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ABSTRACT

An aptitude test requiring 10-minutes' administration time was administered to high school students learning Forkner, Century 21, and Gregg shorthand for the purpose of determining test validity for different shorthand systems. Validity data were obtained from approximately 2000 students. Aptitude test reliability ranged from KR20=0.88 to 0.90. Validity coefficients with shorthand dictation achievement ranged from r=0.44 to 0.55. Because of significant differences in student achievement with different shorthand systems, the aptitude test may be used along with other student background information to assist students and teachers in choosing among alternative shorthand systems. The Lambrecht Shorthand Aptitude Test (LSAT) Test Booklet is appended to the Teacher's Manual. The Teacher's Manual contains the following six sections: (1) Purpose of the LSAT; (2) Administering the LSAT; (3) Scoring the LSAT; (4) Interpreting LSAT scores; (5) Technical Data from Three Validations Studies; and (6) Collecting Other Validity Data. (Author/RL)

LAMBRECHT SHORTHAND APTITUDE TEST

AND

TEACHER'S MANUAL

by

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TABLE OF CONTENTS

LIST OF TABLES

TEACHER'S MANUAL

LAMBRECHT SHORTHAND APTITUDE TEST

This Manual contains the following six sections: I. Purpose of the Aptitude Test; II. Administering the Aptitude Test; III. Scoring the Aptitude Test; IV. Interpreting Aptitude Test Scores; V. Technical Data from Three Validations Studies; and VI. Collecting Other Validity Data.

I. Purpose of the Aptitude Test

The primary purpose of the Lambrecht Shorthand Aptitude Test is to assist teachers in counseling students who wish to learn either a symbolic (e.g., Gregg or Century 21) or alphabetic (e.g., Forkner) shorthand system. By administering this test before students begin to learn shorthand, preferably before they enroll in the class, teachers or counselors can estimate the level of shorthand dictation and transcription skill which students are likely to attain after 18 and 36 weeks of instruction.

A second purpose of the Shorthand Aptitude Test is to provide an instrument for other researchers to use in their study of shorthand and shorthand systems. This test may be used as a pretest in studies in which students' initial abilities related to shorthand achievement are to be determined.

Shorthand has been recognized as a subject which many more students begin than complete with a useable vocational skill. Two years of shorthand instruction have generally been considered necessary to develop vocational skill levels. Even considering the large number of schools which do not offer a second year of shorthand (Crank, et al., 1971-72; Gertler and Barker, 1973), many students decide not to take a second year when it is available. Over 50 percent of the juniors in one study in the beginning shorthand course did not plan to take a second year.

Dropout rates in shorthand have been estimated to range from 25 to 60 percent (DiBona, 1958, Ryals, 1970; Lambrecht, 1977). While persons who drop out of first-year shorthand are not necessarily failures, many who do not complete one year or who decide not to take a second year are those who have experienced difficulty with shorthand. If a student's likelihood of success in shorthand can be estimated before he or she begins the course, the wasted time and disappointment of failing the subject might be avoided for many students.

No one measure of ability is satisfactory to be used alone to predict shorthand achievement. The Shorthand Aptitude Test has a higher relationship with shorthand achievement than other more general ability measures, and it requires little administration time (10 minutes). If the Shorthand Aptitude Test shows that a student is likely to attain a low shorthand dictation skill, three courses of action are recommended:

First, other indicators of possible success in shorthand should be examined to see if they confirm the expectation of low achievement predicted by the Aptitude Test.

These other indicators should include English course grades, particularly grammar and writing course grades; foreign language course grades; test scores from other standardized tests of verbal ability; I.Q. test scores; overall grade point averages; a student's career interests; and a student's reasons for wanting to enroll in the shorthand course. Further discussion of these ability measures and their relation to shorthand achievement may be found in other references (Lambrecht, 1972; Pullis, 1976; and Wagoner, 1974).

Second, if several of these other more general ability measures also suggest a low likelihood of success in shorthand, the student

should be encouraged to consider a shorthand system that is easier to learn or other business courses to develop employment skills.

Third, if a student with a low Shorthand Aptitude Test scores chooses to enroll in shorthand, individualized instructional activities may be designed to assist the student with those areas of shorthand theory or transcription that cause difficulty.

Rationale of the Test

The Lambrecht Shorthand Aptitude Test measures those verbal skills used primarily at the beginning stages of shorthand instruction. It measures skills related to learning shorthand theory and to recording and transcribing dictation without regard to the mailability of the final product.

Success in using any shorthand system depends largely upon verbal abilities, or ability to use and understand spoken and written English. Other abilities and knowledge--vocabulary level, spelling ability, skill in using English style features (punctuation, capitalization, word usage, etc.), and typewriting ability--all affect the quality of the final transcript. However, unless a student can recall the theory of a shorthand system well enough to record dictation and read it back, other English style or typewriting capabilities will be of little assistance.

For this reason the Lambrecht Shorthand Aptitude Test was designed to be a short (10-minute), easy-to-administer measure of those verbal abilities related specifically to learning a shorthand system, recording dictation, and reading this dictation.

It is possible, however, that a student might be able to learn to write shorthand from dictation, but not be able to transcribe acceptable

transcripts. English style knowledges and typewriting abilities are areas which a shorthand teacher or counselor should consider together with the basic shorthand aptitude measured by this test.

The 40 items in the Lambrecht Shorthand Aptitude Test were designed to draw upon verbal abilities and general vocabulary level in a way similar to that required when reading shorthand notes written from dictation. Research has shown that the verbal aspects of recalling and recognizing shorthand outlives dexterity required to write at a rapid rate (Lambrecht, 1971). It is this verbal ability or "word sense" required to write and then read shorthand outlines which is measured by this Shorthand Aptitude Test.

II. Administering the Aptitude Test

A total of 20 minutes should be allotted for administering this Shorthand Aptitude Test. Actual testing time is 10 minutes.

The Lambrecht Shorthand Aptitude Test contains 40 items. Each item is comprised of the disarranged syllables of two words: an adjective and a noun. The student is to unscramble the syllables and determine the adjective and noun pair. The following is an example:

1	2	3	4	5	6
un	o	sta	econ	ble	my

unstable economy

adjective — noun

When the two words have been identified, the answer is shown by marking on the answer sheet the number over the last syllable of the second word, the noun. In the example above, the answer is 6, the number over my.

Time is important on the test. Exactly 10 minutes should be allowed for the completion of the 40 items. To use the normative data in this manual, it is important that this timing be as exact as possible. Follow these

steps when administering the test:

1) Provide each student with an ANSWER SHEET and ask each one to complete the identifying information on this sheet.
2) Provide each student with a TEST BOOKLET.
3) Make sure all TEST BOOKLETS remain closed until you ask the students to begin Problem 1.
4) Read OUT LOUD the directions and sample problems on the front of the TEST BOOKLET with the students as they read silently. Students are asked to complete two sample problems. The answers for these samples are contained in the students' TEST BOOKLETS immediately after the sample problems. Students should be allowed approximately one minute to mark the sample problems on their ANSWER SHEETS before you continue with the reading of the correct answers.
5) Ask students to begin the test as you begin the timing.
6) At the end of 10 MINUTES, ask all students to stop writing and to pass the TEST BOOKLET and ANSWER SHEET to you.

III. Scoring the Aptitude Test

The list below contains the answers to the 40 items in the Lambrecht Shorthand Aptitude Test. A separate overlying ANSWER KEY has also been provided for your use in scoring the printed ANSWER SHEETS.

Count one wrong for each incorrect answer and for each item not completed. Subtract this number from 40 to obtain a student's score. A student's score is the number of items answered correctly.

Figure 1

ANSWER KEY

1) 2	11) 2	21) 4	31) 1
2) 1	12) 1	22) 4	32) 4
3) 3	13) 5	23) 2	33) 2
4) 1	14) 2	24) 4	34) 5
5) 4	15) 4	25) 5	35) 1
6) 4	16) 1	26) 1	36) 2
7) 2	17) 3	27) 1	37) 6
8) 2	18) 5	28) 6	38) 6
9) 3	19) 3	29) 2	39) 6
10) 1	20) 1	30) 5	40) 2

IV. Interpreting Aptitude Test Scores

Interpreting students' scores on the Shorthand Aptitude Test requires information about the test's predictive validity. Three validity studies have been carried out to determine the relationship between students' Aptitude Test Scores and their shorthand dictation at the end of one semester and one year of shorthand instruction. Technical data describing the results of the validity studies are contained in the next section of this manual. The following guidelines are based on those technical data. Interest counselors and teachers may wish to examine these data.

The following guidelines for cutoff scores were chosen by examining three results: 1) correlation between Aptitude Test Scores and dictation achievement; 2) differences in the average aptitude test scores for students who withdrew or did not withdraw from shorthand by the middle of the school year; and 3) the proportion of students with certain aptitude test scores who achieved above the average on the shorthand dictation tests.

The guidelines are only suggestions for scores that may signal the need for additional information. It is strongly encouraged that other ability measures and indicators of student interest in learning shorthand always be combined with Shorthand Aptitude Test scores for counseling students.

Recommended Aptitude Test Cutoff Scores

The following cutoff points on the Lambrecht Shorthand Aptitude Test are recommended as guidelines for teachers and counselors to use in their decisions to seek additional information about students' abilities to learn shorthand:

Students with scores of 24 and above on the Shorthand Aptitude Test have approximately a 50 percent or better chance of attaining the minimum percent of dictation accuracy or average dictation achievement (as determined in the validation studies) when learning either an alphabetic or a symbolic shorthand system.

Students with scores of 15 and above on the Shorthand Aptitude Test have approximately a 50 percent or better chance of attaining the minimum percent of dictation accuracy or average dictation achievement (as determined in the validation studies) when learning the alphabetic shorthand.

If students' options are between Century 21, Forkner, and Gregg shorthand, these cutoff points suggest that students with Aptitude Test scores of 24 and over should be encouraged to learn either system. Students with Aptitude Test scores between 15 and 24 points should be encouraged to learn Forkner shorthand. Students with Aptitude Test scores of 14 or less should be identified as students for whom more information is necessary to determine their verbal abilities and their interest in learning shorthand.

These cutoff points on the Shorthand Aptitude Test should not be considered as rigid guidelines. As can be seen in the tables in the technical data section, some students at all score levels on the aptitude test scored at or above the minimum shorthand achievement scores used in these tables. Students' chances of achieving these minimums, however, increased with higher aptitude test scores. A low aptitude test score does not mean that a student cannot succeed. Students with low Shorthand Aptitude Test scores but with other indicators of verbal ability and an interest in learning shorthand should not be discouraged from enrolling in shorthand if they wish.

V. Technical Data From Three Validation Studies

The following sections describe: the student groups who participated in three separate validations of the Shorthand Aptitude Test; descriptive data for these student groups on Shorthand Aptitude Test; the shorthand dictation achievement tests used in the validation studies and student scores on these tests; and the relationship between shorthand aptitude and achievement scores.

Students Participating in Validation Studies

The Shorthand Aptitude Test was validated on three seperate occasions using beginning shorthand students at the high school level: in 1970-71 to 944 students in 21 Wisconsin high schools; in 1975-76 to 1204 students in 20 Minneapolis-St. Paul, Minnesota area high schools; and in 1979-80 to 1116 students in 31 high schools in 22 states. In the 1970-71 testing all of the students were learning Gregg shorthand. In the 1975-76 testing, 565 of the students were learning Gregg shorthand, 570 were learning Forkner shorthand, and 69 were learning Century 21 shorthand (Lambrecht, 1977). In 1979-80 all of the students were learning Century 21 shorthand. The large

majority of the students were females, 15 to 18 years old, and sophomores, juniors, or seniors in high school. All were beginning shorthand students.

Lambrecht Shorthand Aptitude Test

Descriptive normative data for the three administrations of the Lambrecht Shorthand Aptitude Test are presented in Table 1. Internal consistency (KR_{20}) reliability of the Shorthand Aptitude Test on all administrations is also shown.

Shorthand Achievement Tests Administered

The following shorthand dictation achievement tests were administered in the three validation studies, 1970-71 (Wisconsin), 1975-76 (Minnesota), and 1979-80 (National).

1970-71 (Wisconsin). The Semester Achievement Test developed by Tilly Dickinson in 1956 was administered at the end of one semester of shorthand instruction. This test consisted of seven 2 1/2-minute letters dictated at speeds ranging from 45 to 75 words per minute (wpm). All students wrote from tape-recorded dictation. After writing all the dictation, students responded by using the "partial transcription" method. Students were allowed 28 minutes of "partial transcription" time for the 20 minutes of dictation.

The "partial transcription" method required that a student write in longhand selected words from each letter, rather than transcribe each letter in its entirety. The primary objective of this shorthand test was to ascertain whether a student could write shorthand from dictation at various speeds and then read her or his notes. Transcription of mailable copy was not a factor. Objectivity of scoring was promoted by omitting spelling and punctuation as considerations in the grading of the partial transcript. A student's score was the number of correct words supplied out of the 222 omissions in the seven letters.

Table 1

Lambrecht Shorthand Aptitude Test
Descriptive Data

SAMPLE	N	Mean	Standard Deviation	Reliability N	Reliability KR_{20}	Standard Error of Measurement
1970-71 Wisconsin						
GREGG	944	17.61	7.84	709	0.88	2.59
1975-56 Twin Cities						
CENTURY 21	69	17.83	6.76	69	0.80	3.02
GREGG	565	17.40	7.54	565	0.89	2.50
FORKNER	570	17.07	8.14	570	0.88	2.70
ALL	1204	17.07	7.66	1204	0.89	2.54
1979-80 National						
CENTURY 21	1116	15.31	7.55	1101	0.90	2.39

Test-retest reliability data are not available for this "partial transcription" test. Because speed of completing the 222 omissions from the seven letters was an important factor in the test, the internal consistency reliability coefficient of r = .98 reported by Byers (1958, pp. 98-99) is probably spuriously high.

Table 2 shows the mean and standard deviation obtained on this achievement by 816 beginning shorthand students in Wisconsin in 1970-71. All of the students were learning Gregg shorthand.

Table 2

Shorthand Semester Achievement Test
1970-71 Wisconsin Study
Gregg Shorthand
N=816

Mean	Standard Deviation	Possible Score	Range
67.54	32.80	222	6 - 182

1975-76 (Minnesota). Shorthand achievement was measured by administering a series of dictation tests at three speeds at the middle of the school year and at the end of the school year. At the middle of the year, the three dictation speeds were 50, 60 and 70 wpm. At the end of the school year, these rates were raised to 60, 70 and 80 wpm. Except for the actual letters used, the dictation material and procedures were the same each time.

At each of the dictation speeds, three letters containing approximately 100 standard shorthand words were dictated. A total of nine letters were therefore dictated at both the middle and end of the year. Students were to take this dictation on three different days and on each testing day one

letter each at 50, 60 and 70 wpm (middle-of-year) and one letter each at 60, 70 and 80 wpm (end-of-year). Table 3 provides descriptive data for the 18 business letters used as the middle- and end-of-year tests.

On both the middle- and end-of-year tests students wrote all letters from tape-recorded dictation and transcribed all letters. The middle-of-year tests were administered during the 16th, 17th or 18th weeks of the school year, or after students had completed coverage of the theory of the shorthand system they were learning. The end-of-year dictation tests were administered during the last three weeks of the school year, May, 1976.

The letters were scored on the basis of the percent of actual words in each letter which were transcribed correctly. Only omissions or incorrect words were counted as errors. Added words, incorrect spelling, punctuation, or typewriting errors were not counted as errors. The number of correct words was divided by the number of actual words dictated to obtain the percent of accuracy for each letter. For the three letters at the same dictation speed, the percent of accuracy scores were averaged to yield a single percent of accuracy score at each speed: 50, 60 and 70 wpm at the middle-of-year testing, and 60, 70 and 80 wpm at the end-of-year testing. If a student missed two of the three days of dictation, her score was not included. Table 3 also shows the results of reliability analysis of the percent of accuracy score using a test-retest procedure.

Table 4 shows the means and standard deviations obtained by Forkner and Gregg shorthand students at the middle- and end-of-year testing sessions for the Minnesota validation study.

1979-80 (National). The achievement tests administered to the students learning Century 21 shorthand during the 1979-80 school year were similar to the test used in the first 1970-71 validation study. The partfal transcription tests used in 1979-80, however, were shorter than those used earlier.

Table 3
Shorthand Dictation Achievement Tests
1975-76 Minnesota Study
Middle- and End-of-Year Test Letters at Three Speeds

Test Letters	Standard Words	Actual Words	% Common* Words	Syllabic Intensity	Reliability N	Reliability r
Middle of Year						
50 wpm						
1	100	98	64.89	1.43		
2	100	91	69.66	1.54		
3	100	94	61.70	1.49		
Avg.	100	93	65.42%	1.49	37	0.91
60 wpm						
1	100	96	61.70	1.46		
2	106	107	60.00	1.39		
3	103	98	68.69	1.47		
Avg.	103	100	63.46%	1.44	12	0.70
70 wpm						
1	110	108	62.96	1.43		
2	106	105	60.95	1.41		
3	103	104	67.02	1.39		
Avg.	106	106	63.64%	1.41	16	0.79
End of Year						
60 wpm						
1	100	94	70.21	1.49		
2	100	87	62.07	1.61		
3	100	90	65.56	1.56		
Avg.	100	90	65.95%	1.55		
70 wpm						
1	104	106	59.43	1.37		
2	114	115	59.13	1.46		
3	111	104	64.42	1.51		
Avg.	110	108	60.99%	1.45		
80 wpm						
1	110	111	64.86	1.41		
2	110	105	63.81	1.48		
3	110	113	64.29	1.38		
Avg.	110	110	64.32%	1.42	27	0.93

* Common Words were the first 200 words on the Perry list of most frequently business vocabulary.

Table 4
Shorthand Dictation Achievement
1975-76 Study
Forkner and Gregg Shorthand

Shorthand System and Score	Middle-of-Year Tests		
	50 wpm	60 wpm	70 wpm
GREGG			
N	529	506	501
x̄	63.63%	53.47%	41.73%
s.d.	18.40	18.19	15.29
FORKNER			
N	507	503	479
x̄	79.81%	69.57%	54.73%
s.d.	16.16	18.69	17.50
	End-of-Year Tests		
	60 wpm	70 wpm	80 wpm
GREGG			
N	468	467	453
x̄	89.56%	78.90%	67.54%
s.d.	11.51	16.43	18.40
FORKNER			
N	388	385	375
x̄	91.85%	83.04%	68.20%
s.d.	9.59	14.19	18.30

The semester dictation achievement test consisted of four letters each 2½ minutes long dictated at the rates of 45, 55, 65 and 70 wpm. These letters had been part of the partial transcription test used in the 1970-71 validation of the shorthand aptitude test. In 1979-80, the partial transcription answer sheet contained 127 possible responses. Students were permitted 20 minutes to complete the partial transcript after writing all the dictation.

The end-of-year dictation achievement test consisted of four letters each 2 minutes long dictated at the rates of 50, 60, 70 and 80 wpm. The copy of each letter was controlled so that at least 90 percent of the words were among the 1500 most frequently used words on the Silverthorn list of business vocabulary. The partial transcript answer sheet contained 115 possible responses. Students were permitted 20 minutes to complete the transcript after writing all the dictation.

Internal consistency reliability for the partial transcription tests used in the 1979-80 validation study (KR_{21}) was r=.96 for the semester and r=.97 for the end-of-year tests. Table 5 shows the descriptive data for students on these tests.

Relationship Between Shorthand Aptitude and Shorthand Achievement

The validity of the Lambrecht Shorthand Aptitude Test is presented in three ways: the relationship between Aptitude Test scores and a student's status as a dropout or nondropout from the first-year shorthand course, the correlation between Aptitude Test scores and shorthand dictation achievement, and the proportion of students with given aptitude test scores who achieve above selected minimum shorthand achievement scores.

Shorthand Aptitude and Dropout Status. Students who withdrew from the beginning shorthand classes by the middle of the 1975-76 and 1979-80 school years had significantly lower scores on the Lambrecht Shorthand Aptitude Test than students who did not drop out. Of the 1204 students who participated in the Minnesota validation study, 289 had withdrawn from their shorthand classes

Table 5
Shorthand Dictation Achievement
Middle- and End-of-Year
1979-80 Study
Century 21 Shorthand

	Semester	End-of-Year
N	648	500
Possible Score	127	115
Range	2-124	1-115
Mean	38.12	75.79
Standard Deviation	24.15	27.44

by the middle of the school year compared with 915 who had not withdrawn. Of the 1116 students included in the 1979-80 validation study, 468 were not present for the semester dictation tests compared with 648 present. The aptitude test scores for the withdrawn/absent students were compared to the scores of those not withdrawn or absent for the semester dictation tests.

Table 6 shows mean scores for students learning Century 21, Forkner, and Gregg shorthand on the Shorthand Aptitude Test by "dropout/absent" or "non-dropout" status. Analysis of variance in the 1975-76 study showed the mean of dropouts to be significantly lower than the mean score for the non-dropouts. Similarly, t-tests in the 1979-80 study showed the aptitude test scores of those withdrawn or absent for the semester dictation test to be significantly lower than those present.

Correlation Between Shorthand Aptitude and Dictation Achievement. The Pearson Product Moment correlation coefficient between the Shorthand Aptitude Test scores and the shorthand dictation achievement tests administered in 1970-71, 1975-76, and 1979-80 are presented in Table 7. While the correlations between the Aptitude Test and shorthand achievement are moderately

Table 6
Shorthand Aptitude Test Scores
for
Middle-of-Year Dropouts and Nondropouts

Group	N	$\bar{x}$	s.d.
1975-76 Study			
DROPOUTS			
Gregg	134	14.23	6.20
Forkner	136	13.37	7.55
Century 21	19	17.26	6.22
Total	289	14.02	6.91
NONDROPOUTS			
Gregg	431	18.39	7.65
Forkner	434	18.23	7.98
Century 21	50	18.04	7.00
Total	915	18.30	7.77
Grand Total	1204	17.07	7.66
F Ratio = 70.146		F Prob = 0.000	
1979-80 Study			
Century 21			
Dropout/Absent	468	13.31	7.02
Nondropout	648	16.75	7.60
Total	1116	15.31	7.55
T-value = -7.71		T Prob = 0.000	

Table 7

Lambrecht Shorthand Aptitude Test
Validity Coefficients

SAMPLE	N	Validity Coefficient r	Coefficient of Determination r^2
1970-71 Wisconsin			
Validation Sample - GREGG	354	0.479	22.94%
Cross-Validation Sample - GREGG	355	0.550	30.25%
1975-76 Twin Cities			
GREGG			
Middle of Year			
50 wpm	470	0.437	19.10%
60 wpm	447	0.449	20.16%
70 wpm	443	0.442	19.54%
End of Year			
60 wpm	409	0.475	22.56%
70 wpm	408	0.417	17.39%
80 wpm	393	0.356	12.67%
FORKNER			
Middle of Year			
50 wpm	487	0.477	22.75%
60 wpm	483	0.568	32.26%
70 wpm	460	0.572	32.72%
End of Year			
60 wpm	375	0.449	20.16%
70 wpm	372	0.504	25.40%
80 wpm	362	0.551	30.36%

Table 7 (Continued)

SAMPLE	N	Validity Coefficient r	Coefficient of Determination r^2
1979-80 National			
CENTURY 21			
Middle of Year	648	0.508	25.81%
End of Year	500	0.520	27.04%

high in all of the validation studies, this validity coefficient is slightly higher for Forkner shorthand than for Century 21 and Gregg shorthand students.

The Coefficient of Determination (r^2) shows the proportion of the variance in the shorthand achievement tests which is accounted for by the variance in the Shorthand Aptitude Test. Approximately 1/5 to 1/3 of the variance in the achievement tests is accounted for by shorthand aptitude as measured by this test.

Likelihood of Shorthand Achievement. As an aid to visualizing the relationship between Shorthand Aptitude Test scores and shorthand dictation achievement, several tables have been developed. Achievement data from the 1975-76 and 1979-80 studies were used for these illustrations. In each table students are placed within 10 aptitude test score-range groups. Except for the higher ranges, each group includes approximately 10 percent of the students taking both the aptitude test and achievement test. For each aptitude score-range group, the proportion of students achieving at or above selected achievement scores are shown.

Tables 8 to 11 contain data for students learning Forkner and Gregg shorthand. Tables 12 and 13 contain data for students learning Century 21 shorthand. Tables 8 to 11 are described in item A below. Tables 12 and 13 are described in item B.

A) Forkner and Gregg Shorthand Students.

The mean shorthand achievement scores obtained in the 1975-76 validation study (Table 4, page 14) were used to determine the minimum shorthand achievement levels illustrated in Likelihood of Achievement Tables 8 through 11. Students learning Forkner or Gregg shorthand are identified. For given score ranges on the Shorthand Aptitude Test, these four tables show the proportion of students who achieved at or above these minimum percent of accuracy scores on the dictation tests. Each table is for a single dictation rate, Tables 8 and 9 for 50 and 60 wpm on middle-of-year dictation, Tables 10 and 11 for 70 and 80 wpm dictation at the end of the year.

In Table 8, middle-of-year dictation at 50 wpm, of the 62 students learning Forkner shorthand and having Aptitude Test scores from 0 to 8 points, 48.4 percent achievement 70 percent accuracy or above on the dictation; 35.5 percent of these 62 students achieved 80 percent accuracy or above; and 1.6 percent of these 62 students achieved 95 percent accuracy or above. Of the 50 students learning Gregg shorthand and having scores of 0 to 8 on the Aptitude Test, 18.0 percent achieved 70 percent or above on the 50 wpm dictation; 6.0 percent of these 50 students achieved 80 percent accuracy or above; and none of these 50 students achieved 95 percent accuracy.

Table 8

Likelihood of Forkner and Gregg
Shorthand Achievement Levels
for Given Shorthand Aptitude Scores
1975-76
Middle-of-Year Tests
50 wpm

Shorthand Aptitude Score	FORKNER N = 487				GREGG N = 470			
	N	≥ 70% Accuracy 27%ile*	≥ 80% Accuracy 40%ile*	≥ 95% Accuracy 82%ile*	N	≥ 70% Accuracy 69%ile*	≥ 80% Accuracy 78%ile*	≥ 95% Accuracy 97%ile*
0 - 8	62	48.4%	35.5%	1.6%	50	18.0%	6.0%	0
9 - 11	62	48.4%	35.5%	1.6%	56	17.9%	7.2%	0
12 - 14	66	59.1%	42.4%	3.0%	60	33.4%	15.1%	1.7%
15 - 17	69	72.3%	56.4%	8.7%	68	35.5%	23.5%	0
18 - 20	51	84.3%	74.5%	19.6%	60	40.0%	20.0%	1.7%
21 - 23	55	92.7%	78.2%	25.5%	55	43.6%	29.1%	1.8%
24 - 26	49	89.7%	77.5%	34.7%	52	65.4%	42.3%	1.9%
27 - 29	27	85.1%	74.0%	25.9%	36	61.0%	38.8%	8.3%
30 - 34	32	93.7%	84.3%	62.5%	25	68.0%	48.0%	12.0%
35 - 40	14	100.0%	100.0%	85.7%	8	87.5%	75.0%	25.5%

*The percentiles for each achievement score tell the percent of students scoring below this score on the achievement test.

Table 9

Likelihood of Forkner and Gregg
Shorthand Achievement Levels
for Given Shorthand Aptitude Scores
1975-76
Middle-of-Year Tests
60 wpm

Shorthand Aptitude Score	FORKNER N = 483				GREGG N = 447			
	N	≥ 60% Accuracy 32%ile*	≥ 70% Accuracy 49%ile*	≥ 95% Accuracy 91%ile*	N	≥ 60% Accuracy 64%ile*	≥ 70% Accuracy 78%ile*	≥ 95% Accuracy 99%ile*
0 - 8	61	34.3%	21.2%	0	47	12.7%	4.2%	0
9 - 11	61	42.7%	23.0%	0	53	17.0%	5.7%	0
12 - 14	66	57.5%	27.2%	1.5%	54	22.3%	14.9%	0
15 - 17	68	73.6%	47.1%	2.9%	63	31.7%	12.7%	0
18 - 20	51	78.4%	68.6%	5.9%	59	35.6%	18.7%	1.7%
21 - 23	55	85.6%	67.4%	9.1%	52	42.2%	34.5%	3.8%
24 - 26	49	85.6%	77.4%	16.3%	50	62.0%	40.0%	0
27 - 29	26	80.8%	65.4%	15.4%	36	64.0%	39.0%	5.6%
30 - 34	32	93.8%	84.4%	40.6%	25	60.0%	48.0%	4.0%
35 - 40	14	100.0%	100.0%	50.0%	8	87.5%	50.0%	0

*The percentiles for each achievement score tell the percent of students scoring below this score on the achievement test.

Table 10

Likelihood of Forkner and Gregg
Shorthand Achievement Levels
for Given Shorthand Aptitude Scores
1975-76
End-of-Year Tests
70 wpm

Shorthand Aptitude Score	FORKNER N = 372				GREGG N = 408			
	N	≥ 80% Accuracy 37%ile *	≥ 90% Accuracy 59%ile *	≥ 95% Accuracy 75%ile *	N	≥ 80% Accuracy 47%ile *	≥ 90% Accuracy 66%ile *	≥ 95% Accuracy 79%ile *
0 - 8	43	23.2%	13.9%	2.3%	40	32.5%	17.5%	5.0%
9 - 11	44	45.4%	18.1%	4.5%	42	33.2%	16.6%	9.5%
12 - 14	54	53.7%	25.9%	7.4%	51	54.8%	25.4%	17.6%
15 - 17	51	51.0%	29.4%	13.7%	52	46.2%	32.7%	11.5%
18 - 20	41	75.6%	51.2%	31.7%	54	50.1%	35.2%	22.2%
21 - 23	49	83.7%	55.1%	42.9%	51	56.8%	35.3%	23.5%
24 - 26	41	82.9%	58.5%	39.0%	49	67.3%	46.9%	30.6%
27 - 29	21	71.4%	57.1%	38.1%	35	71.4%	48.5%	31.4%
30 - 34	21	95.2%	85.7%	71.4%	25	68.0%	48.0%	44.0%
35 - 40	7	100.0%	100.0%	100.0%	9	88.9%	66.7%	55.6%

*The percentiles for each achievement score tell the percent of students scoring below this score on the achievement test.

Table 11

Likelihood of Forkner and Gregg
Shorthand Achievement Levels
for Given Shorthand Aptitude Scores
1975-76
End-of-Year Tests
80 wpm

Shorthand Aptitude Score	FORKNER N = 362				GREGG N = 394			
	N	≥ 70% Accuracy 54%ile*	≥ 80% Accuracy 79%ile*	≥ 95% Accuracy 94%ile*	N	≥ 70% Accuracy 56%ile*	≥ 80% Accuracy 71%ile*	≥ 95% Accuracy 92%ile*
0 - 8	39	18.0%	2.6%	0	39	25.7%	15.4%	0
9 - 11	43	16.3%	9.3%	0	41	24.5%	14.7%	4.9%
12 - 14	53	26.4%	15.1%	1.9%	49	32.7%	18.4%	4.1%
15 - 17	50	36.0%	26.0%	4.0%	49	38.7%	26.5%	6.1%
18 - 20	40	67.5%	45.0%	2.5%	50	46.0%	32.0%	4.0%
21 - 23	49	59.2%	34.7%	8.2%	49	49.0%	32.7%	6.1%
24 - 26	41	68.3%	46.3%	12.2%	49	65.2%	38.7%	16.3%
27 - 29	21	61.8%	38.0%	9.5%	34	55.9%	32.4%	14.7%
30 - 34	19	94.8%	84.3%	26.3%	25	68.0%	56.0%	20.0%
35 - 40	7	100.0%	100.0%	28.6%	9	88.8%	77.7%	22.2%

* The percentiles for each achievement score tell the percent of students scoring below this score on the achievement test.

Of the 69 Forkner shorthand students who had Aptitude Test scores in the 15 to 17 range, 72.3 percent, 56.4 percent, and 8.7 percent respectively achieved 70 percent, 80 percent, and 95 percent accuracy or above on the dictation test at 50 wpm. Of the 52 Gregg shorthand students with Shorthand Aptitude Test scores in the 24 to 26 range, 65.4 percent, 42.3 percent, and 1.9 percent respectively achieved 70 percent, 80 percent, and 95 percent accuracy or above on the shorthand dictation test at 50 wpm.

Tables 9 to 11 for the higher dictation speeds at the middle- and end-of-year testing sessions show a similar pattern. Higher Shorthand Aptitude Test scores were required by Gregg shorthand students to achieve percent of dictation accuracy levels attained by similar proportions of Forkner shorthand students with lower Aptitude Test scores.

As an aid in interpreting the minimum scores on the dictation tests (70%, 80% and 95% in Table 8, for example), percentile rankings of these scores are reported. For example, the minimum score of 70% accuracy represents the 27%ile on the 50 wpm dictation test. Of the 487 students taking this test, 27% scored below 70% accuracy.

B) Century 21 students

The mean shorthand achievement scores obtained in the 1979-80 national validation study (Table 5, page 16) were used to determine the minimum shorthand achievement levels illustrated in the Likelihood of Achievement Tables 12 and 13. For given score ranges on the Shorthand Aptitude Test, these tables show the proportion of students who achieved at or above the minimum percent of accuracy scores on the partial transcription tests. Table 12 shows the results for the middle-of-the-year dictation and Table 13 shows the results for the end-of-the year dictation. All students were learning Century 21 shorthand.

Table 12

Likelihood of Century 21 Shorthand
Achievement Levels for
Given Shorthand Aptitude Scores
1979-80
Middle-of-Year Tests
N=648

Shorthand Aptitude Score	N	Achievement Level		
		≥ 40% (59%ile)*	≥ 70% (86%ile)*	≥ 85% (98%ile)*
0 - 8	92	9.8%	2.2%	0
9 - 11	94	22.3%	2.1%	0
12 - 14	90	38.9%	5.5%	1.1%
15 - 17	84	45.2%	15.5%	3.6%
18 - 20	78	39.7%	11.5%	1.3%
21 - 23	76	50.0%	13.2%	1.3%
24 - 26	60	63.3%	26.7%	6.7%
27 - 29	43	72.1%	44.2%	4.7%
30 - 34	20	80.0%	60.0%	0
35 - 40	11	100.0%	54.5%	0

*The percentiles for each achievement score tell the percent of students scoring below this score on the achievement test.

Table 13

Likelihood of Century 21 Shorthand
Achievement Levels for
Given Shorthand Aptitude Scores
1979-80
End-of-Year Tests
N=500

Shorthand Aptitude Score	N	Achievement Level		
		≥ 75% (46%ile)*	≥ 85% (59%ile)*	≥ 95% (73%ile)*
0 - 8	76	9.2%	6.6%	6.6%
9 - 11	69	34.8%	18.8%	11.6%
12 - 14	60	40.0%	26.7%	13.3%
15 - 17	57	56.1%	40.4%	22.8%
18 - 20	72	59.7%	44.4%	26.4%
21 - 23	60	63.3%	48.3%	31.7%
24 - 26	43	83.7%	72.1%	51.2%
27 - 29	38	81.6%	76.3%	60.5%
30 - 34	17	88.2%	76.5%	70.6%
35 - 40	8	100.0%	100.0%	87.5%

*The percentiles for each achievement score tell the percent of students scoring below this score on the achievement test.

In Table 12, middle-of-the-year shorthand achievement, 84 students were in the 15-17 score range on the Shorthand Aptitude Test. Of these, 45.2% achieved a shorthand achievement test score of 40% or higher; 15.5% achieved 70% or higher, and only 3.6% achieved above 85%. Other score ranges in Tables 12 and 13 would be read in a similar way.

As an aid to interpreting the minimum achievement scores used (40%, 70%, 85%), the percentile ranking of these scores are reported. For example, the minimum score of 40% represents the 59%ile on the achievement test; 59% of the 648 students taking the achievement test scored below 40% correct.

VI. Collecting Other Validity Data

The normative data which have been presented in this Manual were collected from samples of high school students learning three systems of shorthand. Validity information is not currently available for other groups of students (postsecondary, for example) or for students learning shorthand systems other than Century 21, Forkner, or Gregg.

If students are learning another symbolic system, however, such as Pitman Shorthand, the normative data for Century 21 and Gregg Shorthand could be examined for a rough approximation of the results which might be obtained when these other systems are taught. If students are learning other alphabetic systems, such as Speedscript, Stenospeed, or Speedwriting, the normative data for Forkner Shorthand could be examined for a rough approximation of the results which might be obtained with other alphabetic systems.

It is better, however, for each school to collect local shorthand achievement data for the shorthand system being taught and the specific group of students being served. The following procedures should be followed in establishing local norms:

1) Administer the Lambrecht Shorthand Aptitude Test to all students wishing to learn shorthand.

   The Shorthand Aptitude Test should be administered before the students begin the shorthand course using the instructions in this Manual, pages 4 - 5.

2) Allow all students taking the Aptitude Test to enroll in the shorthand class.

   The first time the Aptitude Test is given, it is important that all students be permitted to take shorthand and that none are excluded from the course. Unless all students have a chance to try to learn shorthand, achievement data cannot be made available to show their success in the subject.

3) Keep accuracy records on the identity of students who withdraw from the course before achievement tests are administered.

   Keep a record of the students who withdraw from shorthand before the end of the first quarter or semester. It would be helpful if the reason for the students' withdrawals can be determined so that those who leave for personal reasons can be separated from those who leave because of lack of success. At the end of the first quarter or semester, the average score of the "dropouts"

on the Shorthand Aptitude Test can be compared with the average score for "nondropouts" to see if they differ. Comparison can be made with the data in Table 6, page 17 of this Manual.

4) Administer Shorthand Dictation Achievement Tests.

After 18 weeks of instruction (assuming five 1-hour class meetings per week) or when the class has completed the coverage of the theory of the shorthand system, which ever is later, administer shorthand dictation tests. These tests should be similar to those described on pages 9-15 of this Manual. The content of the letters, the length of the dictation, the speed of the dictation, and the scoring procedures should be the same as those described in this Manual for the Minnesota validation study in 1975-76.

Dictation tests should be administered again at the end of one year (nine months) of instruction.

5) Compare Shorthand Aptitude Test scores and shorthand dictation percent of accuracy scores.

For each dictation speed used for testing, find the corresponding Likelihood of Shorthand Achievement Table in the Manual, Tables 8 - 13, pages 21 - 27. You will now be constructing similar Tables for your own students.

For each of the Shorthand Aptitude Test score ranges shown at the lefthand column of a Table, place the number of students in your school achieving these scores. For example, if there are seven students in your school who had Aptitude Test scores in the range 18 to 20, place "7" next to the numbers "18-20" in the Table.

For these seven students, determine the percent who achieved at or above the minimum percents of accuracy shown at the top of the Table. For example, if four of these seven students achieved 70 percent accuracy or better on the 50 wpm dictation, place "57 percent" next to the seven students under the column reading "≥ 70% accuracy." Do this for each of the Aptitude Test score ranges at the lefthand side of the Table and for each of the minimum percent of accuracy scores at the top.

When you have completed a Table for each dictation speed, you will have Likelihood of Achievement Tables comprised of your own local norms--likelihood of achieving the various minimum achievement scores for your own students given their score ranges on the Aptitude Test.

6) Calculation of Correlation Coefficient for Local Data

A correlation coefficient is a single number between 0 and 1 which summarizes how well the Shorthand Aptitude Test predicts shorthand achievement in your school.

The correlation coefficient should be calculated between students' Shorthand Aptitude Test scores and the percent of accuracy which each student achieved on a dictation test at one dictation rate. Scores for <u>all</u> students on a single dictation test (or the average percent of accuracy on several tests at the same speed) should be included in these calculations, even if a student does not achieve above a pre-set achievement minimum, such as 80, 90, 95 or 97 percent. Exclude the Aptitude Test scores for only those students who do not have dictation scores on a particular dictation speed, such as students who have withdrawn from the course.

The formula for calculating a correlation coefficient may be obtained from several test and measurements or statistics books. The following references are suggested:

Erickson, R. C., and Wentling, T. L. Measuring Student Growth. Boston: Allyn and Bacon, Inc., 1976, pp. 433-434.

Gronlund, N.E. Measurement and Evaluation in Teaching, Second Edition. New York: The Macmillan Company, 1971, pp. 509-512.

Guilford, J. P. Fundamental Statistics in Psychology and Education, Fourth Edition. New York: McGraw-Hill Book Company, 1965, pp. 97-98.

If the correlation coefficient you calculate is greater than r = .50, then you will have confirmed that the validity of the Lambrecht Shorthand Aptitude Test is the same or better in your school as it is for the groups of students discussed in the Manual.

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Gertler, D. B., & Barker, L. A. Patterns of Course Offerings and Enrollments in Public Secondary Schools, 1970-71. DHEW Pub. No. (OE) 73-11400. Washington, D. C.: U.S. Dept. of Health, Education and Welfare, Office of Education, National Center for Educational Statistics, 1973.

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LAMBRECHT SHORTHAND APTITUDE TEST

TEST BOOKLET

LAMBRECHT SHORTHAND APTITUDE TEST

TEST BOOKLET

Directions and Examples

In this exercise, each of the items is comprised of the disarranged syllables of two words. When the syllables are arranged in their proper order, they form an adjective followed by a noun. You are to unscramble the syllables into a pair of meaningful words.

When you have decided what the two words are (always an adjective and a noun) notice the number above the last syllable of the second word (the noun). Circle this number for the appropriate problem on your SEPARATE ANSWER SHEET.

Do not spend too much time on a single item. Work as quickly and accurately as you can. If an item seems difficult, continue on to the next and come back to it later if you have time.

Here are two examples for you to do. Circle the answers on your SEPARATE ANSWER SHEET. GO AHEAD and do number E 1.

	1	2	3	4	5
E 1.	o	sta	econ	ble	my

The logical paid of words is stable economy. Since my is the last syllable of the noun, the answer is 5.

Now, go on to practice problem E 2.

	1	2	3	4
E 2.	ket	lic	pub	mar

Since the logical adjective-noun paid is public market, the answer is 1, the number above ket.

NOW, work as rapidly and as accurately as you can to complete the remaining problems. Circle all of your answers on the separate answer sheet.

WHEN INSTRUCTED TO DO SO, turn the page.

1 2 3 4
1. tal ror er fa

1 2 3 4
2. tempt tile at fu

1 2 3 4 5
3. ness like ner busi man

1 2 3 4 5
4. sure ty faul ra e

1 2 3 4 5
5. i ac ble count cred

1 2 3 4 5
6. ex vant rel cerpt e

1 2 3 4 5
7. ry al di ta ro

1 2 3 4 5
8. tial tus i sta in

1 2 3 4 5
9. u nat stinct ral in

1 2 3 4 5
10. vey com in sur plete

1 2 3 4 5
11. lic cule i rid pub

1 2 3 4 5
12. use lect ful dis neg

1 2 3 4 5
13. nite re i def ply

1 2 3 4 5
14. i tail al triv de

1 2 3 4 5
15. sem re act blance ex

1 2 3 4 5
16. mise u grad de al

1 2 3 4 5
17. i mal sode dis ep

1 2 3 4 5
18. no in vic cent tim

1 2 3 4 5
19. ent in fect her de

1 2 3 4 5
20. ing lif pro writ ic

1 2 3 4 5
21. er ex mun cise dane

1 2 3 4 5
22. tic hol fran caust o

1 2 3 4 5
23. late rain des ter o

1 2 3 4 5
24. de ble no fault ig

1 2 3 4 5
25. clu verse con ad sion

1 2 3 4 5
26. lude et ter qui in

1 2 3 4 5 6
27. view al son ter per in

1 2 3 4 5 6
28. lem di en deep ing ma

1 2 3 4 5 6
29. cal come i out ron i

1 2 3 4 5 6
30. ter u in lar val reg

CONTINUE ON TO NEXT PAGE

1 2 3 4 5 6
31. rion te cri able li re

1 2 3 4 5 6
32. sig in id ture na val

1 2 3 4 5 6
33. so nent ob po com lete

1 2 3 4 5 6
34. script men de non to me

1 2 3 4 5 6
35. er ga riv nav ble i

1 2 3 4 5 6
36. ob dice rate prej du u

1 2 3 4 5 6
37. ary pos cus de tom it

1 2 3 4 5 6
38. spon ar ne ta ous dor

1 2 3 4 5 6
39. ic ad thet he syn sive

1 2 3 4 5 6
40. her ble co gar in ent

S T O P

LAMBRECHT SHORTHAND APTITUDE TEST

ANSWER SHEET

Name _____ Age _____

School _____ Date _____

Class Period _____

E1. 1 2 3 4 5

E2. 1 2 3 4

1. 1 2 3 4

2. 1 2 3 4

3. 1 2 3 4 5

4. 1 2 3 4 5

5. 1 2 3 4 5

6. 1 2 3 4 5

7. 1 2 3 4 5

8. 1 2 3 4 5

9. 1 2 3 4 5

10. 1 2 3 4 5

11. 1 2 3 4 5

12. 1 2 3 4 5

13. 1 2 3 4 5

14. 1 2 3 4 5

15. 1 2 3 4 5

16. 1 2 3 4 5

17. 1 2 3 4 5

18. 1 2 3 4 5

19. 1 2 3 4 5

20. 1 2 3 4 5

21. 1 2 3 4 5

22. 1 2 3 4 5

23. 1 2 3 4 5

24. 1 2 3 4 5

25. 1 2 3 4 5

26. 1 2 3 4 5

27. 1 2 3 4 5 6

28. 1 2 3 4 5 6

29. 1 2 3 4 5 6

30. 1 2 3 4 5 6

31. 1 2 3 4 5 6

32. 1 2 3 4 5 6

33. 1 2 3 4 5 6

34. 1 2 3 4 5 6

35. 1 2 3 4 5 6

36. 1 2 3 4 5 6

37. 1 2 3 4 5 6

38. 1 2 3 4 5 6

39. 1 2 3 4 5 6

40. 1 2 3 4 5 6