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ABSTRACT

The development of national minimum educational standards for the Federated States of Micronesia (FSM) began in 1988 with the deliberations of a national task force that created performance expectations in a number of subjects. In 1988 the development of nationally standardized tests reflecting these standards began. This document presents the 1995 results from tests in language arts and mathematics for grades 6, 8, and 10. All the tests in the series are based on a criterion-referenced test development process. The total samples from the 4 states of Chuuk, Kosrae, Pohnpei, and Yap were: (1) grade 6 language arts, 673; (2) grade 8 language arts, 621; (3) grade 10 language arts, 263; (4) grade 6 mathematics, 656; (5) grade 8 mathematics, 601; and (6) grade 10 mathematics, 257. In the English language arts content area, an average of 49-61% of the FSM students answered items correctly at all 3 grades. Scores from Chuuk were somewhat lower for sixth graders, and Chuuk did not test its eighth graders. In all four states, English listening comprehension was the language arts area with the greatest success. In mathematics, an average of 37-49% of FSM students answered items correctly at all 3 grades. The greatest success in mathematics was in the area of basic arithmetic operations. These results can be used to improve education throughout the FSM. It is recommended that guidelines be developed to help families understand the relationship of family language practices to academic language development. Parents should feel sure that using their indigenous language at home is a positive contribution to school development and they should understand the positive contributions of billingualism. An appendix contains the test administration manual. (Contains 15 tables and 3 references.) (SLD)

SPRING 1995 RESULTS

SIXTH, EIGHTH, AND TENTH GRADE LANGUAGE ARTS AND MATHEMATICS

FSM NATIONAL STANDARDIZED TESTS OF NATIONAL CURRICULUM MINIMUM STANDARDS

Prepared for the FSM National Department of Education
by the Micronesian Language Institute of the University of Guam
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SPRING 1995 RESULTS

SIXTH, EIGHTH, AND TENTH GRADE LANGUAGE ARTS AND MATHEMATICS

FSM NATIONAL STANDARDIZED TESTS OF NATIONAL CURRICULUM MINIMUM STANDARDS

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I. History and Rationale of the Tests

History

The development of the FSM National Sixth, Eighth, and Tenth Grade Language Arts and Mathematics Tests is an outgrowth of efforts to develop national minimum standards for the FSM public school basic skill curriculum. That process began in January 1988 with the deliberations of a National Curriculum Task Force, consisting of two or more representatives from each of the FSM States. The work of the Task Force resulted in a series of performance expectations in health and nutrition, language arts, mathematics, science, social studies, and vocational education for grades 3, 6, 8, 10, and 12 (FSM Department of Human Resources, Office of Education, July 1990).

In November 1988, the Northwest Regional Educational Laboratory, joined by 32 educators, began the development of the FSM National Eighth Grade Language Arts and Mathematics Tests. These were field tested in June 1989. The Laboratory selected and re-assembled the test items on the basis of field test results. A report on the Eighth Grade Language Arts and Mathematics field test describes the analysis and results (Yap, 1989).

In 1990, the Micronesian Language Institute (MLI) was contracted to collaborate with educators from the FSM Department of Human Resources, Office of Education, and other representatives of each FSM State, for the purpose of developing the FSM National Sixth and Tenth Grade Language Arts and Mathematics Tests. In Spring and Fall, 1992, these four tests were field tested in each State. Included in the 1993 technical manual and field test report (Spencer, 1993) is information on the test contruction rationale and process, guidelines and cautions for test use and qualifications of examiners, comments on various characteristics of the tests (e.g., sensitivity to practice effects), a description of the field test process, presentation of field test results for all four tests, and recommendations for the assembly of items for each test based on the analyses of field test results.

The development of the National Curriculum Minimum Standards and the corresponding test development activities represents a collaboration by the FSM National Government and the State Departments of Education to produce an agreed upon curriculum framework for basic skill instruction and for expectations for minimum levels of student performance in these basic skills, throughout the nation. The collaboration also recognizes the diversity of language, culture, and a variety of other local conditions that enter into local educational decisions pertaining to basic skill instruction that are under the authority of State Departments of Education. It is recognized that these local conditions may result in instructional approaches or requirements that exceed the Minimum Standards. Title 40, Chapter 2, Section 221 and 222 of the Code of the Federated States of Micronesia mandated the development of the FSM Minimum Standards. The specific set of standards have received national review and approval.

Rationale

All tests in the FSM National Standardized Test Series are based on a criterion-referenced test development process. The performance expectations of the National Curriculum Minimum Standards Language Arts and Mathematics sections served as the standards for which all test items were designed to correspond. To develop the final Sixth, Eighth, and Tenth Grade Language Arts and Mathematics tests, the team of FSM and State curriculum and testing specialists and the MLI-UOG test and curriculum specialists met

for two extended item writing sessions, and several more informal feedback sessions following the field test.

All performance expectations for each grade level of each of the two academic subjects were carefully reviewed. Those performance expectations which were compatible with the purpose of developing group testing items were selected. Some performance expectations were deemed unsuitable for group testing purposes, although well suited to classroom teaching activity or to individual testing approaches. The objectives that remained after this selection process were examined by the MLI-UOG consultants to ensure that the remaining collection would provide an adequate sample of the central academic constructs of language arts or mathematics at the Sixth and Tenth Grade levels. In some cases, the knowledge or skills embedded in two or more performance expectations overlapped to such an extent that they were treated as one for item writing purposes. The team of curriculum and testing specialists discussed options for utilizing various performance expectations within the test structures. In a number of cases, the team questioned the appropriateness of certain performance expectations for the target grade (e.g., some of the geometry expectations at Tenth Grade), or expressed uncertainty about the level of competency expected for a particular skill (e.g., level of reading comprehension at Sixth Grade). The field test results helped clarify some of the questions raised by the curriculum and testing team. Taken together, the field test results and the Spring 1995 administration of the final version enlighten future refinements of both minimum standard test instruments, and of the minimum curriculum standards themselves.

The team drafted a series of items for each of the selected objectives. Care was taken to incorporate contexts and details in the items that encouraged students to identify real life situations in their home islands, and therefore to enhance motivation for test taking. Following the group item writing work, the MLI-UOG consultants selected the best of the drafted items to assemble an adequate representation of items for each performance expectation to be included in the field test examinations. Some additional items were written to enlarge the number of items when this was needed, or to address some aspect of the construct that had been overlooked in the original item writing process. All items in all field tests were repeatedly reviewed in an attempt to

eliminate obvious problems of ambiguity in the questions or response options, or other errors. Most such flaws were eliminated prior to the field test, although some item and procedural problems that had been overlooked were later identified during the field test.

In the Sixth and Tenth Grade language arts tests, at least twice as many items per performance expectation were included in the field tests as were needed for the final tests. In the Sixth and Tenth Grade mathematics tests, the field tests were shorter than for language arts because many of the items could be altered for use in alternate forms merely by substituting different quantities in question and answer portions of the item. Nevertheless, multiple approaches to addressing specific performance expectations were also used in the mathematics tests.

The Eighth Grade language arts and mathematics tests that were developed in a collaboration between the Northwest Regional Educational Laboratory and FSM educators, and field tested in 1989, were revised by MLI for use in the Spring 1995 NST administration. Attention was given to representation of the performance expectations, correction of problems identified in the field test, and consistency with the formats of the 6th and 10th grade tests and procedures.

II. Spring 1995 Test Administration

Procedures

In March, 1995, Burnis Danis, Testing and Evaluation Specialist for the FSM National Department of Education, and Mary Spencer of the Micronesian Language Institute, provided on-site training to test administrators in Pohnpei and Chuuk. Mr. Danis traveled to Yap and Kosrae and provided the same training program to test administrators in those states. The following administration guides (Appendix) were provided to test administrators:

1. General Instructions for All Tests: Administration Manual
2. Specific Instructions for all Grade Levels: Language Arts (Grades 6, 8, and 10); Writing (Grades 6, 8, and 10 in home language and English); Mathematics (Grades 6, 8, and 10)

3. Time Issues - NST
4. Errors Found in the NST Language Arts Tests during Tester Training
5. Chuuk NST Sampling Plan

Samples

The testing plan envisioned an all-students testing procedure for all three grades in all four states. At the time of test administrator training, states had not made definite commitments about whether they would test all students or use samples. If samples were to be used, decisions about size and representativeness had not been made. During the test administrator training in Chuuk, it became apparent that sampling would be the most likely approach. Therefore, the MLI consultant provided a tentative Chuuk NST Sampling Plan (Appendix) which would minimize cost and logistical difficulties, but should ensure that at least a minimum of test administration would be done in that state.

After testing, the testing and evaluation specialist for each state sent the batched answer sheets to the Micronesian Language Institute. Each batch consisted of the tests in a particular grade and content area given at a particular school within that state. Based on this information, the sample for the Spring 1995 FSM NST is presented in Tables 1-6.

Table 1
Language Arts Sample: 6th Grade

Content Area & Grade	State and School	Number of Students
Language Arts: 6th Grade	Chuuk	
	Nechap	9
	Sino Memorial	55
	Pwene	17
	Sapore	10
	Inaka	14
	Nukuno	14
	SUBTOTAL	**119**
	Kosrae	
	SES	10
	Malem	38
	Lelu	50
	Walung	7
	Utwe	29
	SUBTOTAL	**134**
	Pohnpei	
	Awak	22
	Kolonia	44
	Nett	45
	Ohmine	41
	Sapwehrek	18
	PCS	22
	Sapwalap	17
	Seinwar	32
	Sokehs Pah	13
	Sokehs Powe	37
	Wone	18
	SUBTOTAL	**309**
	Yap	
	Rumung	2
	Bael	2
	Gilman	5
	Kanfay	3
	D. Binaw	13
	Maap	7
	Rumu	13
	Tomilang	14
	Gagil	10
	Colonia M.	22
	CMS	20
	SUBTOTAL	**111**
	TOTAL 6TH GRADE LANGUAGE ARTS	**673**

Table 2:
Language Arts Sample: 8th Grade

Content Area & Grade	State and School	Number of Students
Language Arts: 8th Grade	Chuuk	
	SUBTOTAL	0
	Kosrae	
	SES	7
	Malem	36
	Lelu	66
	Walung	6
	Utwe	32
	Tafunsak	50
	SUBTOTAL	197
	Pohnpei	
	Awak	11
	Kolonia	41
	Ohmine	47
	PCS	22
	Nett	68
	Sapwalap	28
	Sapwerek	21
	Seinwar	23
	Sokehs Pah	6
	Sokehs Powe	43
	Wone	23
	SUBTOTAL	333
	Yap	
	Bael	1
	Gilman	9
	Kanfay	2
	D. Binaw	7
	Maap	7
	Rumu	3
	Tomilang	13
	Gagil	9
	Colonia M.	21
	CMS	19
	SUBTOTAL	91
	TOTAL 8TH GRADE LANGUAGE ARTS	621

Table 3
Language Arts Sample: 10th Grade

Content Area & Grade	State and School	Number of Students
Language Arts: 10th Grade	Chuuk	
	Weeno JH	30
	Subtotal	**30**
	Kosrae	
	Subtotal	**0**
	Pohnpei	
	PICS	16
	PICS	27
	PICS	33
	PICS	24
	PICS	28
	Subtotal	**128**
	Yap	
	Yap H.S.	48
	Outer Island HS	25
	NIMS	32
	Subtotal	**105**
	TOTAL 10TH GRADE LANGUAGE ARTS	**263**

Table 4
Mathematics Sample: 6th Grade

Content Area & Grade	State and School	Number of Students
Mathematics: 6th Grade	Chuuk	
	Nechap	9
	Sino Memorial	54
	Pwene	17
	Sapore	18
	Inaka	14
	Nukuno	14
	Subtotal	**126**
	Kosrae	
	SES	10
	Malem	38
	Lelu	49
	Walung	7
	Utwe	6
	Subtotal	**110**
	Pohnpei	
	Sapwehrek	18
	Awak	22
	Kolonia	44
	Nett	45
	Ohmine	41
	PCS	22
	Sapwalap	17
	Seinwar	32
	Sokehs Pah	13
	Sokehs Powe	37
	Wone	18
	Subtotal	**309**
	Yap	
	Rumung	2
	Bael	2
	Gilman	5
	Kankay	3
	D. Binaw	13
	Maap	7
	Rumu	13
	Tomilang	14
	Gagil	10
	Colonia M.	22
	CMS	20
	Subtotal	**111**
	TOTAL 6TH GRADE MATHEMATICS	**656**

Table 5
Mathematics Sample: 8th Grade

Content Area & Grade	State and School	Number of Students
Mathematics: 8th Grade	Chuuk	
	Subtotal	0
	Kosrae	
	SES	7
	Malem	37
	Lelu	68
	Walung	6
	Utwe	32
	Tafunsak	49
	Subtotal	199
	Pohnpei	
	Awak	11
	Kolonia	41
	Ohmine	25
	Nett	68
	PCS	22
	Sapwalap	28
	Sapwerek	21
	Seinwar	23
	Sokehs Pah	6
	Sokehs Powe	43
	Wone	23
	Subtotal	311
	Yap	
	Bael	1
	Gilman	9
	Kanifay	2
	D. Binaw	7
	Maap	7
	Rumu	3
	Tomilang	13
	Gagil	9
	CMS	21
	CMS	19
	Subtotal	91
	TOTAL 8TH GRADE MATHEMATICS	601

Table 6
Mathematics Sample: 10th Grade

Content Area & Grade	State and School	Number of Students
Mathematics: 10th Grade	Chuuk	
	Weeno JH	30
	Subtotal	**30**
	Kosrae	
	Subtotal	**0**
	Pohnpei	
	PICS	25
	PICS	33
	PICS	16
	PICS	28
	PICS	23
	Subtotal	**125**
	Yap	
	Yap HS	48
	Outer Island HS	22
	NIMS	32
	Subtotal	**102**
	TOTAL 10TH GRADE MATHEMATICS	**257**

III. Scoring and Analysis

The Computer Center of the University of Guam performed automated scanning, scoring, and analysis on the machine-readable answer sheets submitted by each state. For each student at each school site where testing was conducted within a given state, descriptive statistics for each test were developed on raw score, percent correct, percentile within grade and school.

For each test for each school, descriptive statistics were developed on number of respondents, number of items, average score, median score, standard deviation, highest and lowest scores, and the difficulty factor (percent of students scoring correctly) on each item. Also for each test for each school, a table was provided that listed raw score, with corresponding percentile, Z-score, T-score, and stanine.

Separate analyses were provided which combined all schools tested on a particular test within a state. For example, for Yap, a combined analysis was available of all students in all participating schools for the Sixth Grade Language Arts Test. The same descriptive statistics listed above were provided for each combined analysis.

A copy of the complete set of school site analyses, and the combined analysis were provided to each state and to the FSM National Department of Education.

IV. Spring 1995 Test Results

Tables 7 and 8 present a summary of descriptive statistics for Grades 6, 8, and 10 in Language Arts and Mathematics for each state (excluding states not participating in a particular test) and as an FSM total. Tables 9 through 14 cite the average difficulty level of items assigned to the performance expectations for each of the six tests as achieved by students tested in each state, and for an FSM total. These tables allow us to see how well students are doing, on average, in the different national minimum standards performance areas. Table 15 provides a special comparative focus on growth in reading performance across the Sixth, Eighth and Tenth Grades.

Table 7
Spring 1995
Summary of FSM National Standardized Test Series

Language Arts

Grade	Yap	Pohnpei	Kosrae	Chuuk	FSM Total
6th Number of Items = 63 *Chance = 15.75*	Mean = 33.9 (54%)[a] Median = 33.0 SD = 11.4 N = 111	Mean = 32.6 (52%) Median = 33.0 SD = 13.6 N = 309	Mean = 36.0 (57%) Median = 38.0 SD = 10.7 N = 134	Mean = 21.7 (34%) Median = 22.0 SD = 11.81 N = 119	Mean = 31.1 (49%) N = 673
8th Number of Items = 52 *Chance = 13*	Mean = 30.4 (58%) Median = 31.0 SD = 9.6 N = 91	Mean = 30.5 (59%) Median = 32.0 SD = 10.3 N = 333	Mean = 33.5 (64%) Median = 34.0 SD = 7.9 N = 197		Mean = 31.5 (61%) N = 621
10th Number of Items = 69 *Chance = 17.25*	Mean = 45.2 (66%) Median = 45.0 SD = 13.0 N = 105	Mean = 45.3 (66%) Median = 44.0 SD = 10.1 N = 128		Mean = 36.3 (53%) Median = 37.0 SD = 9.52 N = 30	Mean = 42.3 (61%) N = 263

[a] *Percentage of items correct represented by the mean.*

Table 8
Spring 1995
Summary of FSM National Standardized Test Series

Mathematics

Grade	Yap	Pohnpei	Kosrae	Chuuk	FSM Total
6th Number of Items = 38 *Chance = 9.5*	Mean = 13.7 (36%)[a] Median = 13.0 SD = 4.4 N = 111	Mean = 16.3 (43%) Median = 16.0 SD = 6.85 N = 309	Mean = 14.6 (38%) Median = 14.0 SD = 5.32 N = 134	Mean = 11.8 (31%) Median = 12.0 SD = 5.07 N = 126	Mean = 14.1 (37%) N = 680
8th Number of Items = 57 *Chance = 14.25*	Mean = 26.0 (46%) Median = 26.0 SD = 8.2 N = 91	Mean = 28.4 (50%) Median = 27.0 SD = 9.60 N = 311	Mean = 28.7 (50%) Median = 28.0 SD = 8.74 N = 199		Mean = 27.7 (49%) N = 601
10th Number of Items = 50 *Chance = 12.5*	Mean = 18.5 (37%) Median = 18.0 SD = 6.09 N = 102	Mean = 22.3 (45%) Median = 21.0 SD = 7.27 N = 125		Mean = 14.4 (29%) Median = 15.0 SD = 3.69 N = 30	Mean = 18.4 (37%) N = 257

[a] *Percentage of items correct represented by the mean.*

Table 9
RESULTS LISTED BY PERFORMANCE EXPECTATIONS, SPRING 1995

6th Grade Language Arts

Performance Expectations	K	Y	P	C	Total
11 & 13: Listening Comprehension	83%	85%	75%	65%	77%
11 & 13(emphasis): Listening Comprehension	52%	61%	42%	38%	48%
11 & 13 Combined	73%	77%	65%	57%	68%
12: Usage	54%	59%	51%	23%	47%
14: Gives and responds to oral directions and descriptions in one-to-one interactions	-----	-----	-----	-----	___
15: Reads and orally paraphrases a passage of at least two paragraphs from program materials used by the student	-----	-----	-----	-----	___
16: Content Area Reading Comprehension	50%	39%	38%	23%	37%
16: Graded Content Area Reading Comprehension Grade 1	70%	64%	63%	33%	58%
Grade 2	64%	53%	56%	31%	51%
Grade 3	66%	52%	60%	32%	53%
Grade 4	48%	36%	45%	28%	39%
Grade 6	24%	24%	24%	17%	22%
17: Writes a paragraph on a given topic with correct punctuation and capitalization	-----	-----	-----	-----	___
18: Writes a personal letter for a specific purpose demonstrating correct letter form, spelling, capitalization and punctuation	-----	-----	-----	-----	___
19: Uses visual modes of expression and/or body movement to depict characters, events and/or rhythmic language in a literary work	-----	-----	-----	-----	___
20: Gives reasons for enjoying and not enjoying a literary work	-----	-----	-----	-----	___
21: Newspaper reading	39%	35%	37%	24%	34%

Table 10
RESULTS LISTED BY PERFORMANCE EXPECTATIONS, SPRING 1995

8th Grade Language Arts

Performance Expectations	K	Y	P	Total
22: Adapts his/her oral language to formal and informal situations within the experiences of the student	----	----	----	----
23: Appropriate Communication	73%	67%	68%	69%
24: Reads and Uses Information in Group	77%	73%	65%	72%
25: Evaluates effectiveness of oral communication through appropriate feedback	----	----	----	----
26: Organizes, analyzes and interprets information in solving a problem in group situation	----	----	----	----
27: Reads and Explains Simple Maps, Graphs, Tables	93%	86%	80%	86%
28 & 30: Reading Comprehension	84%	77%	76%	79%
29: Reads a news article from a local newspaper, identifies the central idea and documents it with supporting details	----	----	----	----
30: Reading Comprehension in Content Areas	55%	50%	50%	51%
30: Graded Content Area Reading Comprehension Grade 2	68%	60%	62%	63%
Grade 4	67%	56%	53%	59%
Grade 6	40%	42%	44%	42%
31: Personal Letter in Appropriate Form	48%	40%	48%	45%
32: Writes a descriptive and/or narrative paragraph using appropriate words and sentence patterns	----	----	----	----
33: Describes the advantages and limitations of using the oral and written modes of communication	----	----	----	----
34: Analyzes the role language plays in facilitating one's identity as part of a social group or family	----	----	----	----

Table 11
RESULTS LISTED BY PERFORMANCE EXPECTATIONS, SPRING 1995

10th Grade Language Arts

Performance Expectations	K	Y	P	C	Total
37: Understanding and Eliciting Details and Conclusions by Listening to Oral Communication	----	74%	75%	59%	69%
38: Reads and uses appropriate information in solving a problem in group discussion	----	----	----	----	----
39: Usage	----	79%	79%	53%	70%
39: Definitions	----	78%	77%	53%	69%
39: Analogies	----	71%	80%	67%	72%
39 Total	----	75%	78%	60%	71%
40: Reads and identifies alternative strategies for solving a problem and arrives at a solution through group interaction and consensus	----	----	----	----	----
41: Comprehending Two or More Articles or Passages and Generalizing Across Them	----	49%	50%	36%	45%
42: Comprehension-Short Paragraph	----	85%	89%	65%	80%
42: Comprehension-Using Information From Tables and Technical Writing	----	63%	59%	53%	58%
42: Comprehension-Long Paragraphs	----	62%	61%	57%	60%
42: Graded Reading Comprehension Grade 2	----	70%	68%	61%	67%
Grade 4	----	76%	78%	53%	69%
Grade 6-7	----	54%	58%	30%	47%
Grade 8	----	56%	58%	48%	54%
Grade 9	----	46%	40%	34%	40%
Grade 10	----	55%	46%	50%	50%
43: Writes a paragraph for a specific purpose and audience stating a main idea with supporting details	----	----	----	----	----
44: Writes a composition for a specific purpose and audience using appropriate words and sentence patterns with emphasis on self-expression	----	----	----	----	----
45: Writes a composition for a specific purpose and audience using the resources of language such as words, sentence patterns, organizational form and style with emphasis on exposition	----	----	----	----	----

Table 12
RESULTS LISTED BY PERFORMANCE EXPECTATIONS, SPRING 1995

6th Grade Mathematics

Performance Expectations	K	Y	P	C	Total
17: Uses whole numbers, decimals and fractions to communicate physical quantities	12%	24%	20%	12%	17%
18: Solves addition and subtraction problems of whole numbers, solves multiplication problems of any whole numbers by 2-digit numbers, and solves division problems of any whole number by 2-digit numbers	55%	52%	63%	43%	53%
19: Adds and subtracts like-denominator fractions and commonly used decimals	41%	39%	48%	38%	42%
20: Solves multiplication and division problems with decimals	36%	31%	38%	27%	33%
21: Estimates measurements and solves mental computation problems	36%	49%	36%	15%	34%
22: Uses ratios to compare quantities and characteristics of physical objects	43%	35%	36%	32%	36%
23: Adds and subtracts common fractions, improper fractions and mixed fractions	41%	33%	46%	36%	39%
24: Solves multiplication and division problems of common and mixed fractions	40%	21%	38%	19%	30%
25: Solves simple ratio, proportion, and percent problems	39%	34%	44%	26%	36%
26: Estimates and measures length, capacity, and mass of physical objects using standard units (English and metric)	28%	37%	29%	18%	28%
27: Reads and writes time, money expressions and temperatures	26%	31%	32%	22%	28%
28: Estimates and measures angles, regions, and volume using standard units (both English and metric)	21%	25%	30%	27%	26%
29: Explains the uses of the metric system in everyday living (a bag of sugar is 2 kilograms)	52%	42%	61%	33%	47%
30: Identifies and draws various plane and solid geometric figures (circle, rectangle, trapezoid, triangle, cone, sphere, rectangular prism, cylinder	59%	57%	60%	39%	54%
31: Uses correct terminology in describing the properties of geometric figures (Isosceles triangles, right triangles, rhombus, polygons, quadrilaterals, acute angles, obtuse angles, right angles, etc.)	28%	25%	27%	28%	27%
32: Clarifies problems by listing all information given and related facts	---	---	----	----	---

Table 13
RESULTS LISTED BY PERFORMANCE EXPECTATIONS, SPRING 1995

8th Grade Mathematics

Performance Expectations	K	Y	P	Total
33: Adds, Subtracts, Multiplies, Divides Decimals, Fractions and Integers	46%	40%	47%	44%
34: Ratios to compare quantities and characteristics of physical objects	43%	47%	53%	48%
35: Solves ratio, proportion, and percent problems	58%	50%	62%	57%
36: Estimates and measures angles, areas, and volume using standard unites, including metric units	36%	25%	37%	33%
37: Computes measurements using the four basic operations	47%	45%	48%	46%
38: Converts within metric units	46%	39%	46%	44%
39: Interrelationships of metric units	43%	40%	43%	32%
40: Classifies plane and solid geometric figures	67%	52%	58%	59%
41: Computes measurements on plane and solid geometric figure (perimeter, area, capacity, volume)	32%	20%	27%	26%
42: Uses correct terminology in describing the properties of geometric figures	59%	55%	54%	56%
43: Relationships of parts of a geometric figure and among geometric figures	51%	58%	49%	53%
44: Makes, reads, and interprets graphs, tables, schedules	58%	58%	58%	58%
45: Clarifies problems by listing facts relevant to solution	51%	59%	49%	53%
46: Solves problems by making deductions, working simple sample problems, or checking assumptions	52%	52%	52%	52%
47: Devises and uses alternate means to solve problems	54%	54%	59%	56%

Table 14
RESULTS LISTED BY PERFORMANCE EXPECTATIONS, SPRING 1995

10th Grade Mathematics

Performance Expectations	K	Y	P	C	Total
48: Adds, subtracts, multiplies and divides rational numbers	---	44%	53%	31%	42%
49: Uses algebraic techniques and describes their relationship to properties of real numbers	---	36%	63%	25%	41%
50: Computes measurements of common plane and solid geometric figures	---	24%	28%	19%	24%
51: Describes and explains possible uses and misuses of basic statistical measurements	---	31%	36%	25%	31%
52: Calculates and interprets statistical measurements from a set of data	---	60%	62%	43%	55%
52/53: Calculates and interprets statistical measurements from a set of data; calculates measures of dispersion and correlation of data	---	53%	58%	39%	50%
54: Uses correct terminology in describing the properties of plane and solid geometric figures	---	42%	46%	36%	41%
55: Explains relationship of the parts of a geometric figure and among geometric figures	---	34%	42%	26%	34%
56: Performs and describes geometric transformation	---	19%	31%	30%	27%
57: Describes ways that geometric properties and relationship are organized in a deductive system	---	---	---	---	---
58: States or writes the problem using the necessary information in a concise manner	---	---	---	---	---
59: Solves problems by translating given situations into mathematical sentences, by breaking the problem into parts, or by working the problem backwards	---	35%	41%	27%	34%
60: Generalizes the solution process and applies it to similar problems	---	16%	31%	13%	20%

Table 15
Comparison of Student Performance on Graded Reading Comprehension Items for 6th, 8th, and 10 Grade Students in Kosrae (K), Yap (Y), Pohnpei (P), Chuuk (C), and the States Combined (T) (Percent Correct)

Material Grade	Student Grade														
	6th					8th					10th				
	K	Y	P	C	Total	K	Y	P	C	Total	K	Y	P	C	Total
FIRST	70%	64%	63%	33%	58%										
SECOND	64%	53% (items	56% combined*)	31%	51%										
	62%	53%	53%	33%	50%	68%	60%	62%	-	63%	-	70%	68%	61%	66%
THIRD	66%	52%	60%	32%	53%										
FOURTH	48%	36% (items	45% combined*)	28%	29%										
	48%	36%	45%	27%	39%	67%	56%	53%	-	59%	-	76%	78%	53%	69%
SIXTH	24%	24%	24%	17%	18%	40%	42%	44%	-	42%	-	54%	58%	49%	54%
EIGHTH											-	56%	58%	48%	54%
NINTH											-	46%	40%	34%	40%
TENTH											-	55%	46%	50%	50%

** At the sixth grade level, two separate stories (each having 3 questions) were provided for second grade material. This was also true of fourth grade material. Only one story and the three questions for it were repeated in the 6th, 8th, and 10th grade language arts tests. Responses for only the repeated items are shown on the comparison lines of the table above.*

V. Conclusions and Recommendations

Language Arts

1. In the English Language Arts content area, an average of 49 to 61% of the FSM students answered the items correctly at grades 6, 8, and 10.

2. Yap, Pohnpei, and Kosrae English Language Arts scores were fairly close at grades 6 and 8, with Kosrae in a slight advance. Chuuk scores were approximately 20 percentage points lower at grade 6 than the three other states. Chuuk did not test their Grade 8 students.

3. Yap and Pohnpei had identical average total scores of 66% of students answering English Language Arts items correctly at Grade 10. Chuuk scores were 13 points lower at 53%. Kosrae did not test their Grade 10 students.

4. English listening comprehension was the performance area enjoying greatest success across all four states at Grade 6. Grade 1 and 2 English reading material was also handled with relatively greater success by all FSM 6th graders combined (difficulty levels of 58% and 51% of students answering items correctly, respectively).

5. Sixth grade English Language Arts items posing greater difficulty included Grade 4 and 6 reading material, content area reading comprehension items, and newspaper reading.

6. Kosrae, Yap, and Pohnpei received their highest 8th grade Language Arts scores in reading maps, graphs, and tables, all with 80% or more students responding correctly. A variety of ungraded reading comprehension items were also relatively easy for 8th graders. It appears that their reading comprehension peaked at when answering Grade 2 items correctly (63%), falling off to 59% with Grade 4 and 42% when given Grade 6 materials. Chuuk did not administer the 8th grade tests.

7. Grade 10 students in Yap, Pohnpei, and Chuuk all scored relatively well on oral communication (averaging approximately 60-75% of students correct), as well as on items of usage, definitions, and analogies. Performance was also high on comprehension of short English paragraphs (65% to 89%). It is of concern however that Chuuk trails Yap and Pohnpei by 15 to 20 or more points even in these relatively successful areas. Kosrae did not administer 10th grade tests.

8. On English reading comprehension with graded materials, the 10th grade Yap, Pohnpei, and Chuuk students all did well on Grade 2 and 4 materials, and fairly well with Grade 8 reading materials (48% - 58% students correct). Scores for all fell on Grade 9 materials, but rallied on the Grade 10 materials. These results are encouraging indications that the secondary students are growing in their English academic language use. The materials and questions used for Grade 8 to 10 deliver complex reading tasks. However, it should be kept in mind that because 10th grade enrollment is not universal among FSM children of an appropriate age for 10th grade, the students tested represent a select sample of students who have survived the preceding nine years of schooling. We should not neglect the literacy needs of all other students who may not be included in this sample.

Mathematics

9. In the mathematics content area, an average of 37% to 49% of the FSM students answered the items correctly at grades 6, 8, and 10.

10. On average, the 8th grade math performance was somewhat better than performances on 6th and 10th grade items. Results for Yap, Pohnpei, and Kosrae were similar (46%, 50%, 50%). Chuuk did not test 8th grade students.

11. The percentage of Chuuk students scoring correctly on 6th grade math items was similar to that of Yap and Kosrae (5 to 7 percentage points less), with a greater gap relative to Pohnpei (12 percentage points). At the 10th

grade, the Yap and Pohnpei students surpassed Chuuk by 8 and 14 percentage points respectively. Kosrae did not test Grade 10 students.

12. In 6th grade math, greatest success was with basic arithmetic operations, using two-digit whole numbers, and with identifying and drawing geometric figures. Communicating physical quantities was most difficult, as was estimating and measuring angles, regions, and volume; using correct terminology for properties of geometric figures; estimating and measuring length, capacity, and mass of physical objects; and reading/writing time, money expressions, and temperature. Given the practical nature of many of the Grade 6 math items, it is importhat that students grow substantially in these performance areas. It should be remembered that this was an English language test of math, which therefore may have masked students' actual skill in math to some extent. It is important for teachers to ensure students' math development by checking their understanding and performance in their first language as well.

13. In Grade 8 math, computing measurements on plane and solid geometric figures was most difficult. Also difficult were interrelationships of metric units and estimating and measuring angles, areas, and volume. Students were most successful classifying plane and solid geometric figures. They were also successful with items requiring interpretation of graphs, tables, and schedules; solving ratio, proportion, and percentage problems; using geometric terminology; and using alternative means for solving problems.

14. In Grade 10 math, generalizing the solution process and applying it to similar problems; computing measurements of plane and solid geometric figures; and performing and describing geometric transformations were most difficult. Also hard were tasks requiring explanations of relationships of parts of a geometric figure, explaining uses and misuses of statistics, and translating situations into mathematical sentences. Students were most successful with items requiring calculation and interpretation of statistical measurements from a data set. Many of the 10th grade math problems were very difficult. Success required English academic language skills as well as effective classroom experience with the specific mathematical performance expectations incorporated into the items.

Recommendations

1. Make the FSM NST results available to every educator in the FSM, and make them the subject of school improvement discussions throughout the nation. Document opinion on how, in specific terms, teachers, schools, and central state and national administrators can raise student performance on the national minimum performance expectations in language arts and mathematics. Document opinion on the specific activities families can engage in with their school age children to contribute to this growth.

2. Hold public forums at village level to share the NST results and stimulate discussion and community commitment to elevating student learning.

3. Provide written tips to parents and educators stemming from these public forums on how to improve the learning and performance of FSM students. Use examples based on the performance expectations; for example, the need to read and comprehend newspapers. Broadcast these tips on TV and radio in the indigenous languages and encourage the participation of traditional and other community leaders in raising public awareness about how to contribute to student learning in the NST performance areas.

4. Because the NST multiple choice testing in language arts and mathematics was entirely in English, and the majority of families in the FSM are either bilingual in their indigenous language and English, or monolingual in their indigenous language, they will need guidance in what these test results mean in terms of their family language practices.

   We recommend that a set of guidelines be developed for families that help them understand the relationship of family language practices to their children's academic language development. This should be based on the best international research on bilingualism and academic language development. For instance, parents should feel secure that using their indigenous language at home is a positive contribution to their children's school development. They should be made aware of language-based

home and community activities that they can use to further enhance their children's academic language and mathematical skill and knowledge development.

An example of these is the popular community activity of reading the Bible and singing from hymnals written in the indigenous language. These are excellent ways for family and community to create literate environments that positively impact student academic development at school. Perhaps more time should be spent in this activity, engaging even more members of the family. Perhaps discussion of the meaning of certain passages or stories to emphasize comprehension and interpretation of the written word, instead of or in addition to rote memorization or simple decoding, could be added to this existing home practice. Having children write about church issues in the indigenous language, followed by discussion, would extend the academic value still further. Having children write new verses to traditional hymns, or compose lyrics in the indigenous language to more contemporary melodies directly challenges children to develop their higher order language arts skills. Families need to know that children learn to read and write once, and they may do this in any language. Once learned, reading and writing will transfer directly to their work in school to acquire English as a second language.

Most FSM children will witness the bilingualism of the adults in their families. Attitudes that give at least equal prestige to their indigenous languages relative to English will help children develop balanced bilingualism. Constructive activities with English that families may choose to use with their children might include reading the newspaper together, exploring all of the different types of reading materials that appear in a newspaper and explaining the purposes of these different parts of the newspaper. In some communities indigenous language newspapers may be available. Practical mathematical material appears in many parts of a newspaper and these may be used for practice as well.

The NST results showed that students need more learning experience with practical mathematical operations such as those found when calculating quantities, volumes, or areas for activities such as cooking,

home repair and construction, or for various agricultural and fishing activities. Families need to be aware that they can contribute to their children's school success by increasing mathematical learning activities such as these. They might want assistance in how to help their children with mathematical language, whether in the indigenous language or in English.

VI. References

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APPENDIX

FSM NATIONAL GOVERNMENT

Department of Human Resources
Palikir Station, Pohnpei FSM 96941

GENERAL INSTRUCTIONS FOR ALL TESTS

Administration Manual

This manual is designed to give test administrators and proctors a clear set of general directions and procedures for administering all types of the National Standardized Tests appropriately. These directions are appropriate for the language arts, mathematics, and writing types of tests. Specific instructions for each content area test are given in a separate packet. This manual provides information on the following:

1. Advance Preparation
2. School Site Preparation
3. Before Testing
4. During Testing
5. End of Testing
6. Cautions and Security of Test Materials
7. Cheating
8. Defective Tests
9. Wrong Page
10. Stray Marks

Please read this manual carefully before administering the tests. It is imperative that you are well versed on the entire test administration procedure before the day of testing.

TEST ADMINISTRATION

Advance Preparation

1. Send advance notice to schools at least one week before testing.

2. Talk to the Principal or someone in charge of the school site to decide how many tests to take there on each test day. Decide on your schedule for testing each of the test grades (6th, 8th, or 10th) at that school in each subject area (language arts, mathematics, or writing). You will test all students in any selected classroom.

   If your State has decided to sample rather than test all students, you will have a sampling plan. This plan should use all students in any selected classroom. For example, if you need 50 eighth grade students, and classroom A has 30 and classroom B has 32, you will have to have a sufficient supply of testing materials for all 62 students.

3. Alert teachers in advance that a list of correct first and last names, and the birth date of each student to be tested, will be needed on test day. If students are unsure about their birth date, teachers will need to have students bring that information from home before the day of testing.

4. Make all the necessary logistical arrangements with your administrative officer or the people who are responsible for logistics. This will include arrangements for the proctors' transportation and the availability of various supplies.

5. One day before testing, familiarize yourself once again with the manual by practicing the administration of the tests.

School Site Preparation

1. Prior to testing, find out from the teachers if there are any students who will not be able to understand the test directions in the language in which the test will be given. Make notes about this and **list the names of those students.** Put these notes in the package with the answer sheets from that class of students.

   or special need Ss

2. Organize all materials before the students enter the classroom.

3. Students should use the restroom before they enter the classroom. No one will be allowed to leave the classroom during the test.

4. Make sure that the students present are in the correct grade.

5. Arrange students' desks to allow for reasonable spacing of students to minimize cheating possibilities.

Before Testing

1. Try to put students at ease.

2. Check to see that the students' desks are clear.

3. Make sure that each student receives one (1) test booklet and one (1) answer sheet.

4. Make sure each student receives one (1) sharpened number 2 pencil and that extra pre-sharpened number 2 pencils are available in case students break the points on their pencils.

6. Give general instructions for taking the test before you give the specific language arts test instructions:

Say to the students:

For Language Arts and Math Tests

- "This is a test to find out how well you do with various kinds of **Language Arts** (or, mathematics) activities and questions. Do your best to read the items and answer the questions. Work carefully."
- "It is important that you do your own work."
- "For each question, mark only one answer."
- "Try to answer every question. If you do not know the answer, try to guess."
- "If you make a mistake or want to change your answer, erase your wrong answer completely. Then mark your new answer.
- "Do not mark anything on the test booklets."
- "If you break your pencil, or if you need a new pencil, raise your hand."
- "If you need help with your answer sheet, raise your hand."
- "If you have questions about how to proceed, raise your hand."

(Additional specific instructions for each test are given in the packet of specific instructions for each grade level and content area. Give these specific instructions after giving the answer sheet instructions below.)

7. Give instructions for filling in the answer sheets:

Say to the students:

- "Look at the top of your answer sheet. At the left, there is a row of boxes where you are supposed to print your name. Start with your last name. Print each letter of your last name in one of the little boxes, starting at the far left. (**Demonstrate on the blackboard.**) Then leave one space blank, and continue by printing each letter of your first name."

- "At the end of the line you see the word "SEX." Right below it is a circle with an **M**, and another circle with an **F**. If you are a boy, that is, a **Male**, darken the circle with the **M**. If you are a girl, that is, a **Female**, darken the circle with the **F**."

- "At the bottom, you will see a box which is a place for your birthdate. Write the numbers for the month, day, and year of your birthdate. If you need help, raise your hand. Do not darken the bubbles in this box.

- **NEVER MAKE ANY MARKS ON THE BACK OF YOUR ANSWER SHEET!** Remember, a separate answer sheet is needed for each subject area. Never allow answers to both language arts and mathematics to be given on the same answer sheet.

8. Give specific instructions for the subject area and grade level test that you will be administering. **Turn to the specific instructions packet where specific instructions for each of the six multiple choice tests in language arts or math and the three writing tests are given.**

During Testing

1. Help students fill in personal information on their answer sheets or on their writing tests if they are having problems, or if they have left blanks.

2. Monitoring of students by the test administrator and proctors should focus on solving test-taking problems such as replacing flawed or illegible tests, and preventing cheating.

   - Circulate through the rows of students once during the first 10 minutes of the test, checking each student visually to be sure they understand how to use the answer sheet.

   - Thereafter, monitors are advised to station themselves in the front and in the back of the classroom. Walking through the rows is often distracting to students and should be avoided unless necessary to prevent cheating, to solve a specific problem, or to respond to students who have raised their hands for help.

End of the Test

1. Collect and count all test booklets. Add the number of booklets that are used by students and those that are not being used so that you have the same number of test booklets you came with.

2. Inspect the answer sheets as students turn them in. If some are missing both names or complete birth date information, one of the proctors should attempt to obtain this information at this time.

3. Once you have complete name and birthdate information, and you have determined that you have all of the test booklets, you can let the students go. If some of the test booklets are missing, you will have to search for them. Request the school-site administrator and teacher to do this.

4. The language art and math multiple choice tests may require more than one test sitting. After the first or second test sitting, you will have to pass them out efficiently and accurately to the appropriate students at the next test sitting.

Cautions and Security of Test Materials

1. After the test administration, organize your materials.

2. Account for all test materials, both used and unused. To do this, fill out the test inventory information on the Profile Sheet for this classroom. Put the answer sheets from the classroom together in a batch and secure with a rubber band or similar means.

CAUTIONS:

It is absolutely essential that a classroom Profile Sheet is prepared and put together with each classroom batch. This form tells us the grade and subject area of the test, the school and the state. Without it, scoring and analysis cannot be done.

NEVER STAPLE THE ANSWER SHEETS. THEY ARE SPECIAL COMPUTER READABLE ANSWER SHEETS. STAPLES RUIN THEM SO THE COMPUTER CANNOT READ THEM. KEEP THEM AS CLEAN AND UNWRINKLED AS POSSIBLE.

3. All test materials should be kept in locked storage in order to maintain their security.

4. Only authorized personnel should be allowed to review the test materials. This includes the test administrators, the proctors, and the state and national testing and evaluation specialists. This does not include the teachers or the school-site administrators.

Cheating

Warn students about cheating before they start taking the test. Although the test administrator and proctors can prevent most cheating before it can happen by closely observing students as they take the test, it still can happen. When it does, do not stop the student from continuing with the test; but note the student's name and mark this on the profile sheet. Remind the student to work independently. **Never leave the classroom during the testing session.**

Defective Tests

If you encounter materials or test items that are defective, replace the test booklet. Give the student a new answer sheet and show her or him where to start. After the testing session, you may go over the first items and complete them by using the student's answers on the defective answer sheet. Be sure to go around and check whether or not other students are having similar problems with their test booklets. If so, correct the problem.

Wrong Page

If you discover that a student has started on the wrong page, give her or him instructions for starting properly.

Stray Marks

Any student who is making marks on the answer sheets other than filling in the bubble or the demographic information should be told not to do so. Clean up the answer sheet or have the student start a new one if the situation is serious.

TIME ISSUES - NST

Common Questions

1. What is the maximum time for each test?

   Students may work on their tests for 1 hour maximum for each test sitting.

   All tests have 1 sitting except for the 10th Grade Language Arts Test, which has 2 sittings. Therefore, students may work for a maximum of 1 hour on all tests except the 10th Grade Language Arts Test, on which they can work for 2 hours with a break between the first and second hour.

   You will notice in the instructions that the test time mentioned is "45 - 60 min. per sitting." We strongly recommend that all students be given a maximum time of 60 minutes per sitting. If you can accommodate the 60 minute per sitting arrangement, tell students they get 60 minutes when you give instructions.

2. What do the instructions mean, "or when 90% of students finish."?

   If 90% of the students finish before 60 minutes, they may leave when they are finished. Before they leave you must make sure they have turned in their test and that their answer sheet contains all necessary personal information.

   If you feel it would be too disruptive for them to leave early, ask them to spend the extra time checking their answers.

3. Is this a "timed test" or a "paced test?"

   In several ways, these tests have been designed so the tests and the test administrators help the students pace themselves so students work carefully, but also work at a good steady rate. The idea here is that we must set a reasonable maximum amount of time for administering each test. Otherwise, it might be impossible to get all of the tests administered in a reasonable amount of time and at reasonable costs. However, we want students to work efficiently so they have time to work on all of the items on each test.

4. How long should we expect each part of each test to take?

The Language Arts Tests are each made up of several sections and the Writing Tests are each made up of two writing activities. Estimates of the time needed by students to finish each section of the language arts and writing tests are specified below. The Mathematics Tests are not divided into sections.

We recommend that the test administrator give pacing hints for all of the tests, as follows: At the end of 30 minutes, remind students that they have 30 more minutes to finish all items. At the end of 45 minutes, remind them that they have 15 more minutes to work on the test. Remind them again when they have only 5 minutes before the tests have to be closed and turned in.

Students who finish early may go back and check their work or make a new attempt at items they find difficult.

Time Estimates for Each Section of the Language Arts Tests

6th Grade Language Arts

Items 1-8: less than 5 minutes
Items 9-13: less than 5 minutes
Items 14-17: 5 or 6 minutes
Items 18-22: less than 5 minutes
Items 23-41: about 10 minutes
Items 42-63: about 10 minutes

Items 23 - 63 must be read silently by each student. Good readers will probably finish this section in about 20 minutes. Others will need more time.

8th Grade Language Arts

Items 1-16: about 10 minutes or less
Items 17-18: about 1 or 2 minutes
Items 19-21: about 1 or 2 minutes
Items 22-25: about 2 or 3 minutes
Items 26-52: about 20 minutes

Items 26 - 52 must be read silently by each student. Good readers will probably finish this section in about 20 minutes. Others will need more time.

1st sitting:
Items 1-12: about 10 minutes or less
Items 13-18: about 3 minutes
Items 19-21: about 2 or 3 minutes
Items 22-25: about 2 or 3 minutes
Items 26-29: about 2 or 3 minutes
Items 30-35: 5 - 10 minutes
Items 36-55: about 20-25 minutes

Items 36 - 55 must be read silently by each student. Good readers will probably finish this section in about 20 minutes. Others will need more time.

2nd sitting:
Item 56-71: about 20-25 minutes

Items 56-71 must be read silently by each student. Good readers will probably finish this section in about 25 minutes. Others will need more time.

Time Estimates for Each Section of the Writing Tests

Expect a maximum of about 20 minutes for each of the two writing activities that appear in each writing test. At the end of 20 minutes (or earlier if you see everyone has finished with the first vernacular writing activity), ask students to begin writing their English composition according to the directions on the activity page.

If students finish the first activity early, they can begin the second writing activity. If they have time after finishing the second writing activity, they can go back to the first or second activity and polish them or add on to them.

Encourage student to write 1 to 2 pages for each writing activity...not to stop after writing only a few sentences.

Time Estimates for the Mathematics Tests

Since the math tests are not broken down into sections, students will work continuously from the first item to the last. However, remember to clue them in to how much time they have left when 30, 15, and 5 minutes remain in the testing hour.

Students who finish early can go back and check their work or make a new attempt at items they find difficult.

Errors Found in the NST Language Arts Tests

During the training of test administrators in March, 1995, the specialists and other educators involved identified several errors that appear in the Language Arts Tests. All but one of these errors is in the 10th grade test. This is probably because this test was modified extensively according to state specialist feedback following the field test. I take personal responsibility for these errors and I apologize for them. The errors will be corrected prior to the next printing of tests. For the time being, please do not let them distract students. We will eliminate faulty items from the analysis of test results.

Mary Spencer
NST Consultant

Errors:

6th Grade Language Arts

Page 19 reading material: Under the item for **Martial Arts Club**, the word Wenno should be spelled Wénó.

10th Grade Language Arts

Page 1 instructions: Should say: "The tester will read the test information, questions, and alternatives for items 1 through 12."

Page 2, item 4, option d: Should be Thursday, not Friday. Either allow students to make their best choice on this item or tell them to skip on to item 5. This item will be eliminated from the analysis of results.

Page 14, instructions: Should say: "Read the following accounts and answer questions 42 and 43."

Page 14, reading material, paragraph 2: The letter s is omitted from the word phosphate.

Page 15, reading material and items: Aluminum has been misspelled in several places.

As you administer the NST series, you may find some additional errors or items that concern you. Please note these in your comments so we can address them in the future. Teamwork is what makes this project get better as time goes on. Thank you in advance for your feedback.

CHUUK NST SAMPLING PLAN

6th, 8th, and 10th Grades, Language Arts and Mathematics

Overall Goal: 10% Sample

6th Grade Student Population Estimates

	Chuuk State	10% Sample
Wénó	463	46
Other Lagoon Islands *(repreented by Toloas)*	919	92
Outer Islands	414	41
Total	1,796	179

8th Grade Student Population Estimates

	Chuuk State	10% Sample
Wénó	383	38
Other Lagoon Islands *(repreented by Toloas)*	744	74
Outer Islands	430	43
Total	1,557	155

10th Grade Student Population Estimates

	Chuuk State	10% Sample
Faichuk	35	
S. N.J.H.	102	10
Mortlocks	33	3
Wénó	155	16
Weipat	45	
Pattiw	22	
Total	392	29

Since classrooms are the unit of sampling, it is likely that the total sample at each grade level will be higher than the 10% sample listed here. That is permissible as it gives us an even more adequate sample than the 10% goal. The selection of Toloas and Wénó as representatives of the Lagoon islands was made because the relatively large number of students in these locations make testing practical. The selection of the Mortlocks as the representative of the Outer Islands was made because the location of an airport and their relatively large number of students aids practical considerations. These selections were also made after discussing representativeness of highschool admission scores in these locations. Therefore, the three testing sites are: Wénó, Toloas, and Satawan in the Mortlocks.

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