Mean	43.1			19.1	34.4		
SD	12.1			5.3	14.7		
N	69			277	232		

Third Grade

Raw	OPT Stnd	OPT Band	OPT Mid	LC	Written Stnd	Written Band	Written Mid
31	391	23-44	35		468	66-81	74
32	400	24-45	36		475	68-83	76
33	409	26-48	38		482	70-84	77
34	417	30-52	40		489	72-85	78
35	426	32-54	41		496	74-86	80
36	434	33-57	43		503	75-87	82
37	443	35-59	44		510	77-88	83
38	452	36-60	45		517	78-89	84
39	461	38-61	48		524	79-91	85
40	470	40-62	52		531	81-91	86
41	478	41-64	54		538	83-92	87
42	487	43-68	57		545	84-93	88
43	496	44-70	59		552	85-94	90
44	504	45-72	60		559	86-95	91
45	513	48-74	61		566	87-96	92
46	522	52-75	62		573	88-96	93
47	530	54-78	64		580	89-96	94
48	539	57-83	68		587	90-97	95
49	548	59-87	70		594	91-97	96
50	557	60-89	72		601	92-98	96
51	566	61-90	74		608	93-98	96
52	574	62-91	75		615	94-99	97
53	583	64-93	78		622	95-*	97
54	591	68-97	83		629	95-*	98
55	600	70-*	87		636	96-*	98
56	609	72-*	89		643	96-*	99
57	618	74-*	90		650	97-*	*
58	626	75-*	91		657		
59	635	78-*	93		664		
60	644	83-*	97		672		
61					679		
62					686		
Mean	37.8			15.3	24.4		
SD	14.6			6.06	12.5		
N	72			236	236		

ESKIMO

Sixth Grade

Raw	OPT Stnd	OPT Band	OPT Mid	LC Stnd	LC Band	LC Mid	Written Stnd	Written Band	Written Mid
1	130			164			257		
2	139			182			264		
3	148			200			271		
4	157			218			273		
5	166			226			285		
6	174			254			292		
7	182			272			299		
8	191			290			306		
9	200			303			313		
10	209			326			320		
11	218			345	*- 3	*	327	*- 2	*
12	226			363	*- 5	2	334	*- 2	1
13	234			381	*- 7	3	341	*- 3	1
14	243			399	2- 9	5	343	1- 4	2
15	252			417	3-12	7	355	1- 5	2
16	261	*- 3	*	435	5-16	9	362	1- 7	3
17	270	*- 4	1	453	7-18	12	369	1- 8	3
18	278	*- 4	1	471	9-22	16	376	2- 9	3
19	287	*- 4	2	489	12-27	18	383	2-11	4
20	295	*- 5	2	507	16-33	22	390	3-12	7
21	303	*- 5	3	525	18-40	27	397	3-13	8
22	312	*- 6	3	543	22-49	33	404	3-15	9
23	321	1- 6	4	562	27-61	40	411	4-16	11
24	330	1- 7	4	580	33-71	49	418	6-17	12
25	339	2- 8	4	598	40-82	61	425	7-18	13
26	347	2- 9	5	616	49-89	71	432		
27	356	3-10	5	634	61-95	82	439		
28	365	3-11	6	652	71-99	89	446		
29	374	4-12	6	670	82- *	95	453		
30	382	4-13	7	636	89-	99	460		

Fifth Grade

Raw	OPT Stnd	OPT Band	OPT Mid	LC Stnd	LC Band	LC Mid	Written Stnd	Written Band	Written Mid
1	130			164			257		
2	139			182			264		
3	148	*- 2	*	200			271		
4	157	*- 2	1	213			273		
5	166	*- 2	1	226			285		
6	174	*- 3	1	254	*- 3	*	292		
7	182	*- 3	1	272	*- 5	2	299		
8	191	1- 3	2	290	*- 7	3	306	*- 2	*
9	200	1- 4	2	308	2- 9	5	313	*- 2	1
10	209	1- 4	2	326	3-11	7	320	*- 3	1
11	218	1- 5	2	345	5-14	9	327	*- 3	1
12	226	2- 5	3	363	7-16	11	334	1- 4	2
13	234	2- 6	3	331	9-19	14	341	1- 4	2
14	243	2- 6	3	399	11-22	16	343	1- 5	2
15	252	2- 6	4	417	14-25	19	355	1- 6	3
16	261	3- 7	4	435	16-29	22	362	1- 7	3
17	270	3- 7	4	453	19-32	25	369	1- 9	4
18	273	4- 8	5	471	22-36	29	376	1-11	5
19	287	4- 8	5	489	25-43	32	383	2-12	6
20	295	4- 9	6	507	29-45	36	390	3-14	8
21	303	4-10	6	525	32-57	43	397	3-15	10
22	312	4-10	6	543	36-66	45	404	3-17	12
23	321	4- 9	6	562	43-73	57	411	4-19	13
24	330	4-10	7	580	45-79	66	413	5-20	14
25	339	5-11	7	598	57-87	73	425	7-22	16
26	347	5-12	7	616	66-90	79	432	9-25	18
27	356	6-13	8	634	73-96	87	439	11-27	20
28	365	6-14	8	652	79-99	90	446	12-28	21
29	374	6-15	9	670	87- *	96	453	14-29	24
30	382	7-18	10	636	90-	*	460	15-31	24

ESKIMO

Sixth Grade

OPT

Raw	Mid	Band	Stnd
31	8	4-16	391
32	9	5-19	400
33	10	5-23	409
34	11	6-26	417
35	12	6-28	426
36	13	7-30	434
37	16	8-33	443
38	19	9-37	452
39	23	10-41	461
40	26	11-44	470
41	28	12-47	478
42	30	13-53	487
43	33	16-59	496
44	37	19-62	504
45	41	23-66	513
46	44	26-70	522
47	47	28-73	530
48	53	30-76	539
49	59	33-79	548
50	62	37-83	557
51	66	41-88	566
52	70	44-93	574
53	73	47-95	583
54	76	53-98	591
55	79	59-*	600
56	83	62-*	609
57	83	66-*	618
58	93	70-*	626
59	95	73-*	635
60	98	76-*	644
61			
62			

Mean 45.9 SD 9.4 N 62

LC

Mean 22.9 SD 4.7 N 220

Written

Mid	Band	Stnd
14	8-19	468
15	9-19	475
16	11-20	482
17	12-21	489
18	13-23	496
19	15-26	503
20	16-29	510
21	17-32	517
23	18-34	524
25	19-37	531
27	19-39	538
30	20-41	545
34	21-43	552
36	23-46	559
38	26-49	566
40	28-53	573
42	32-56	580
45	34-58	587
48	37-62	594
52	39-67	601
55	41-71	608
57	43-76	615
60	46-81	622
64	48-87	629
69	53-23	636
74	56-96	643
78	58-99	650
84	62-*	657
90	67-*	664
96	72-*	672
98	75-*	679
*	81-*	686

Mean 46.4 SD 12.0 N 179

Fifth Grade

OPT

Mid	Band	Stnd
11	7-20	391
12	7-23	400
13	8-26	409
14	8-28	417
15	9-30	426
18	10-32	434
20	11-34	443
23	12-36	452
26	13-40	461
28	14-44	470
30	15-48	478
32	18-53	487
34	20-57	496
36	23-61	504
40	26-66	513
44	28-71	522
48	30-75	530
53	32-79	539
57	34-83	548
61	33-88	557
66	40-91	566
71	44-94	574
75	48-96	583
79	53-98	591
83	57-*	600
88	61-*	609
91	66-*	618
94	71-*	626
96	75-*	635
98	79-*	644

Mean 44.8 SD 12.1 N 64

LC

Mean 20.8 SD 6.0 N 236

Written

Raw	Stnd	Band	Mid
31	468	17-33	26
32	475	19-35	28
33	482	20-37	29
34	489	22-39	30
35	496	25-41	32
36	503	27-44	34
37	510	28-48	37
38	517	29-50	38
39	524	31-52	40
40	531	33-55	42
41	538	35-57	46
42	545	37-58	49
43	552	38-61	52
44	559	41-66	54
45	566	44-69	56
46	573	48-72	57
47	580	50-75	58
48	587	52-68	64
49	594	55-81	68
50	601	57-84	70
51	608	58-87	73
52	615	62-91	76
53	622	66-93	80
54	629	69-95	83
55	636	72-97	86
56	643	75-99	89
57	650	78-*	92
58	657	81-*	94
59	664	84-*	96
60	672	87-*	98
61	679	91-*	*
62	686		

Mean 41.9 SD 13.0 N 189

HOPI

Third Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	273			213			157		
5	285	*- 5	*	226			166		
6	292	*- 9	1	254			174		
7	299	*-12	2	272			182		
8	306	*-14	2	290	*- 3	*	191		
9	313	*-15	4	308	*- 7	1	200		
10	320	1-17	7	326	1- 9	3	209		
11	327	1-19	12	345	1-12	7	218		
12	334	1-21	14	363	3-18	9	226		
13	341	2-25	14	331	7-23	12	234		
14	343	5-28	16	399	9-34	13	243		
15	355	9-32	19	417	12-44	23	252		
16	362	12-35	20	435	18-49	34	261		
17	369	14-38	22	453	23-55	44	270		
18	376	15-43	27	471	34-63	49	273		
19	383	17-48	30	489	44-70	55	287		
20	390	19-52	33	507	44-70	55	295		
21	397	21-55	37	525	49-76	63	303		
22	404	25-58	40	543	55-80	70	312		
23	411	28-61	46	562	63-85	76	321		
24	418	32-63	50	580	70-92	80	330		
25	425	35-65	53	598	76-96	85	339		
26	432	39-66	56	616	80-99	92	347		
27	439	43-67	59	634	85- *	96	356		
28	446	48-69	62	652	92- *	*	365		
29	453	52-71	64	670			374		
30	460	55-73	66	636			382		

Fourth Grade

Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid	Raw
257			164			130			1
264			182			139			2
271			200			148			3
273			218			157			4
285			226			166			5
292	*- 2	*	254			174			6
299	*- 4	1	272			182			7
306	*- 5	1	290			191			8
313			303			200			9
320			326			209			10
327	*- 5	2	345	*- 4	*	218			11
334	*- 5	2	363	*- 5	2	226			12
341	1- 6	4	381	*- 8	4	234			13
348	1- 6	4	399	2-11	5	243			14
355	1- 7	6	417	4-12	8	252			15
362	1- 9	6	435	5-14	11	261			16
369	3- 9	6	453	8-17	12	270			17
376	4-11	7	471	11-22	14	278			18
383	5-12	8	489	12-31	17	287			19
390	5-13	10	507	14-42	22	295			20
397	5-15	10	525	17-50	31	303			21
404	6-16	13	543	22-59	42	312			22
411	6-18	13	562	31-70	50	321			23
418	7-21	15	580	42-79	59	330			24
425	9-23		598	50-86	70	339			25
432			616	59-93	79	347			26
439			634	70-97	86	356			27
446			652	79-99	93	365			28
453			670	86- *	97	374			29
460			636	93- *	99	382			30

HOPI

Fourth Grade

Raw	OPT Band	OPT Mid	Stnd	LC	Written Band	Written Mid	Stnd
31			391		10-24	16	468
32			400		11-24	18	475
33			409		12-25	20	482
34			417		13-26	22	489
35			426		15-29	23	496
36			434		17-31	24	503
37			443		19-32	25	510
38			452		21-34	25	517
39			461		23-37	28	524
40			470		24-39	31	531
41			478		24-41	32	538
42			487		25-44	33	545
43			496		26-49	36	552
44			504		29-53	37	559
45			513		31-57	40	566
46			522		32-59	42	573
47			530		35-61	46	580
48			539		37-64	51	587
49			548		39-67	55	594
50			557		41-71	58	601
51			566		44-77	61	608
52			574		49-82	62	615
53			583		53-86	65	622
54			591		57-88	69	629
55			600		59-9?	74	636
56			609		61-95	79	643
57			618		64-*	85	650
58			626		67-*	88	657
59			635		71-*	89	664
60			644		77-*	94	672
61					82-*	99	679
62					86-*	*	686

OPT: Mean, SD, N
LC: Mean 22.5, SD 4.4, N 85
Written: Mean 45.1, SD 12.5, N 79

Third Grade

Raw	OPT Band	OPT Mid	Stnd	LC	Written Band	Written Mid	Stnd
31			391		58-75	66	468
32			400		61-77	68	475
33			409		63-77	70	482
34			417		65-78	72	489
35			426		66-80	74	496
36			434		67-81	76	503
37			443		69-83	77	510
38			452		71-85	73	517
39			461		73-87	79	524
40			470		75-88	80	531
41			478		77-89	82	538
42			487		77-90	84	545
43			496		78-92	86	552
44			504		80-93	87	559
45			513		81-94	88	566
46			522		83-94	90	573
47			530		85-95	91	580
48			539		87-95	92	587
49			548		88-96	93	594
50			557		89-97	94	601
51			566		90-98	94	608
52			574		92-99	95	615
53			583		93-*	96	622
54			591		94-*	96	629
55			600		94-*	98	636
56			609		95-*	98	643
57			618		95-*	*	650
58			626				657
59			635				664
60			644				672
61							679
62							686

OPT: Mean, SD, N
LC: Mean 19.2, SD 4.8, N 107
Written: Mean 26.8, SD 12.6, N 109

HOPI

Sixth Grade

Raw	OPT Band	OPT Mid	OPT Stnd	LC Stnd	LC Band	LC Mid	Written Stnd	Written Band	Written Mid
1			130	164			257		
2			139	182			264		
3			148	200			271		
4			157	218			273		
5			166	226			285		
6			174	254			292		
7			182	272			299		
8			191	290			306		
9			200	303			313		
10			209	326			320		
11			218	345			327		
12			226	363			334		
13			234	381			341		
14			243	399			343		
15			252	417			355		
16			261	435	*- 4	*	362	*- 6	*
17			270	453	*- 6	2	369	*- 7	2
18			278	471	*- 9	4	376	*- 8	3
19			287	489	2-12	6	383	*- 9	4
20			295	507	4-16	9	390	*- 9	5
21			303	525	6-22	12	397	1-10	6
22			312	543	9-32	16	404	2-10	7
23			321	562	12-45	22	411	4-11	8
24			330	580	16-61	32	418	5-11	9
25			339	598	22-74	45	425	6-11	9
26			347	616	32-86	61	432		
27			356	634	45-97	74	439		
28			365	652	61- *	86	446		
29			374	670	74- *	97	453		
30			382	636			460		

Fifth Grade

Raw	Written Band	Written Mid	Written Stnd	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1			257	164			130		
2			264	182			139		
3			271	200			148		
4			273	213			157		
5			285	226			166		
6			292	254			174		
7			299	272			182		
8			306	290			191		
9			313	308			200		
10			320	326			209		
11			327	345			218		
12			334	363			226		
13			341	331			234		
14			343	399			243		
15			355	417			252		
16			362	435	*- 4	*	261		
17			369	453	*- 8	2	270		
18			376	471	*-11	4	273		
19			383	489	2-18	8	287		
20			390	507	4-23	11	295		
21			397	525	8-29	18	303		
22			404	543	11-36	23	312		
23			411	562	18-40	29	321		
24			413	580	23-52	36	330		
25			425	598	29-67	40	339		
26			432	616	36-82	52	347		
27			439	634	40-93	67	356		
28			446	652	52-98	82	365		
29			453	670	67-99	93	374		
30			460	636	82- *	98	382		

HOPI

Fifth Grade

Raw	Written Stnd	Written Band	Written Mid	LC	OPT Stnd	OPT Band	OPT Mid
31	468				391		
32	475				400		
33	482	*- 7	*		409		
34	489	*- 8	3		417		
35	496	*- 9	4		426		
36	503	*-12	5		434		
37	510	*-15	6		443		
38	517	3-18	8		452		
39	524	5-21	9		461		
40	531	5-23	11		470		
41	538	6-25	13		478		
42	545	7-27	16		487		
43	552	8-31	19		496		
44	559	9-34	21		504		
45	566	12-37	24		513		
46	573	15-45	26		522		
47	580	17-53	30		530		
48	587	20-59	33		539		
49	594	23-61	35		548		
50	601	25-62	40		557		
51	608	28-64	49		566		
52	615	31-68	57		574		
53	622	34-75	61		583		
54	629	37-81	62		591		
55	636	45-86	64		600		
56	643	53-91	65		609		
57	650	59-97	70		618		
58	657	61-*	78		626		
59	664	62-*	83		635		
60	672	64-*	88		644		
61	679	68-*	94				
62	686	74-*	*				

Written: Mean 51.0, SD 7.9, N 56
LC: Mean 24.8, SD 3.5, N 57
OPT: Mean __, SD __, N __

Sixth Grade

Written Stnd	Written Band	Written Mid	LC	OPT Stnd	OPT Band	OPT Mid	Raw
468	7-12	10		391			31
475	8-12	10		400			32
482	9-12	11		409			33
489	9-13	11		417			34
496	10-13	11		426			35
503	10-14	12		434			36
510	11-14	12		443			37
517	11-15	12		452			38
524	11-16	13		461			39
531	12-17	13		470			40
538	12-18	14		478			41
545	12-20	14		487			42
552	13-21	15		496			43
559	13-22	16		504			44
566	14-23	17		513			45
573	14-25	18		522			46
580	15-29	20		530			47
587	16-35	21		539			48
594	17-40	22		548			49
601	18-45	24		557			50
608	19-50	27		566			51
615	20-65	33		574			52
622	22-77	39		583			53
629	23-81	42		591			54
636	25-84	48		600			55
643	29-89	53		609			56
650	35-94	76		618			57
657	40-96	79		626			58
664	45- *	82		635			59
672	50- *	86		644			60
679	57- *	92					61
686	78- *	96					62

Written: Mean 51.7, SD 11.1, N 75
LC: Mean 25.9, SD 3.0, N 81
OPT: Mean __, SD __, N __

NAVAJO

Fourth Grade

Raw	OPT Stnd	OPT Band	OPT Mid	LC Stnd	LC Band	LC Mid	Written Stnd	Written Band	Written Mid
1	130			164			257		
2	139			182			264		
3	148			200			271		
4	157			218			273		
5	166			226			285	*-3	
6	174	*-3	*	254	*-3	*	292	*-4	1
7	182	*-3	1	272	*-5	2	299	*-5	1
8	191	*-3	1	290	*-8	3	306	*-6	2
9	200	*-3	1	303	2-12	5	313	*-8	2
10	209	*-4	2	326	3-16	8	320	*-9	4
11	218	*-5	2	345	5-21	12	327	1-10	5
12	226	*-6	3	363	8-26	16	334	2-13	5
13	234	*-7	3	381	12-31	21	341	2-16	7
14	243	1-8	3	399	16-36	26	348	3-20	8
15	252	1-9	3	417	21-43	31	355	4-23	10
16	261	1-10	4	435	26-50	36	362	5-27	12
17	270	2-10	5	453	31-56	43	369	6-32	15
18	278	3-12	6	471	36-63	50	376	8-36	18
19	287	3-12	7	489	43-70	56	383	9-41	21
20	295	3-14	8	507	50-76	63	390	11-44	25
21	303	3-15	9	525	56-82	70	397	13-48	30
22	312	4-16	10	543	63-87	76	404	20-51	35
23	321	5-18	10	562	70-91	82	411	23-54	39
24	330	6-19	12	580	76-95	87	418	23-58	43
25	339	7-20	12	598	82-97	91	425	27-60	46
26	347	8-22	14	616	87-98	95	432	32-63	50
27	356	9-25	15	634	91-99	97	439	37-65	52
28	365	10-26	16	652	95-*	98	446	41-67	56
29	374	10-27	18	670	97-*	*	453	45-70	60
30	382	12-29	19	636	98-	*	460	48-72	62

Third Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130	*-3	*
2	264	*-5	*	182	*-2	*	139	*-3	2
3	271	*-6	1	200	*-2	1	148	*-4	2
4	273	*-8	1	213	*-4	2	157	*-5	2
5	285	*-8	3	226	1-6	2	166	*-6	2
6	292	*-10	3	254	2-9	4	174	*-6	3
7	299	*-12	4	272	2-14	6	182	*-7	3
8	306	1-14	6	290	4-19	9	191	1-9	3
9	313	2-16	7	303	6-25	14	200	2-11	4
10	320	3-18	9	326	9-32	19	209	2-12	5
11	327	4-22	10	345	14-38	25	213	3-14	6
12	334	5-25	14	363	19-45	32	226	3-15	6
13	341	6-30	15	381	25-54	38	234	3-17	7
14	348	8-36	18	399	32-64	45	243	3-18	9
15	355	9-40	20	417	38-63	54	252	4-20	11
16	362	12-49	24	435	45-74	62	261	5-21	12
17	369	14-55	29	453	54-80	68	270	6-23	14
18	376	16-61	33	471	62-84	74	273	6-24	15
19	383	19-66	38	489	68-88	80	237	7-26	17
20	390	23-72	44	507	74-91	84	295	9-28	18
21	397	26-76	52	525	80-94	88	303	11-29	20
22	404	30-79	58	543	84-96	91	312	12-31	21
23	411	36-81	64	562	88-98	94	321	14-34	23
24	413	40-83	69	580	91-*	96	330	15-35	24
25	425	47-85	74	598	94-*	98	339	17-37	26
26	432	55-87	78	616	96-	*	347	18-39	28
27	439	61-89	80	634	98-	*	356	20-40	29
28	446	68-90	82	652	99-	*	365	22-42	31
29	453	71-92	84	670			374	23-44	34
30	460	75-93	86	636			332	24-46	35

NAVAJO

Fourth Grade

Stnd	OPT Band	OPT Mid	Raw
391	12-32	20	31
400	14-35	22	32
409	15-37	25	33
417	16-39	26	34
426	18-43	27	35
434	19-46	29	36
443	20-50	32	37
452	22-54	35	38
461	25-58	37	39
470	26-62	39	40
478	27-67	43	41
487	30-70	46	42
496	32-75	50	43
504	35-78	54	44
513	37-82	58	45
522	39-84	62	46
530	43-86	67	47
539	46-88	71	48
548	50-91	75	49
557	54-93	78	50
566	58-95	82	51
574	62-96	84	52
583	67-97	86	53
591	70-99	88	54
600	75-*	91	55
609	78-	93	56
618	82-	95	57
626	84-	96	58
635	86-	97	59
644	91-	99	60
			61
			62

OPT: Mean 40.5, SD 12.1, N 475

LC: Mean 17.8, SD 5.0, N 1,483

Written (Fourth Grade)

Stnd	Band	Mid
468	51-74	64
475	54-74	67
482	53-75	69
489	61-76	71
496	63-78	73
503	65-81	74
510	68-83	75
517	70-85	76
524	72-86	76
531	74-87	80
538	74-88	81
545	75-89	85
552	76-91	86
559	78-92	87
566	81-93	88
573	84-94	89
580	85-94	90
587	86-95	92
594	87-96	92
601	89-97	94
608	90-98	94
615	91-98	95
622	92-93	96
629	93-98	96
636	94-99	97
643	94-*	98
650	95-*	99
657	96-*	99
664	97-*	
672	98-*	*
679	98-*	*
686	98-*	*

Written: Mean 28.6, SD 12.1, N 1,497

Third Grade

OPT (Third Grade)

Stnd	Band	Mid
391	26-49	37
400	28-52	39
409	29-56	40
417	31-59	42
426	34-62	44
434	35-66	46
443	37-68	49
452	39-70	52
461	40-72	56
470	42-76	59
478	43-78	62
487	46-82	66
496	49-86	68
504	52-88	70
513	56-91	72
522	59-92	76
530	62-94	78
539	66-95	82
548	68-96	86
557	70-97	88
566	72-98	91
574	76-99	92
583	78-99	94
591	82-*	95
600	86-*	96
609	88-*	97
618	91-*	98
626	92-*	98
635	94-*	99
644	95-*	*

OPT: Mean 34.8, SD 13.8, N 451

LC: Mean 15.1, SD 5.2, N 1,357

Written (Third Grade)

Raw	Stnd	Band	Mid
31	468	79-93	88
32	475	81-94	89
33	482	83-94	92
34	489	85-94	92
35	496	87-95	93
36	503	89-95	94
37	510	90-96	94
38	517	92-96	94
39	524	93-96	95
40	531	93-97	96
41	538	94-97	96
42	545	94-97	96
43	552	94-98	97
44	559	95-98	97
45	566	95-98	97
46	573	96-98	98
47	580	96-98	98
48	587	96-99	98
49	594	97-*	98
50	601	97-*	99
51	608	97-*	99
52	615	98-	*
53	622	98-	*
54	629	98-	*
55	636	99-	*
56	643		
57	650		
58	657		
59	664		
60	672		
61	679		
62	686		

Written: Mean 21.5, SD 9.2, N 1,370

NAVAJO

Sixth Grade

Raw	OPT Stnd	OPT Band	OPT Mid	LC Stnd	LC Band	LC Mid	Written Stnd	Written Band	Written Mid
1	130			164			257		
2	139			182			264		
3	148			200			271		
4	157			218			273		
5	166			226			285		
6	174			254			292		
7	182	*- 1	*	272			299		
8	191	*- 2	1	290			306		
9	200	*- 2	1	303			313		
10	209	*- 2	1	326	*- 3	*	320		
11	218	*- 2	1	345	*- 5	2	327	*- 4	*
12	226	*- 3	1	363	*- 7	3	334	*- 5	1
13	234	1- 4	1	381	2- 9	5	341	*- 6	2
14	243	1- 4	1	399	3-12	7	348	*- 8	3
15	252	1- 4	2	417	5-15	9	355	*- 9	4
16	261	1- 4	2	435	7-19	12	362	*-10	5
17	270	1- 5	2	453	9-24	15	369	2-13	6
18	278	1- 5	3	471	12-30	19	376	2-14	7
19	287	1- 5	4	489	15-36	24	383	3-16	9
20	295	1- 5	4	507	19-43	30	390	4-17	10
21	303	2- 5	4	525	24-52	36	397	5-19	12
22	312	2- 6	4	543	30-61	43	404	6-21	13
23	321	2- 7	5	562	36-70	52	411	8-23	15
24	330	3- 7	5	580	43-80	61	418	9-25	17
25	339	4- 8	5	598	52-88	70	425	11-27	18
26	347	4- 9	5	616	61-94	80	432	12-29	21
27	356	4-10	5	634	70-98	83	439	14-32	22
28	365	4-10	6	652	80- *	94	446	15-34	24
29	374	5-12	7	670	88- *	98	453		
30	382	5-14	7	636	94- *	*	460		

Fifth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	273			213			157		
5	275			226			166		
6	294		*	254			174	*- 1	*
7	299	*- 4	1	272	*- 3	*	182	*- 1	1
8	306	*- 5	2	290	*- 4	2	191	*- 2	1
9	313	*- 7	2	303	*- 6	3	200	*- 2	1
10	320	*- 9	3	326	2- 8	4	209	*- 3	1
11	327	*-11	4	345	3-11	6	213	*- 3	1
12	334	1-13	6	363	4-14	8	226	*- 3	1
13	341	1-15	8	381	6-18	11	234	1- 4	1
14	343	2-18	10	399	8-23	14	243	1- 4	2
15	355	3-20	12	417	11-28	18	252	1- 5	2
16	362	4-24	14	435	14-32	23	261	1- 6	3
17	369	5-26	17	453	18-38	28	270	1- 6	3
18	376	6-28	20	471	23-44	32	273	1- 7	3
19	383	8-32	22	489	23-52	38	287	1- 8	4
20	390	9-34	25	507	32-60	44	295	2-10	4
21	397	12-36	28	525	33-67	52	303	2-11	5
22	404	15-40	30	543	44-75	60	312	3-12	6
23	411	17-41	33	562	52-82	67	321	3-13	6
24	418	20-44	36	580	60-88	75	330	3-13	7
25	425	24-46	40	598	67-94	82	339	4-14	8
26	432	26-43		616	75-97	88	347	4-16	10
27	439	20-44		634	82-99	94	356	5-18	11
28	446	24-46		652	83- *	97	365	6-19	12
29	453	26-48		670	94- *	99	374	6-20	13
30	460	28-50		636	97- *	*	332	7-22	13

iiAVAJO

Sixth Grade

	OPT Stnd	OPT Band	OPT Mid	Raw
	391	5-16	3	31
	400	5-18	9	32
	409	5-20	10	33
	417	6-22	10	34
	426	7-24	12	35
	434	7-26	14	36
	443	8-28	16	37
	452	9-31	18	38
	461	10-34	20	39
	470	10-38	22	40
	478	12-42	24	41
	487	14-45	26	42
	496	16-49	28	43
	504	18-54	31	44
	513	20-59	34	45
	522	22-65	38	46
	530	24-69	42	47
	539	26-74	45	48
	548	28-80	49	49
	557	31-84	54	50
	566	34-87	59	51
	574	38-91	65	52
	583	42-94	69	53
	591	45-98	74	54
	600	49-*	80	55
	609	54-*	84	56
	618	59-*	87	57
	626	65-*	91	58
	635	69-*	94	59
	644	74-*	98	60
				61
				62

OPT: Mean 46.7, SD 10.6, N 418

LC: Mean 21.7, SD 4.7, N 1,300

Written Stnd	Written Band	Written Mid
468	17-36	26
475	19-38	28
482	21-40	31
489	23-41	33
496	25-43	35
503	27-46	38
510	29-48	39
517	32-51	41
524	34-53	43
531	36-55	45
538	39-58	47
545	40-60	50
552	41-63	52
559	43-66	54
566	46-68	57
573	48-71	59
580	51-74	62
587	53-76	65
594	55-80	67
601	58-82	70
608	60-86	72
615	63-88	75
622	66-91	78
629	68-93	81
636	71-95	83
643	74-97	87
650	76-99	90
657	80-*	91
664	82-*	95
672	86-*	96
679	89-*	98
686	91-*	99

Written: Mean 40.8, SD 13.0, N 1,302

Fifth Grade

OPT Stnd	OPT Band	OPT Mid
391	8-26	14
400	10-28	16
409	11-30	18
417	12-33	19
426	13-36	20
434	13-39	22
443	14-41	26
452	16-44	28
461	18-48	30
470	19-52	33
478	20-56	36
487	22-62	39
496	26-67	41
504	28-70	44
513	30-73	48
522	33-74	52
530	36-80	56
539	39-84	62
548	41-87	67
557	44-90	70
566	48-92	73
574	52-96	74
583	56-98	80
591	62-99	84
600	67-*	87
609	70-*	90
618	73-*	92
626	74-*	96
635	80-*	98
644	84-*	99

OPT: Mean 43.0, SD 11.4, N 440

LC: Mean 20.0, SD 5.3, N 1,326

Raw	Written Stnd	Written Band	Written Mid
31	468	32-52	42
32	475	34-54	46
33	482	36-56	48
34	489	41-58	49
35	496	44-61	51
36	503	45-63	53
37	510	46-65	55
38	517	48-68	57
39	524	50-70	60
40	531	52-72	62
41	538	55-74	64
42	545	56-77	67
43	552	58-79	69
44	559	61-81	71
45	566	64-83	74
46	573	65-85	76
47	580	68-87	78
48	587	70-89	80
49	594	72-90	82
50	601	75-92	84
51	608	77-94	86
52	615	79-95	88
53	622	81-96	90
54	629	83-98	92
55	636	85-98	93
56	643	87-99	94
57	650	89-*	96
58	657	90-*	97
59	664	92-*	98
60	672	94-*	99
61	679	95-*	*
62	686	96-*	*

Written: Mean 35.1, SD 12.9, N 1,339

SECTION III

Sections I and II of this interpretive manual consider the use of test results in decision making and provide information necessary to interpret scores. Section III provides a discussion of test technique selection and item validation studies, and also gives information on the calculation of the statistical data.

Test Technique Selection

The basic goals of the test development project were formulated in the summer of 1968, when a series of planning meetings, attended by ELTP staff, BIA staff and project consultants were held. At these meetings it was decided that primary importance should be given to developing a test of English proficiency for grades four, five and six. These grades were selected on the basis of data presented at the meetings about student motivation and attendance patterns in BIA schools, namely: interest in school begins dropping by fourth grade, there are motivation problems by sixth grade, and a 20 to 30 percent drop-out rate by eighth grade.

The goal of the development effort was to be a test of English proficiency which assessed skills in both production and perception of English, and which would be "culture fair." On the basis of potential content validity various techniques were suggested to be used in eliciting production and perception responses exhibiting those skills considered necessary for speaking and understanding English.

The following techniques were evaluated as to how well they could assess English production: description of pictures to a rater, reading a paragraph, telling a story suggested by a series of pictures, role playing, interviewing, description of an object presented for manipulation, imitation of given sentences, transformation of given sentences into their corresponding passives or negatives, word association following direction, and self-ratings. From these techniques, picture description, repetition and transformation of given sentences were selected for field testing.

It was decided to examine the perception of English by using both written and auditory (spoken) stimuli. Techniques considered for use in written form included: question and short answer, sentence completion, combining two simple sentences into a complex one, breaking a complex sentence into two simple ones, selecting transformations of a given sentence, and correctly ordering sentences presented in scrambled form. The format finally chosen for field testing of written perception consisted of multiple choice items of the short answer and sentence completion type. The items for the written form were to be written to completely cover a list of grammatical categories selected by linguists as being basic to communication in English.

Techniques considered for use in spoken form for examining perception of English were: distinguishing minimal phonetic pairs, identifying a picture described by a test sentence, inferring where a presented conversation took place, and recalling information presented in a conversation. All of these except minimal pair discrimination were selected for field testing.

It was also decided that, along with field testing of techniques, external criteria adequacy and validity studies should be carried out. Field testing attempted to find out (1) what kinds of things people respond to and (2) what kinds of things yield responses that have a varying range. For external criteria adequacy, other measures that might show English ability, i.e., achievement test scores, IQ scores, attendance records, grades, reading rates, teacher ratings and self-image ratings, were suggested. External criteria adequacy studies were necessary to answer the question how well do these other measures reflect knowledge of English. Measures finally selected were grades, teacher ratings and achievement test scores. Validity studies were then necessary to find what, if any, correlation existed between scores from the new techniques and ratings from the external criteria.

Field testing of the selected new techniques was carried out both in BIA schools with native speakers of Amerindian languages, and in Los Angeles schools with native speakers of English. Not only the target grades, four, five and six, but also grades three and seven were tested, to provide bracketting information about proficiency. At the end of the first year techniques had been validated through field testing, and through studies to determine correlations of test scores within each of the prospective techniques. A summary of the figures from the correlation studies has been given in Table 3.

Once techniques had been validated, it remained to improve the consistency of the individual test sections by subjecting each technique to item analysis for item validation. Schools participating in item validation studies in Fall 1969 and Spring 1970 are listed in Appendix I. The written items for the English structure section, were validated in two ways, against total test score and against a subcriterion score. The subcriterion score was the number correct on 16 items selected on the basis of relatively high discrimination scores among Amerindian children speaking English as a first language. Table 12 provides a listing of the categorization of the subcriterion items, and the difference in discrimination power among the two groups. The discrimination scores using total test scores and subcriterion scores were combined with item difficulty data to produce indices of item validity and item reliability, using the formulas: i_r = index of reliability = $r_{g\,t}\,s_g$; i_v = index of validity = $r_{g\,c}\,s_g$; where $r_{g\,t}$ is the correlation of item score with total test score, $r_{g\,c}$ is the correlation of item score with subcriterion score and s_g is the item standard deviation, equal to $\sqrt{pg}$.

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The indices of validity and reliability were used in item selection follow-
ing a technique outlined by Gullicksen (1950, p. 383), in which items are
chosen on the basis of high index of validity and the ratio of ir/iv.

In setting up the two parallel forms of the English structure section,
items were paired according to both their index of validity and index of
reliability, so that for every item assigned to Form A there was an equally
valid and reliable item assigned to Form B. From 256 items representing
the 86 grammatical categories initially chosen as essential to proficiency
in English 124 items representing 29 grammatical categories were finally
selected.

TABLE 12

Categorization of Subcriterial Items

Verb: Auxiliary, replacive, "are too"	.25
Conjunction: Subordinate, "so"	.25
Modifier: Comparative, "different from"	.24
Nominal: Derived noun, "friendship"	.22
Conjunction: Subordinate, "so"	.22
Modifier: Comparative, "the more. . .the. . ."	.21
Modifier: Comparative, "the more. . .the. . ."	.19
Verb: Auxiliary, replacive, "do so"	.17
Modifier: Negative word order, "did not"	.17
Verb: Separable, "write down"	.16
Conjunction: Subordinate, "wish that"	.16
Modifier: Comparative, "as. . .as. . ."	.14
Nominal: Possessive pronoun, "you. . .your"	.13
Nominal: Relative pronoun, "place. . .where"	.12
Verb: Agreement with adverb, "before. . .ing"	.12
Modifier: Comparative	.11
Median $\phi_1 - \phi_2$	.17
Mean $\phi_1 - \phi_2$	.18

The listening comprehension items were validated in two separate
sections: a picture section and a conversation section. Picture items
were selected on the basis of item correlation with total score on the
picture section. Conversation items were selected on the basis of item
correlation with total score on the conversation section. Of 19 picture
items, 14 were selected; of 23 conversation items, 16 were selected for
inclusion in the final LC section which contains both picture and con-
versation items.

The present scoring system for the Oral Production makes adequate description of the target picture a requirement for accepting the response for scoring. Once the response is judged by the examiner to be an adequate description of the target picture, it is then evaluated for grammatical correctness. For each item one or two grammatical aspects have been selected for evaluation, and correctness is determined for these aspects only. Making adequate description a preliminary criterion, and picking the particular grammatical aspects to be scored for each item were the final result of several stages of development.

In the initial stages, all responses were tape recorded and analyzed later. The first scoring system rated plus or minus on four factors : intelligibility--whether the response could be understood; description--whether the response adequately described the target picture; grammaticality--whether there were any grammatical errors in the response; vocabulary--whether there were any vocabulary errors. Sub-scores on these factors were included in the correlation study of techniques and criteria. Results from the study showed that only description and grammaticality were consistently positively correlated with other measures of English proficiency. The correlations were strongest with grammaticality. As a result, in the second stage of the development of a scoring system for the OP section, an expanded classificatory system was worked out which allowed errors to be broken down into four categories: grammar, pronunciation, description and vocabulary. The description and vocabulary categories were not further broken down, the grammar category was divided into errors concerning nouns, errors concerning verbs, and errors of complexity. Errors concerning nouns were further divided as number, gender, absence of noun, determiner and other. Errors concerning verbs were further divided into errors of number, absence of verb, tense and prepositions. Errors in complexity were those where the two required ideas were combined through simple conjunction (using "and"), were given in two simple sentences, or were coupled with "when". Pronunciation errors were broken into errors concerning consonants, vowels and errors of fluency. Fluency was defined as starting the response again, two or more times. The matrix used is given in Table 13.

TABLE 13

Grammar										Pronunciation			Description	Vocabulary
Nouns				Verbs				Complexity			Vowels	Consonants	Fluency		
Number	Absence	Determiner	Preposition	Number	Absence	Tense	Preposition	Simple conj.	Simple sentences	Conj. with "when"					

Five hundred children were tape recorded taking the OP test in Fall 1970. The tapes were returned and scored using the matrix. The results were submitted for standard item analysis. On the basis of the results it was decided to make adequate description an absolute criterion for accepting a response for further evaluation. Once a response is accepted as being adequately descriptive, it is evaluated only as to whether it contains what was the most powerfully discriminating error for that set of pictures. The last eight pictures, are scored for complexity, in addition to the category selected by the item analysis procedure. After the errors to be scored were selected, they were weighted from one to four points per item. The weights were assigned on the basis of the biserial correlation coefficient of item score with OP test score. The biserial correlation was computed on only the top and bottom 27 percent of each group, with the middle 46 percent of each group omitted.

Because of the weighting of the items, the score on the OP section is not a straight linear function of the number of items on which no error was made. Since standard formulas giving estimates of test reliability require that score be a linear function of number of items answered correctly, and since the question of scorer reliability arises with a test of production, the reliability figure reported for the OP section does not have the same meaning, as the figure for the ES and LC sections. In an attempt to account for both internal consistency and scorer reliability, the geometric mean of an internal consistency estimate (KR-20) and a scorer reliability figure (product-moment) was taken. The KR-20 estimate is .728 the figure from the rater reliability study is .755. Their geometric mean, .74, was used to compute the SE_m for the OP section.

The KR-20 formula was used as the source for the internal consistency figure used to calculate the geometric mean, even though one of the assumptions for the use of KR-20 (linearity of score and number of items correct) was violated. An estimate of the magnitude of error resulting from this violation must be attempted. Gullicksen (1950, p. 326) gives a formula developed by Wicks which approximates the mean value of the correlation

between two weighted composites, $R_{x_v \cdot x_w} = 1 - \frac{1}{2\bar{r}K}[(\frac{S_v}{M_v})^2 + (\frac{S_w}{M_w})^2$ $\bar{R}_{x_v \cdot x_w}$

is the mean value of the correlation between the weighted composites, $\bar{r}$ is

the average intercorrelation between the variables being combined, $\frac{\Sigma r_{gh}}{n}$.

K is the number of variables being combined. M_v and M_w are the means of

the two systems weights, and S_v and S_w are the standard deviations of the

two systems of weights. For the unweighted case $M_v = 1$ and $S_v = 0$. If

both are unweighted $\bar{R}$ becomes 1. The question is how much does the set of

weights used with the OP section change this value. The mean of the OP

weights is 2.86 and the SD is 3.06. So with the OP weights $\bar{R}$ becomes

$1 - \frac{1.14}{2\bar{r}K}$. Since there are 21 items, this becomes $1 - \frac{.027}{\bar{r}}$. Even if $\bar{r}$

were as low as 0.3, $\bar{R}$ would still be 1 - .09 or .91.

The inter-rater reliability figure is based on the correlation of total scores on the OP section. Four judges rated each of five subjects twice, and four judges rated each of ten subjects once, for a total of 200 pairs of ratings. The resultant figure of .755 thus reflects both inter and intra-judge reliability.

Test Inter-Correlation

Inter-correlations among parts of the test are as given in Table 14.

TABLE 14

Inter-Correlations of Sections of TOPESL

GROUP	ES/LC	ES/OP	LC/OP
Choctaw	.71	.45	.47
Eskimo	.56	.51	.40
Hopi	.55	.53	.42
Navajo	.53	.51	.43
Combined groups	.56	.50	.43

Parallel Forms Data

Five hundred and two students took both Forms A and B of the ES section. All groups took the second form within five days of taking the first. Exactly half had Form A first and half had Form B first. The correlation with A first, $r_{A B}$ was .890, the correlation with B first, $r_{B A}$ was .900. Mean raw score on Form A 35.4, Form B 34.8. Standard deviation of Form A was 13.7, the standard deviation of Form B, 13.3.

Combined Scores for Forms A and B of the ES Section

A preliminary sample of 538 persons, of whom 269 took Form A, and 269 Form B, was drawn to determine if the population mean for Form A was different than Form B. The means, SD's and critical ratios for the sample were as follows:

	M	SD
Form A	34.84	16.28
Form B	33.70	15.80
Difference	1.14	.48
Critical Ratio	.83	.49
Probability	.40	.60

On the basis of this sample it was concluded that the population means and SD's for Form A and B were not different. This conclusion was born out by correlation information on the total norms sample of 6,771. The correlation of ES score with form was + .003.

Speededness

Speededness data were collected only for the ES section of TOPESL as a format for the LC and OP sections precludes any strong speededness effects. Percentages of persons reaching item 46 (3/4 finished), and 62 (end of test) are indicated in Table 15. Figures are based on the item analysis sample of 795 persons.

TABLE 15

	% Reaching Item Number			
	Form A		Form B	
Group	#46	#62	#46	#62
Choctaw	.47	.31	.64	.33
Eskimo	.89	.68	.88	.74
Hopi	.98	.94	.98	.93
Navajo	.80	.66	.83	.55
Combined groups	.81	.66	.84	.62

Item Statistics

Item statistics based on the item analysis sample for combined groups are presented in Tables 16 and 17. Reported are p, p', r_{pb}, and item categorization for each item on the written test. Tables 18 and 19 give p and p' for individual language groups.

Research with TOPESL

Subsidiary information collected during the norming administration included data on school size, school accessibility, English contact, sex differences, and grade and age phenomena. Correlations of English contact with scores, and of school size with scores given in Section II of the manual, in Tables 3 and 10.

No significant correlations were found for accessibility. Sex data are available for the Navajos only. These are reported in Table 16.

The relative influence of grade and age on section scores can be seen in Table 17. Though there is a positive correlation between both age and grade, when grade is partialed out of the age-score correlations, they become strongly negative, indicating that within the same grade, older children tend not to do as well as younger ones.

TABLE 16

Correlation of Sex and Section Scores for Navajo Students

	ES			LC			OP		
Grade	r	SD	N	r	SD	N	r	SD	N
4	.16**	12.2	1,497	.03^{ns}	5.0	1,483	.13**	13.2	475
5	.18**	13.1	1,339	.06^{ns}	5.7	1,327	.05^{ns}	11.4	440
6	.15**	13.1	1,302	-.03^{ns}	4.9	1,300	.11*	10.7	418

TABLE 17

Correlations of Age, Grade and Age--Grade Partialed Out
With TOPESL Section Scores

Choctaw 4,5,6	ES	LC	OP	M	SD
Age	.26	.12	.32	11.0	1.3
Grade	.50	.04	.51	4.9	.9
Age (Grade Out)	-.17	-.12	-.07		
Eskimo 4,5,6					
Age	-.04	.01	-.23	11.0	1.3
Grade	.36	.23	.11	4.9	.8
Age (Grade Out)	-.41	-.20	-.42		
Hopi 4,5,6					
Age	.10	.21	.08	10.7	1.2
Grade	.27	.35	.31	5.0	.9
Age (Grade Out)	-.18	-.13	-.28		
Navajo 4					
Age (Grade Out)	-.04	-.02	-.06	10.4	1.0
Navajo 5					
Age (Grade Out)	-.09	-.07	-.13	11.4	.9
Navajo 6					
Age (Grade Out)	-.17	-.15	-.25	12.4	.9

APPENDIX I

BIA Schools

Barrow Day School
Barrow, Alaska
F 68, Sp 69, F 69

Chinle Boarding School
Chinle, Arizona
F 69, Sp 70

Choctaw Central School
Philadelphia, Mississippi
F 68, Sp 69, F 69

Chuska Boarding School (Navajo)
Tohatchi, New Mexico
Sp 69

Hopi Day School
Oraibi, Arizona
F 68, Sp 69, Sp 70

Leupp Boarding School (Navajo)
Leupp, Arizona
F 69

Many Farms Elementary (Navajo)
Chinle, Arizona
F 69

Oglala Community School
Pine Ridge, South Dakota
F 68, Sp 69

Salt River Day School (Pima)
Salt River, Arizona
Su 68

Los Angeles Schools

Beethoven Street School
Los Angeles, California
Su 69

Harrison Street School
Los Angeles, California
Su 68

Richland Avenue School
Los Angeles, California
Su 68

San Jose Street School
Los Angeles, California
Sp 68

F = Fall   Sp = Spring   Su = Summer

APPENDIX II

CHOCTAW

<u>Mississippi</u>

Conehatta Boarding School
Conehatta, Mississippi 39057

Choctaw Central Boarding School
Philadelphia, Mississippi 39350

ESKIMO

<u>Alaska</u>

Akiachak Day School
Akiachak, Alaska 99551

Barrow Day School
Barrow, Alaska 99723

Brevig Mission Day School
Brevig Mission, Alaska 99785

Chevak Day School
Chevak, Alaska 99563

Chifornak Day School
Chifornak, Alaska 99561

Elim Day School
Elim, Alaska 99739

Gambell Day School
Gambell, Alaska 99742

Golovin Day School
Golovin, Alaska 99762

Hooper Bay Day School
Hooper Bay, Alaska 99604

Kalskag Day School
Kalskag, Alaska 99607

Kasigluk Day School
Kasigluk, Alaska 99609

Kiana Day School
Kiana, Alaska 99749

Kotlik Day School
Kotlik, Alaska 99620

Kotzebue Day School
Kotzebue, Alaska 99752

Mountain Village Day School
Mountain Village, Alaska 99632

Napakiak Day School
Napakiak, Alaska 99634

Nunapitchuk Day School
Nunapitchuk, Alaska 99641

St. Michael Day School
St. Michael, Alaska 99769

Savoonga Day School
Savoonga, Alaska 99769

Shaktoolik Day School
Shaktoolik, Alaska 99771

Stebbins Day School
Stebbins, Alaska 99671

Tuntutuliak Day School
Tuntutuliak, Alaska 99680

Unalakleet Day School
Unalakleet, Alaska 99684

APPENDIX II (cont.)

HOPI

Arizona

Hopi Day School
Oraibi, Arizona 86039

Polacca Day School
Polacca, Arizona 86042

Second Mesa Day School
Second Mesa, Arizona 86043

NAVAJO

Arizona

Chinle Boarding School
Chinle, Arizona 86503

Chrystal Boarding School
Fort Defiance, Arizona 87504

Denehotso Boarding School
Kayenta, Arizona 86033

Dilcon Boarding School
Winslow, Arizona 86047

Greasewood Boarding School
Ganado, Arizona 86505

Kaibeto Boarding School
Tonalea, Arizona 86044

Kayenta Boarding School
Kayenta, Arizona 86033

Leupp Boarding School
Leupp, Arizona 86035

Lukachukai Boarding School
Lukachukai, Arizona 86503

Many Farms Elementary School
Chinle, Arizona 86503

New Cottonwood Boarding School
Chinle, Arizona 86503

Red Lake Boarding School
Tonalea, Arizona 86044

Shonto Boarding School
Tonalea, Arizona 86044

Teecnospos Boarding School
Teecnospos, Arizona 86514

Toyei Boarding School
Ganado, Arizona 86505

Tuba City Boarding School
Tuba City, Arizona 85045

New Mexico

Chuska Boarding School
Tohatchi, N. Mex. 87325

Crownpoint Boarding School
Crownpoint, N. Mex. 87313

Dzilth-Na-O-Dith-hle
Bloomfield, N. Mex. 87413

Nenahnezad Boarding School
Fruitland, N. Mex. 87301

APPENDIX II (cont.)

NAVAJO

<u>New Mexico</u>

Sanostee Boarding School
Little Water, N. Mex. 87420

Shiprock Boarding School
Shiprock, N. Mex. 87420

Toadlena Boarding School
Toadlena, N. Mex. 87324

Tohatchi Boarding School
Tohatchi, N. Mex. 87325

Wingate Elementary School
Fort Wingate, N. Mex. 87316

<u>Utah</u>

Aneth Boarding School
Aneth, Utah 84510