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UTILIZATION OF PHONEME-GRAPHEME
RELATIVE FREQUENCY DATA AS AN EFFECTIVE METHOD
OF DEVELOPING READING MATERIALS FOR NAVAJO STUDENTS

by

Wesley K. Roberts

A thesis submitted in partial fulfillment
of the requirements for the degree

of

Master of Science

in

Psychology

Approved:

Utah State University
Logan, Utah

1972

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Wesley K. Roberts

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ABSTRACT

Utilization of Phoneme-Grapheme
Relative Frequency Data as an Effective Method
of Developing Reading Materials for Navajo Students

by

Wesley K. Roberts, Master of Science

Utah State University, 1971

Major Professor: Dr. David R. Stone
Department: Psychology

This thesis suggests a new method of developing reading materials for Navajo students. The core of this method is based on phoneme-grapheme relative frequency correspondence data.

A short story was phonetically edited and rewritten using the phoneme-grapheme relative frequency method. This short story was one of the major products of the thesis.

This short story and three other short stories previously phonically rewritten, were presented in both this form and in original text to 38 Navajo students for reading.

Reading speed and reading comprehension were measured for each student on the short stories. The students performed with superior reading speed and with superior reading comprehension on two stories and equal comprehension on two stories. The difference on reading speed was significant at the .01 level. On the two stories with reading comprehension differences, the difference was significant at the .05 level.

(124 pages)

CHAPTER I

INTRODUCTION TO THE PROBLEM

The extent of the Navajo Indian reading problem was emphasized when Eaton (1969) stated that one-half of the Navajo population in Arizona lack the ability to read and write the English language. When these people are in their homes, Navajo is the spoken language. It is not until they leave their homes that some mastery of reading and writing the English language becomes a necessity.

Navajo students find this bilingualism a difficult barrier when attending schools. Schools are established to teach in the English language and the Navajo youth have had little prior experience with it. Gunderson (1939) pointed out that in order to read fluently and with comprehension, the child must recognize words with ease and facility. This task becomes increasingly difficult for those students with a limited background in the English language. Most often, the schools present reading materials and instruction in a method not readily utilized efficiently by the bilingual Navajo students.

While these points on language barriers with the Navajo students are apparent to many, little has been accomplished to correct the situation. A fact revealed by a Special Subcommittee on Indian Education (1969) gives further necessity for insight into the Indian reading problem. The report

states that one-half to two-thirds of the Indian children entering school have little or no skill in the English language.

The bilingualism of the Navajo student is a difficult problem to deal with in traditional reading methods. The traditional method of teaching reading assumes that the student has some oral mastery of a basic English vocabulary. Further, the instruction is presented in a manner for rapid utilization of reading skills. The majority of students in public schools receive further feedback on reading skills at home. This is not true with the Navajo student. When the Navajo children attend schools near their homes, they can receive little or no assistance in reading from their parents due to a general lack of education in the English language. Students at boarding schools tend to use their more familiar native language outside their classroom and hence give little opportunity for feedback on English language skills.

New methods have been thought of in dealing with reading disability. Some of the relevant research completed to deal with illiterates has been that of Hanna et al. (1966) and Grow (1969). This research utilized frequency of sounds in the English language as a base for dealing with the problem of illiteracy. Since the Navajo people or students can be classified as illiterates by a Census Bureau definition, the method of phoneme-grapheme relative frequency correspondence used by Hanna and Grow can be relevant in

developing reading materials for them.

The method used by Grow (1969) establishes a basic methodology with which English language reading materials can be changed from original text to a text utilizing relative frequency of phoneme-grapheme correspondences. This method can be accomplished without losing content or meaning to the subsequent reader.

It was out of a combination of reading material, interest, and experience working with Navajo students at Utah State University that the idea of this thesis was formed.

Statement of the Problem

The objective of this thesis was to test whether or not a phoneme-grapheme relative frequency correspondence base could be effective in developing reading materials for Navajo students.

One sub-objective of the thesis was to broaden the applicability of the methodology which utilizes phoneme-grapheme control in basic reading materials. Measurements of success in this type of reading was based on reading speed and content comprehension level.

Definitions

Comprehension level: Percentage of questions answered correctly on reading short story.

Original text: The form in which reading materials are written by their author.

Phonics: Science of speech sounds.

Phoneme: A sound.

Phonetic: Refers to the science of speech sounds.

Reading skill: Reading speed in words read per minute, and level of reading comprehension.

Relative frequency: Rate at which a sound occurs in relationship to sounds made from the same grapheme.

Rewritten text: Reading materials that have been reconstructed from the original text using the relative frequency of phoneme-grapheme correspondences. Words with irregular phoneme-grapheme correspondences are not used, but are replaced by analogous words with regularly occurring phoneme-grapheme correspondences.

Justification

The need for a study of this type was one of educational emergency. Navajo students, bilingual, were being educated in large numbers (U.S. Department of the Interior, 1968) in schools where teachers were not trained to deal with their reading problem.

Since the Navajoes showed a need for a new type of reading approach, this thesis was developed in order to test reading materials for them.

Summary

In summary, this thesis tested the use of phoneme-grapheme relative frequency correspondences as an effective

tool in developing reading materials for the Navajo students.

The thesis served to further the phoneme-grapheme relative frequency method and to broaden its usage by testing the method with Navajo students.

CHAPTER II

REVIEW OF LITERATURE

Research pertinent to this thesis may be grouped into four major areas, which are: (1) References related to English as a second language among Navajo people, (2) Research related to similar sounds in the English language, (3) Articles pertaining to word perception and learning to read, and (4) Research dealing with phoneme-grapheme correspondences in reading development. These areas are utilized as the organizational scheme for this chapter.

English as a Second Language Among The Navajo People

The approach used in teaching the Navajo student to read efficiently must take into account that English is generally first used when the children leave their homes and interact outside their native culture. Navajo families communicate in their homes with their native language. It is not until this environment is removed that the Navajo people are forced to use the English language. The tremendous impact of this language dichotomy was pointed out by a United States Senate Special Subcommittee (1969) when reporting on Indian youth in the schools. The report revealed that one-half to two-thirds of the American Indian children enter formal education with little or no skill in the English language.

Since these Indian children are entering formal education under different auspices than the vast majority of American children, we should consider a different method in dealing with their unique reading problems.

The Navajo tribe has more students enrolled in school than any other single American Indian tribe. Statistics concerning the numbers of Indian children attending public schools released by the Department of the Interior (1968) listed 20,351 Navajo students enrolled in Arizona schools alone.

An example of the difficulty in establishing a school system for the highly bilingual Navajo people has been reported. Eaton (1969) revealed that when the Navajo Community College was first established, approximately 60,000 Navajoes from their reservation with a population of over 120,000 did not read or write the English language. This problem certainly carries over into the treatment effect when Navajo children initially begin their formal education in a wide variety of school systems. From the research on and writings about Navajoes and bilingualism, it appears that the high occurrence of English language inability often leads to failure in the present school system (Tunley, 1969). It can be concluded that a new system of basic English skills could greatly enhance the learning opportunities for the Navajo people.

Similar Sounds in the English Language

The English language can be very difficult to master with a high level of confidence. Stone (1966) pointed out that, in the English language, many symbols have like sounds and one symbol may have several sounds. The further breakdown of symbols has shown (Stone, 1966) that there is greater variability of sound-symbol relationships in vowels as compared to those with consonants.

Learning these sound-symbol relationships seems to be important in the early experience of the child (Frandsen, 1957) as the effect should be to teach the child to supplement context cues with phonetic analysis when approaching unfamiliar words. Lovelace (1969) found that the rate of familiarity with words was related to the ability to make correct verbal discriminations. This type of ability and exposure to high frequency words used in basal English comes early in the child's life, if the conditions for learning are present.

The method by which children are taught these basic sound-symbol and verbal-discrimination patterns does not seem to have a stable pattern. Powell (1966) reported that in teaching English skills, the effect of the word versus the phonic approach is a cyclic one. The justification for using either approach is sometimes lost in the effort of the instructor who displays personal bias. It has been reported, however, that phonemically written language is easier to

learn and subsequently easier to apply in acquiring reading skills (Bear, 1965). This research should not be received as a true conclusion within itself. A further review of literature gives more complete insight into phonic utilization. Tensuan and Davis (1965) found the use of phonetically controlled language is not the whole answer, but that a combination method is more practical. An example of such a method was reported by Williams (1968). In this report, two phonemes associated with a grapheme were introduced and practiced concurrently. The ability to try more than one phoneme for a grapheme appeared to be a consequence of this methodology. This ability may be important in integrating word and phoneme responses.

The difficulty of spelling in the English language is often related to the numerous sounds produced by the graphemes of the language. Horn (1954) gave some implications for dealing with this specific English problem. One of the suggestions included was that instruction in the consistencies and inconsistencies of phoneme-grapheme relationships should be taught in spelling instruction. Further, Horn pointed out that the words frequently misspelled are unphonetic. Therefore, instruction in phonics can greatly assist the student in spelling, but such instruction should not replace the direct study of unphonetic words.

From the research conclusions in the aforementioned literature, it can be deduced that some instruction in

phonics can facilitate concrete knowledge of similar sounds in the English language.

Word Perception and Learning to Read

Reading is an art that is developed over a continuing period of study. It is not something that just happens in the child's life. Carroll (1964) defined reading as the activity of reconstructing spoken messages from printed media and then making responses to them that would parallel a spoken language. This process involves a series of events which develop into a complex skill.

Children begin learning words early in life. They build knowledge which assists them in recognizing familiar sounds. A portion of this knowledge is word perception. Gibson, et al. (1962) stated that children learning to read fixate on the component parts of the word in the process of identifying it. Further investigation by Marchbanks and Levin (1965) revealed that the first letter in a word is the most important cue in recognizing a word.

An important part of any beginning reading program is the selection of reading materials. The problem is to select reading materials which will facilitate the most rapid and concrete system of learning available. Newton (1963) was concerned with the language of basal primers, and his main concern was the semantic clarification of high frequency words in the English language. Newton suggested careful

consideration in making vocabulary revisions in basal readers, because the vocabulary usage in basal readers, though very often repetitious, may be serving a developmental function. Research by Stone and Bartschi (1963) partially satisfies the notion put forward by Newton. Stone and Bartschi separated and classified several hundred words into mean grade levels of placement in reading materials. Such a word list could be utilized either as a base for enrichment of a reading program or for a base in remedial reading instruction.

The process of generalization seems to be somewhat established in the reading process. Clymer (1963) found, however, that many generalizations in reading are not utilized at a high frequency. One such generalization applies to the role of phonics. The phonetic approach can play an important role in the generalization of sound. Cleland and Morgan (1966) suggested that the responsibility of teaching phonics rests with the staff involved in reading instruction. An insight which can assist in such phonic instruction has been postulated. Emans (1967) stated that different generalizations may need to be learned at various levels of schooling in order to facilitate the best reading approach. Cleland and Morgan stated that the use of phonetics is but a part of the tools necessary in the reading skill developed by students. This should be remembered in the teaching of reading generalizations.

Teaching students to read should involve a less

intensive, long-term reading course than is sometimes used. Taschow (1968) found such a system to have a higher retention rate with readers. Effort from many sources, in teaching children to read, seems to have a positive effect. Teachers, peers, siblings and parents can all play a vital role in teaching a child to read. The positive effect gained by having parents take an active role in teaching children to read has been verified by Niedermeyer (1970). The parents in this research received a minimum of training and yet, the result of their efforts was very significant in their children's reading progress.

There seems to be some dispute in the area of whether or not phonics is a vital process in the facilitation of reading skills. However, there has been enough research compiled to justify the further testing of the idea. Looking at the art of reading as a step by step process seems to have broad support and does lend to the idea of utilizing a basic high frequency reading vocabulary in developing reading materials. A firm understanding of such a vocabulary should in turn have a positive effect toward the learning of a more difficult reading vocabulary.

Phoneme-Grapheme Correspondences in Reading Development

Many researchers have put together word lists that try to put English in a basic form. The development of these lists was based around their greatest possible use. Julian

Huxley, John Dewey, George Bernard Shaw, Sir Winston Churchill, et al. have endorsed the use of this system (Living Age, 1935; Churchill, 1943).

Grow (1969) has taken several word lists into consideration prior to the development of phoneme-grapheme relative frequency correspondence tables which may be utilized in re-writing original text materials, but Hanna et al.'s tables were used as the primary source for this tabular construction. Grow breaks down each word by the use of his tables. In re-writing printed material, words are used in the manner in which they appear at their highest frequency for different filter levels. Some words may be used at a low level of filtering and not used at a higher level. It has been stated that through the use of basic English, 850 words can do the work of 20,000 words (Living Age, 1931).

The use of some type of basic word recognition is the topic of many studies. Fry (1957) concluded that a basic vocabulary utilized on the basis of frequency is a useful method in the remedial reading classroom. Fry (1964) listed twelve phonics rules that apply to the frequency of sounds and symbols. A basic understanding of these rules should enhance the student's ability to acquire reading skills. Burmeister (1971) developed implications for the final vowel consonant-e in reading materials. The generalizations offered in this study have yet to be fully employed in a word frequency list. Burmeister's method applied to that of Grow would add many new words to the frequency list which could be

used in writing basic reading materials. Wiley (1928) stated that cues to give proper meaning to words are often incomplete and confusion with other words results. Grow avoided this incompleteness and confusion by classifying phoneme-grapheme correspondences as either regular or irregular, words are then presented in their highest rate of regular occurrence or at lower levels in some filters. This method seemed to be germane in developing reading materials for Navajo students and subsequently was utilized throughout the idea of this thesis.

CHAPTER III

METHODOLOGY

Subjects

Thirty-eight Navajo high school students from the Intermountain School, Brigham City, Utah, were used as subjects. Students were selected as subjects for the thesis by a guidance counselor from the Intermountain School. The students, both male and female, were all enrolled in one of the three upper high school grades at the Intermountain School.

Measuring Instruments

Four short stories (1) "Is There an American Abominable Snowman?" (Shuman, 1969), (2) "Marie" (Dostoevsky, 1968), (3) "A Learner Always" (Gorham, 1960), (all three of the aforementioned stories in their rewritten form were taken from Grow, 1969), and (4) "The Conquest of Smallpox" (Hume, 1963), were used to measure the reading skills of the subjects. It is not the intent of this thesis to measure individual reading differences, rather to test the significance of difference between the two types of reading materials. A multiple-choice test administered after each story measured the reading comprehension level of the students. Each test consisted of either nine or ten questions. The reading rate was averaged in words per minute. Each student, as asked,

circled the last word read after the first two minutes of reading each story.

Procedure

The major objective of this thesis was to measure whether or not rewritten reading materials could be valuable in developing reading skills for Navajo students.

Grow (1969) developed a methodology for rewriting reading materials that proved effective in working with illiterates. Three stories rewritten in differing difficulty levels by Grow were used as reading materials for this thesis. The fourth story, "The Conquest of Smallpox" (Hume, 1963), used in this thesis was rewritten using a combination of all five filter levels developed by Grow. The intent in using this combined procedure was to allow the maximum number of words from the original text to be included in the rewritten text. Because of the nature of relevancy to this thesis provided by Grow's study, it was used as the authoritative source for this thesis. The tables developed by Grow provided a procedure whereby rewritten reading materials could be developed for and tested with Navajo students.

An example of a paragraph being prepared for rewriting is shown below.

I	R	I	R	I	R	R	R	I
T ₂ ǔ	mǐlkmāǐd	hōō	sǎt	smīlǐng	ǎt	Dōkter	Ludlow's	nōō
The	milkmaid	who	sat	smiling	at	Dr.	Ludlow's	new

I I R R R I R R I I I
 ůprěnticě wōz yŭng ānd vērē prītē. Ōr sō t₂ŭ nōō ůprěn-
 apprentice was young and very pretty. Or so the new appren-

I R R R R R R R R I
 tīcě t₁ōt āz hē sāt ĩn ů kōrner ōv hĭz mǎster's kōnsŭltĭng
 tice thought as he sat in a korner of his master's consulting

R I I R R I I R
 rōom, wōchĭng t₂ŭ prōcēdĭngs wĭt₂ ĭntērĕst. Dōkter Ludlow,
 room, watching the proceedings with interest. Dōkter Ludlow,

R R I I R I R I R R
 hwĭlē bāndāgĭng t₂ŭ gerlz fĭngēr, wōz lĕktŭrĭng tōō her ōn
 while bandaging the girl's finger, was lecturing to her on

I I R R I R I
 t₂ŭ fāĭlĭng hĕlt₂ ōv t₂ŭ Brĭtĭsh pōpŭlāsčhŭn.
 the failing health of the British population.

Figure 1. Example of an analysis of one paragraph in rewriting reading materials. (Appendix A, p. 54)

The symbol R indicates the phoneme-grapheme correspondence occurs regularly at a high frequency in the English language. The symbol I indicates irregular occurrence of the combination. In rewriting original reading materials all words with phoneme-grapheme relative frequency correspondences which are irregular become omitted in the new text. Words with analogous meaning, or several words conveying the same meaning, which occur regularly, replace the irregular words. The filtering process is that where irregular words

are omitted. Grow used five varying levels in filtering. They are as follows:

Filter Level I: The beginning filter level which consists of mono-vowel-mono-consonant is the level at which the single most probable phoneme for each of the 26 graphemes in the English alphabet becomes established. For example, at this filter level, the short "a" sound occurs with a frequency of .54 and it is established as the single most probable phoneme for the grapheme "a."

Filter Level II: Mono-vowel-bi-consonant frequencies are considered at this second most basic filter level. In filter level II, the unknown word is divided into units of consonants and vowels. Each vowel is treated on an individual basis, and the bi-consonants are treated by sounding recognition of the appropriate modified sound or sounds. An example is the sounding of long "e" for the vowel combination "ae."

Filter Level III: Bi-vowel-bi-consonant words are treated at the third filter level. Each bi-vowel-bi-consonant word is responded to on the basis of the bi-vowel or bi-consonant frequency tables established by Grow. Mono-vowels and mono-consonants occurring in the word are treated alone. An example of this filter level is shown by the recognition sounding of the word "special." The vowel "e" should be sounded alone as a short "e" sound 42 percent of the time (Grow, 1969) and the "ia" recognition sounding is short "u" or schewa 100 percent of the time (Grow, 1969).

Filter Level IV: This level is referred to as the 10 percent level. Any phoneme produced by a given grapheme structure 10 percent of the time or more is classified as regular in phonic editing. An example of this level is shown in the recognition of the word "say." The long "a" occurs at a frequency of 13 percent (Grow, 1969). Therefore, the word "say" may be classified as regular at filter level III.

Filter Level V: This filter level deals with words ending with the mono-vowel "e." Words analyzed at this level must end with the mono-vowel "e;" bi-vowel "e" words are not considered. An example of words analyzed at filter level V is found in the word "date." The mono-vowel "e" acts alone and is not combined with another vowel for a recognition sounding as is found in the word "blue."

This thesis used a combination of all five filters and also created rules for special phoneme-grapheme cases. These rules are listed in the chapter on results, p. 22 of this thesis.

The paragraph prepared in Figure 1. is shown below in its rewritten form.

I	R	R	R
T ₂ u	milkmaid	sāt	at Ludlow's
The milkmaid that sat grinning at Doc Ludlow's young			

	R	R	R		R	R
	yŭng	ănd	vĕrĕ		Ōr	sō
assistant	looked	young	and	very	cute.	Or so
Edward	Jenner					
	R	R	R	R	R	R
	ăz	hĕ	săt	in	ŭ	kōrner
ŏv	hiz	măster's				
imagined	as	he	sat	in	a	corner
of	his	master's	attending			
	R		I		R	R
rōom,		t ₂ ŭ	prōcĕdĭngs	wit ₂		Ludlow
room,	looking	at	the	proceedings	with	care.
Doc	Ludlow,					
	R	R	I		R	R
hwilĕ	băndaging	t ₂ ŭ		fĭngĕr,		lĕktŭring
her						
while	bandaging	the	milkmaid's	finger,	began	lecturing
her						
	R	I		R	I	R
ŏn	t ₂ ŭ	hĕlt ₂	ŏv	t ₂ ŭ	Brĭtĭsh.	
on	the	ill	health	of	the	British.

Figure 2. Example of a rewritten text paragraph. (Appendix A, p. 54)

The word "the" was permitted by applying rule number 13, found on page 23 of this thesis. The demonstrated method was applied throughout the rewriting of "The Conquest of Smallpox," the short story rewritten for this thesis.

The subjects were ranked from low to high reading achievers using the California Achievement Test, previously administered to the subjects by the guidance counseling staff at the Intermountain School. The subjects were placed into

pairs by matching as closely as possible, based on their reading level, each student to another student. During the reading of each of the four stories, the students were randomly selected to read either the original text or the rewritten text of the short story.

The subjects were notified at the end of two minutes of reading time to circle the last word they had read in the story. They were then permitted to finish reading the story. A reading comprehension test was administered at the completion of each test. This procedure prevented any serial position effect on recall of the materials. After a ten minute rest period, the next story was presented. This procedure was used until all four stories were completed.

Null hypothesis: There is no difference in reading comprehension or reading speed between Navajo students reading original text compared to phoneme-grapheme simplified text materials.

To measure the null hypothesis, one statistical approach was used. This statistic was Sandler's A (Runyon and Haber, 1971). Measurement was made for each story individually. Measurement was also individualized for both reading comprehension and for reading speed differences. The significance of difference between the results found, between students reading the two types of reading materials, was the test of the methodology used in this thesis.

CHAPTER IV

RESULTS

The results of this thesis are discussed under three major headings. These headings are: (1) rules developed to facilitate the phonetically simplified rewriting of a given set of material, (2) the phonetically simplified rewriting of a short story and (3) results of the application of four phonetically rewritten selections given to a group of Navajo students. Each heading will be discussed in numbered order.

Rules Added to Facilitate the
Rewriting of Reading Material

The following list of rules was applied during the phonetic rewriting of the short story "The Conquest of Smallpox" (Hume, 1963) and was further adopted as a result of this thesis.

1. "lk" is permitted because it is pronounceable. It does not violate the frequency principle if sounded together, and does not destroy the encoding.

2. "ai" must be sounded together. (The untutored student would sound long "a," then short "i," then switch to "ai" for long "a"). The frequency is .73.

3. Vowel-consonant "e" is permitted in such syllables as "ile," where it makes the preceding vowel long.

4. In the word "Doctor," the first "o" is short and

the second "o" is long which gives proper recognition sounding. If a rule requires status for the "Doc," as in "Doctor," then the PSR--practical sounding rule--can be used as in number one.

5. Proper names and places are allowed as regular.

6. The ending "-tion" (schun, or shun) is allowed because of its constant recognition sounding. The frequency is 1.00.

7. Double vowel sounds are not allowed in two-syllable words. For example, "recess."

8. Double use of phonemes is permitted in multiple syllable words, such as "represent."

9. Instructions, as part of the text, must be simplified or given orally with explanation.

10. "le" is the sounding recognition for the combination "ly." The word "example" illustrates this rule.

11. The "shus" sounding recognition for the ending "-tious" is allowed as regular. The frequency is 1.00.

12. You may omit clauses which do not add vital information to the sentence or the text, if they contain irregular elements.

13. Although irregular, "the" is permitted for clarity of the text.

14. "to," although irregular, is also permitted for clarity of the text.

15. "great" is permitted for description of a circumstance, but the synonyms "big" and "famous" are suggested.

16. "you" and "your" are allowed as regular in order to have personal pronoun structure.

17. The words "cow" and "cowpox," although irregular, must be allowed as part of the story in order to prevent lack of meaning.

18. The vowel-consonant "er" is allowed.

19. "-tain" is sounded "tun" and it is allowed as regular.

20. Single "a" is admitted at a very low frequency, as in the word later.

Some of the aforementioned rules were developed for particular use in the phonetic rewriting of the short story "The Conquest of Smallpox" and would, therefore, not have a general application to all phonetic writing. This illustrates that both common and unique simplification needs must be considered.

The Rewriting of a Short Story

A short story was phonetically edited and rewritten using the listed rules established in this thesis and a combination of the five filter levels developed by Grow (1969). These five rules are: (1) mono-vowel-mono-consonant, (2) mono-vowel-bi-consonant, (3) bi-vowel-bi-consonant, (4) 10 percent, and (5) "e"-cued. The new rules were established to allow words previously edited out of the rewritten text. Grow's filter levels edited words in or out depending on the complexity of the phoneme-grapheme relationships in the word.

Each level progressed in difficulty to the untutored student's ability to recognize sounds.

The short story "The Conquest of Smallpox" (Hume, 1963) was selected for phonetic rewriting in this thesis. This story is presented in original text form in appendix A of this thesis. The phonetic revision of this story is presented with the resulting classification of each word as either regular or irregular. The short stories rewritten by Grow are presented in both original and rewritten forms. These are found in appendix A of this thesis. Questions presented to each student at the end of the reading exercise on each story are shown in appendix B of this thesis.

Results of the Application of Four
Phonetically Rewritten Stories to a Group
of Navajo Students

The results of the experimental and control groups reading "The Conquest of Smallpox" are shown below in tables one through four.

Table 1. Summary of the Performance of the Control and Experimental Groups on the Reading Speed Criterion.

	Experimental Group	Control Group
1. Total number of words read in one minute, based on a two-minute average.	4033	2776
2. Group Mean	212.26	146.10
3. Standard Deviation Between Groups		76.08
4. Standard Error Between Groups		17.45

Sandler's A was computed on the raw data and is summarized below in Table 2.

Table 2. Sandler's A Computed for the Reading Speed Average in One Minute.

Formula	Values	Result
$A = \frac{D^2}{(D)^2}$	$\frac{187,349^*}{1,580,049}$.12

*This value is significant at the .01 level.

Table 3. Summary of the Performance of the Control and Experimental Groups on Reading Comprehension Criterion.

Item	Experimental Group	Control Group
1. Total Number of Questions Answered Correctly	92	72
2. Group Mean	4.84	3.79
3. Standard Deviation Between Groups		24.83
4. Standard Error Between Groups		5.70

Sandler's A was computed on the raw data and is summarized in Table 4. below.

Table 4. Sandler's A Computed for the Reading Comprehension Criterion.

Formula	Values	Result
$A = \frac{D^2}{(D)^2}$	$\frac{13,200^*}{40,000}$.33

*This value is significant at the .025 level.

The results of the experimental and control groups reading differences on the story "Is There An American Abominable Snowman?" (phonetically rewritten by Grow, 1969)

are shown below in Tables 5 through 8.

Table 5. Summary of the Performance of the Control and Experimental Groups on Reading Speed Criterion.

	Experimental Group	Control Group
1. Total Number of Words Read in One Minute Based on a Two-Minute Average	3456	3027
2. Group Mean	181.89	159.32
3. Standard Deviation Between Groups		53.17
4. Standard Error Between Groups		12.20

Sandler's A was computed from the raw data and is summarized in Table 6 below.

Table 6. Sandler's A Computed for the Reading Speed Criterion.

Formula	Values	Result
$A = \frac{D^2}{(D)^2}$	$\frac{60,569^*}{184,041}$.33

*This value is significant at the .025 level.

Table 7. Summary of the Performance of the Control and Experimental Groups on Reading Comprehension Criterion.

Item	Experimental Group	Control Group
1. Total Number of Questions Answered Correctly	63	51
2. Group Mean		
3. Standard Deviation Between Groups		18.61
4. Standard Error Between Groups		4.27

Sandler's A was computed on the raw data and is summarized in Table 8 below.

Table 8. Sandler's A Computed for the Reading Comprehension Criterion.

Formula	Values	Result
$A = \frac{D^2}{(D)^2}$	$\frac{7,000^*}{14,000}$.49

*This value is not significant at the .05 level.

The results of the experimental and control groups reading variances on the short story "A Learner Always" (phonetically rewritten by Grow, 1969) are shown in Tables 9 through 12 below.

Table 9. Summary of the Performance of the Control and Experimental Groups on Reading Speed Criterion.

Item	Experimental Group	Control Group
1. Total number of words read in one minute based on a two-minute average	3879	3079
2. Group Mean	203.89	162.05
3. Standard Deviation Between Groups		59.68
4. Standard Error Between Groups		13.69

Sandler's A was computed on the raw data and is summarized in Table 10 below.

Table 10. Sandler's A Computed for the Reading Speed Criterion.

Formula	Values	Result
$A = \frac{D^2}{(D)^2}$	$\frac{94,352^*}{574,564}$.16

*This value is significant at the .01 level.

Table 11. Summary of the Performance of the Control and Experimental Groups on Reading Comprehension Criterion.

Item	Experimental Group	Control Group
1. Total Number of Questions Answered Correctly	122	119
2. Group Mean	6.42	6.26
3. Standard Deviation Between Groups		24.55
4. Standard Error Between Groups		31.73

Sandler's A was computed on the raw data and is summarized in Table 12 below.

Table 12. Sandler's A Computed for the Reading Comprehension Criterion.

Formula	Values	Result
$A = \frac{D^2}{(D)^2}$	$\frac{10,900^*}{900}$	12.11

*This value is not significant at the .05 level.

The results of the experimental and control groups' reading differences on the short story "Marie" (phonetically

rewritten by Grow, 1969) are shown below in Tables 13 through 16.

Table 13. Summary of the Performance of the Control and Experimental Groups on Reading Speed Criterion.

Item	Experimental Group	Control Group
1. Total Number of Words Read in One Minute Based on a Two-Minute Average	3847	2948
2. Group Mean	202.47	155.15
3. Standard Deviation Between Groups		69.09
4. Standard Error Between Groups		15.85

Sandler's A was computed on the raw data and is summarized in Table 14 below.

Table 14. Sandler's A Computed for the Reading Speed Criterion.

Formula	Values	Result
$A = \frac{D^2}{(D)^2}$	$\frac{128,453^*}{808,201}$.16

*This value is significant at the .01 level.

Table 15. Summary of the Performance of the Control and Experimental Groups on Reading Comprehension Criterion.

Item	Experimental Group	Control Group
1. Total Number of Questions Answered Correctly	136	111
2. Group Mean	7.15	5.89
3. Standard Deviation Between Groups		28.34
4. Standard Error Between Groups		6.50

Sandler's A was computed on the raw data and is summarized in Table 16 below.

Table 16. Sandler's A Computed for the Reading Comprehension Criterion.

Formula	Values	Result
$A = \frac{D^2}{(D)^2}$	$\frac{19,512^*}{96,100}$.20

*This value is significant at the .025 level.

Table 17. Summary of Results

Story	Experimental Group	Control Group	Significance Level
1. THE CONQUEST OF SMALLPOX			
a. Total words read in one minute based on a two-minute average.	4033	2776	.01 S*
b. Total number of questions answered correctly.	92	72	.025 S*
2. IS THERE AN AMERICAN ABOMINABLE SNOW-MAN?			
a. Total words read in one minute based on a two-minute average.	3456	3027	.025 S*
b. Total number of questions answered correctly.	63	51	.05 NS**
3. A LEARNER ALWAYS			
a. Total words read in one minute based on a two-minute average.	3879	3079	.01 S*
b. Total number of questions answered correctly.	122	119	.05 NS**
4. MARIE			
a. Total words read in one minute based on a two-minute average.	3847	2948	.01 S*
b. Total number of questions answered correctly.	136	111	.025 S*

*Significant level

**Not significant level

In summary, the null hypothesis of "There was no significant difference between the performance of Navajo students reading original text materials and Navajo students reading phonetically rewritten materials" would be rejected.

The experimental group read a greater number of words than did the control group. The difference was significant at the .01 level for three of the stories and at the .025 level for one story.

On two of the stories, the experimental group answered correctly more questions than did the control group. This difference was significant at the .025 level in both cases. The difference on the other two stories was not significant at the .05 level.

A word list of all words utilized in the phonetic re-writing of the story "The Conquest of Smallpox," (Hume, 1963) is shown in Appendix A of this thesis. The resultant classification of a word as regular or irregular is based on the usage of the word in the story "Pox Prevention."

CHAPTER V

SUMMARY

The major objective of this thesis was to test phonetically rewritten materials as a base for teaching Navajo students to read.

The methodology used to accomplish this objective consisted of two parts. They were: (1) rewriting a short story ("The Conquest of Smallpox") for use as a measuring device for the thesis, and (2) utilizing this short story and three other short stories ("Is There An American Abominable Snowman?," "A Learner Always," and "Marie") as measuring devices for the hypothesis.

Two forms of each story were presented to the students. The control group read each story in the author's text, and the experimental group read the stories in the phonetically rewritten text. The differences between reading speed and reading comprehension served as the criteria for measurement on each story.

Conclusions

The value of phoneme-grapheme relative frequency correspondences as a base for developing reading materials for Navajo students was verified by this thesis. Simplified phonic utilization in reading materials seemed to have merit in dealing with Navajo students. As a system standing apart

from all other methods, the phonetic method is not espoused to be all-encompassing in a reading program. Rather, it seems logical that phonic simplification gives more hope of wider success to the reading program.

One problem yet to be met is that of deciding which filter to use at what reading level. This problem could be solved by investigation into the appropriate reading level of the materials being developed and then using the filter which provides the best materials for that level.

Another problem in the phonetic writing method is the developing of basic phonic rules which apply in all cases. The only method which seems appropriate at this time is that of relative frequency. However, specific rules utilized in this thesis for the story "The Conquest of Smallpox" should be broadened to apply to any story being rewritten.

The case of vowel-consonant "e" should be developed into frequency tables in order to provide expansion to the present phonetic writing method.

In addition to the aforementioned conclusions, another set of conclusions summarized the findings of this thesis.

They are:

1. Phonetically rewritten reading materials can be utilized in developing reading materials for Navajo students.

2. A comprehensive word bank of regular words would provide a much more rapid technique of phonetic writing than the method used in this thesis. The words used in these

stories as "regular" have been put into an alphabetical list in appendix C.

3. The performance of Navajo students reading phonetically rewritten reading materials was superior to Navajo students reading original text materials on the criterion of reading speed.

4. Navajo students reading phonically rewritten materials gave some indication of comprehending at a higher degree when compared to Navajo students reading original text materials. This conclusion is only partially supported by present evidence and should lead to new reading research in phonetic writing techniques.

Recommendations

It is recommended that:

1. Further testing be made as to the reading comprehension differences between students reading original text and students reading phonetically rewritten text materials.
2. A word bank of phonetically regular words be established to facilitate rapid writing of materials using the phoneme-grapheme relative frequency correspondence base.
3. Rules be established which apply to the highest number of phoneme-grapheme cases. These rules should also be taught as a basic part of the instructions in a reading program.
4. Further research be completed which will account for

all possible phoneme-grapheme combinations, and that this research be based on relative frequency of occurrence.

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APPENDIXES

Appendix A
Presentation of Original Text and
Phonetically Rewritten Text Materials

THE CONQUEST OF SMALLPOX
(Original Text)

The milkmaid who sat smiling at Dr. Ludlow's new apprentice was young and very pretty. Or so the new apprentice thought as he sat in a corner of his master's consulting room, watching the proceedings with interest. Dr. Ludlow, while bandaging the girl's finger, was lecturing to her on the failing health of the British population.

"Don't know what we're coming to," he rumbled on. "Here we are in the modern age! The year 1766! Progress everywhere you look. And we're an unhealthier lot than our great-grandparents were. Twenty more buried last week."

He paused long enough to tie the last knot in the bandage. "Pox got 'em! Never know who'll be next! Could be you! Then that pretty skin of yours wouldn't look so pretty!"

At that the girl turned to him quickly. "Smallpox?" she said. "Bless you, no sir! I cannot take that disease."

"And why not, pray, Missy?"

"I've had the cowpox!" she said proudly, as though it were a personal triumph.

Dr. Ludlow grunted. This popular superstition of the village milkmaids had always amused him. They actually believed, poor ignorant girls, that a case of cowpox--the mild

animal disease which all dairy people caught at one time or another--would protect them against smallpox.

"Edward," he said to the boy, "you hear that? Don't forget it! Whenever you go visiting your patients, take a cow with you! Wonderful animal, the cow!" The good man appreciated his humor more than either member of his audience. He roared with delight. The girl pouted. Young Edward Jenner smiled.

But that moment led eventually to the control of smallpox, the deadliest disease then known to mankind. For Edward Jenner was a man who took knowledge where he found it. For years he would store it away in his memory that the village milkmaids had clear complexions, unmarked by the vicious disease, and that they believed themselves to be safe from smallpox.

When Edward Jenner had learned all that old Dr. Ludlow could teach him, he went to London to study with John Hunter, the foremost surgeon of the day and one of the greatest scientific investigators of all time.

Hunter quickly recognized the boy's talent. When Jenner had finished his formal studies, the famous doctor offered to hire him as an assistant. At the same time the renowned explorer of the South Seas, Captain James Cook, invited him to come along on a forthcoming expedition as ship's naturalist.

It was a flattering choice for a country boy to have to make. But because he was a country boy at heart as well as in fact, Edward Jenner declined both offers and went home to the

quiet village that he loved. Here he married, settled down, and devoted himself to the broken bones, measles, and babies of his country neighbors. And thus his life might have run to the end--except for an idea.

"I cannot take that disease. I've had the cowpox!" a milkmaid had said, years before. Jenner knew that smallpox itself would protect against smallpox, for having once had the disease you were safe from it forever after. Inoculation had been a custom in England for some years. This was the practice of injecting matter from a smallpox pustule into a healthy person. Artificially induced smallpox was milder, people thought, than genuinely "caught" smallpox.

The theory was good. The practice left much to be desired. Inoculation was a terrible ordeal in itself. It had, moreover, the effect of keeping Europe in a state of epidemic for years. There was enough smallpox around without purposely making new cases.

But would the harmless cowpox also give immunity to smallpox? In London, Jenner had put the question to John Hunter, "Do you think that cowpox really prevents smallpox?"

Most London doctors would have laughed at the question. But John Hunter had a theory about the teaching of medicine. He never said "No!" when a pupil asked him whether something could be done. He said instead, "Science is unlimited. Perhaps!" And to Jenner who had asked a question to which he did not know the answer, Hunter said, "Don't think! Try! Be patient. Be accurate."

Since the time had not come to try, Jenner continued to think. He talked too. His friends began to get a little bored with his endless conversation about cowpox. The medical men among them grew angry as well as bored. "A man in your position," they told Edward Jenner, "should not be building scientific theory on the gossip of dairymaids!"

And so, when Jenner was ready to turn the tantalizing idea into a fully informed medical opinion, he stated it first not to a fellow physician, but to a poet. A poet, he felt, would understand wild, unlikely ideas much more easily than a scientist.

It was in May of 1782, Jenner was riding on the road from Gloucester to Bristol with his friend Edward Gardner. He began to talk about cowpox, hesitantly at first. Gardner smiled to himself in the darkness, amused that his friend should be thinking about cows on this starlit spring night. But he grunted encouragingly. What he had never dared to say outright to any of his medical colleagues, Jenner said to the poet.

"Gardner, I believe that there is one type of cowpox that will give protection against smallpox. I hope--and it has become more than a hope--that some day the practice of producing this cowpox in human beings will spread all over the world. When that day comes there will be no more smallpox."

Jenner now set out to prove this theory. His friends were willing and eager to point out the flaws in it. There

was a milkmaid in Kingscote with smallpox, a colleague assured him. She had had the cowpox the year before. A farmer's boy in Gloucester had recently died of smallpox--after a serious case of cowpox the month before.

How could he explain these cases and the others that came to his attention? Certain patients had definitely been infected with the cowpox. Later they had died of smallpox. Didn't this prove that Jenner's theory was wrong?

It took him nearly five years to answer this question. He made a complete study of all dairy diseases and found that cows are victims of quite an assortment of ills. Many of these cow diseases produced running sores on the hands of the milkers. All of these sores were called "cowpox." But Jenner believed that only one kind was the preventive against smallpox. He divided the dairy diseases into two categories: "true" cowpox and "spurious," or false, cowpox.

So that was all there was to it, said a colleague with whom Jenner was talking one day. Then, how did he explain the dairy in Newport that had an epidemic of the "true" cowpox last month and was now undergoing a siege of smallpox?

Jenner went at once to Newport. Had it really been cowpox, true cowpox? "Oh, yes, Dr. Jenners," the dairyman assured him. "All the real symptoms you told us about." And it was true that some of the milkers now had smallpox? The man nodded at the freshly turned earth in the churchyard across the road.

This seemed to be perfect clinical proof that Jenner

was wrong. But he did not give up.

He began all over again, with a careful examination of all the local cows. Here was a case of true cowpox, and a bad one. This was the height of the disease, Jenner decided, rubbing the animal's ears sympathetically. Here was another case. It was nearly over, from the look of the sores.

Cowpox has stages, he thought, just as smallpox does. Suppose the infectious matter in the sore was different during the different stages of the disease. Suppose that after a certain period, the matter could still cause eruptions on the hands of the workers, but could not protect them against smallpox.

Between the long, night-and-day hours which he devoted to his patients, he began a new study of hundreds of cows and milkers in various stages of cowpox. Another five years passed, then six, and eight, and nine. The result of his research? A knowledge that true cowpox has certain well-marked stages of development.

On May 14, 1796, a milkmaid named Sarah Nelmes walked into Jenner's office. She had a bad case of cowpox, she told the doctor. Her employer had sent her around to have her hand bandaged. Jenner saw that she had an ugly, running sore, a cowpox pustule at the very peak of its development. He had seen hundreds of cases of cowpox at dairies, but he had never before been asked to treat one in his office.

As Jenner looked at the girl's hand, the voice of the now dead John Hunter was in his ear, as clearly as if the

man had been standing by his side. "Don't think! Try!" He had been thinking for fourteen years. Surely it was time to try!

His meditations were interrupted by the sound of shouts and laughter. He looked out the window. The caretaker's children were playing tag in the garden outside his office. James, the eldest, was a healthy-looking boy of eight. Jenner watched the child for a moment, then went to the door and called, "James! Will you step in here for a few minutes, please?"

One of the most significant events in history then occurred. Jenner took some of the matter from the sore on the milkmaid's hand and scratched it into the arm of the boy. It was the first vaccination.

James developed a mild case of cowpox, as scheduled. The experiment was half over. On July 1, Jenner inoculated him with the infectious matter taken from a smallpox victim. Since smallpox inoculation was a widespread custom of the time, this was not an unusual action.

Two weeks later he wrote his friend the poet:

A boy by the name of Phipps was inoculated in the arm from a pustule on the hand of a young woman who was infected by her master's cows . . . But now listed to the most delightful part of my story. The boy has since been inoculated for the smallpox, which, as I ventured to predict, produced no effects.

Jenner, still cautious, repeated the experiment twenty-three times more before he published his results in a historic paper which he called "An Inquiry into the Causes and

Effects of the Variolae," which is the scientific name for cowpox, and comes from the Latin word for cow.

A great furor followed the announcement. It was fed by wild rumors about children who had been vaccinated and had promptly moomed. But soon, because the need was so desperate, the attitude began to change. The self-effacing country doctor found himself the most talked about man in the world. It took three secretaries to handle the mail that poured in. Every day brought requests for vaccine lymph, reports on cases, questions about the proper method, letters of congratulations, and crackpot letters urging him to repent his folly. "I have become vaccine clerk to the world, he said to Gardner one afternoon, as he leafed through the mailbag.

Very soon there was not a part of the world that had not taken up vaccination. France, Germany, Spain, and Austria were the first. The news was carried to Greece and spread from there to Turkey, Armenia, and the Far East. In 1803, the Spanish government sent a naval expedition to carry vaccine lymph to the far-flung Spanish possessions in South America and the Caribbean. The expedition then moved on to China. India, the last stronghold of smallpox, urgently requested lymph, which was finally sent from Vienna.

News of Jenner's discovery had reached the United States with the publication of his inquiry. The new nation was cool to the idea at first. But when President Thomas Jefferson had himself vaccinated, the popularity of the discovery was assured.

Honors and gifts from all over the world came to Jenner. The Empress of Russia sent him a diamond ring. An American Indian chief sent him a wampum belt. The French Emperor, Napoleon, although he was at war with England, released two British prisoners when he learned that they were friends of Edward Jenner. In Germany, May 14--the date of James Phipps' vaccination--was declared a yearly national holiday.

But in England, Jenner was plagued by the petty jealousy of his colleagues, the powerful physicians of London. They could never quite stomach the fuss that was being made over the country doctor. When he was nominated for membership in the Royal College of Physicians, it was voted that he could not be admitted until he had taken the usual examinations in Latin. "And that," he said, "I will not do for the whole of John Hunter's museum!"

The sharp voices of his critics meant little to Jenner when he read the statistics that were sent in after a trial period of two years. In Havana, for example, there had not been a single death from smallpox in the two-year period. And Havana had once had the highest smallpox death rate in the world. In Milan, no deaths; in Vienna, no deaths; in Denmark, Norway, and Sweden, no deaths. In the whole of South America, no deaths.

"I hope that some day the practice of producing cowpox in human beings will spread over the whole world," he had once said to Gardner. "When that day comes, there will be no more smallpox."

There was more than "no smallpox." The country doctor who was not too proud to find wisdom in the tradition of his people had brought an entirely new concept to medical practice--the doctrine of preventive medicine.

Text Phonetically Rewritten For This Thesis

POX PREVENTION

The milkmaid that sat grinning at Doc Ludlow's young assistant looked young and very cute. Or so Edward Jenner imagined as he sat in a corner of his master's attending room, looking at the proceedings with care. Doc Ludlow, while bandaging the milkmaid's finger, began lecturing her on the ill health of the British.

"Don't understand what we're nearing," he rumbled on. "We're in the modern age! The year 1766! Progress everywhere you look. And we're an unhealthier bunch than your great-grandparents. 20 persons died last week."

He paused, then tied the last loop in the bandage. "Pox got 'em! Never can tell the next! May be you! Then that skin of yours wouldn't look so good."

At that the milkmaid looked at him. "Pox?" she said. "Bless you, no sir! I cannot take that illness."

"And why refuse, pray, Missy?"

"I've had the cowpox!" she said proudly, as if a personal triumph.

Doc Ludlow grunted. This belief of the milkmaids had bewilderment for him. They actually believed it, the milkmaids, that an illness of cowpox, which all dairymaids catch at a point or another, protects them from the Pox.

"Edward," he said, "you get that? Don't forget it! The good man valued his manner more than either member of

He roared with joy. The milkmaid pouted. Young Edward Jenner grinned.

But that moment led for the control of Pox, the deadliest illness men then had. For Edward Jenner had been a man that took things as he found them. For years he remembered that the milkmaids had good complexions, untouched by the vicious illness, and that they believed themselves free from the Pox.

After Doc Ludlow had taught Edward Jenner about medicine, Edward studied in London with John Hunter, the foremost Doc of the day.

Hunter found the boy's talent. When Jenner had ended his formal studies, the famous Doc Hunter offered him a contract as an assistant. At that moment, the noted Captain of the South Seas, James Cook, invited Jenner along on a trip as ship's assistant.

Jenner loved the flattering offers but he loved the country more and so he went home. He wed, and dealt with the illnesses of his country neighbors. But for a belief, his life didn't end in the country.

"I cannot take that illness. I've had the cowpox!" a milkmaid had said. Jenner said that Pox itself protected from more Pox, for having the illness before protected you from it forever. Innoculation had been in effect in England for years. This way of injecting matter from a Pox boil under the skin of a healthy person induced Pox that seemed mild to that ordeal of most Pox.

The belief seemed good, but inoculation, a fearsome ordeal in itself, had, moreover, the effect of keeping Europe in an illness for years. Enough Pox had been around without making more of it.

But the mild cowpox give immunity to Pox? In London Jenner had asked John Hunter, "Do you think that cowpox really prevents Pox?"

Most London Docs grinned at the notion. But John Hunter had a notion about the teaching of medicine. He never said "No!" when a pupil asked him if a certain thing happened when done. He said, rather, "Medicine is unlimited. Perhaps." Jenner had a notion to which he didn't have a response, Hunter said, "Don't think! Try! Wait! Be accurate."

Jenner continued thinking as the moment for trying hadn't neared. While rapping, his company began getting bored with Jenner's thinking on cowpox. Medical men among them got angry as well as bored. "Gossip of dairymaids won't get it," they told Edward Jenner.

And so, when Jenner readied an informed medical notion, he told Edward Gardner, a man other than a fellow physician. Jenner felt with a man like Gardner, other than medical, the notion had a chance.

In May of 1782, Jenner, on the road from Gloucester going for Bristol, with Edward Gardner, began hesitantly rapping about cowpox. Gardner grunted in support, as he grinned. Jenner amused him by saying things in Gardner's company which he never said with other Docs near.

"Gardner, I believe that having cowpox is protection from the Pox. I think that a day will happen when inoculating cowpox matter in humans, will protect Pox from spreading. When that day is contacted, Pox will be no more."

Jenner set out for proof of this notion. Many persons willingly pointed out flaws in his notion. A milkmaid in Kingscote had cowpox, the Pox later, a Doc told Jenner. A boy in Gloucester had cowpox and then died of Pox. Persons had definitely been infected with cowpox, later they had died of Pox. Didn't this prove Jenner's notion wrong?

It took him nearly five years but he answered these happenings. He studied dairy illness and found that cows have lots of ills. A cow illness makes a boil on the hands of milkers, "cowpox." But Jenner said that only a kind of cowpox prevented Pox. He classified dairy illness, "true" and "other" cowpox.

"So that's it, said a Doc, as Jenner rapped with him. But at a dairy in Newport, milkers had had "true" cowpox last month and did have Pox.

Had it really been "true" cowpox? Jenner asked dairymen at Newport. "Oh, yes, Doc Jenner," they said. "The true cowpox you told us about. And the milkers did have Pox."

It seemed Doc Jenner had been wrong, but he went on. He began over, looking at local cows. He found a cow with "true" cowpox at its height of illness, and one that seemed about over from the looks of the cowpox.

The cowpox illness varies as does the Pox itself.

Suppose the matter in their boils varied during cowpox. Suppose that, at periods, milkers got cowpox, but no protection from Pox.

Between clients, Doc Jenner began another study of hundreds of cows and milkers in various period of cowpox. Another 5, then 6, and 8, and 9, years went by. The results? Cowpox matter does vary in periods of the illness. On May 14, 1796, a milkmaid, Sarah Nelmes, went in for treatment. She had a bad illness of cowpox, she told Doc Jenner. Her hand needed a bandage so her employer had sent her. Doc Jenner looked at her ugly running cowpox, at its height of illness. He had seen hundreds of cowpox at dairies, but the milkers had never asked Doc Jenner for treatment.

As Jenner looked at her hand, he heard the dead John Hunter say, just as if standing by him, "Don't think! Try! Doc Jenner had been thinking for 14 years. So he must try!

Sounds of shouts and fun stopped Doc Jenner. He looked out at the kids playing tag in the yard. James, the eldest, and a healthy-looking boy of 8, played with them. Jenner looked at James for a moment, then went and asked him in.

A big event then took hold. Jenner took cowpox matter from a boil on Sarah's hand and injected it in James' skin, an inoculation for Pox.

James later had the cowpox, as Doc Jenner planned. The was half over. On July 1, Jenner inoculated James with infectious matter taken from a person with Pox. Another Pox inoculation, a widespread action.

2 weeks later Edward Gardner got a letter from Doc Jenner: "Edward, I inoculated a boy, James, with cowpox matter. It protected James when inoculated with Pox matter."

Jenner inoculated 23 more persons before publishing his results in a paper on Pox. Bad stories followed the publication. But, with a need for Pox inoculation, mass Pox inoculation soon began as did good stories on Jenner.

3 women handled letters for Jenner, as he had started a good protection from Pox. Other Docs sent Jenner requests for matter for Pox inoculation. "Gardner, I am the Pox inoculation clerk," Jenner said, looking at the letters.

Very soon France, Germany, Spain and Austria took up Pox inoculation. Then Greece, Turkey, Armenia and the Far East used Doc Jenner's lymph for Pox inoculation.

In 1803, Spain sent ships with inoculations for Spanish persons in South America. Inoculations then went on in China, and finally in India, the last big point for Pox, requested lymph for Pox inoculation.

Jenner's paper had bad effects in the United States. But when President Thomas Jefferson had a Pox inoculation, popularity for Doc Jenner's results went up.

Jenner got gifts; from the Empress of Russia, a ring, and a belt from an American Indian Chief. Fretting with England didn't stop the French Emperor, Napoleon, from releasing 2 British captives, fellows of Doc Jenner. In Germany on May 14th, the date of James Phipps' Pox inoculation by Doc Jenner, yearly festivities begin.

But in England, other Docs showed jealousy for the country Doc, Edward Jenner. When offered membership in the Royal College of Physicians, they voted that Jenner must be tested in Latin. "And that," he said, "I won't do for John Hunter's museum!"

Critics on Pox inoculation meant zero, when Jenner read the results of 2 years of trials.

In Havana, with the biggest death mark from Pox before, no deaths. In Milan, no deaths; in Vienna, no deaths, in Denmark, Norway, and Sweden, no deaths, and in South America, no deaths.

"When Pox inoculation spreads there will be no more Pox," said Jenner. More than no more Pox, the country Doc started the medical doctrine of preventative medicine.

IS THERE AN AMERICAN ABOMINABLE SNOWMAN?¹

(Original Text)

For more than a century, a strange legend has stalked the remote and rumped mountains of Northwest American. It tells of huge, hairy creatures which walk erect and look more like men than apes. Is it truth, or is it fiction?

"It was in the middle of the night and I was groggy with sleep," 75-year-old Albert Ostman recalls. "Something grabbed my sleeping bag and lifted me off the ground. I reached for my sheath knife and couldn't get at it. The beast, or whatever it was, threw me over its shoulder like a sack of flour. I could feel it striding on two legs."

Ostman, a husky logger looking for gold in British Columbia in 1924, estimates that he was carried across wild and rugged terrain for three hours. "I was too scared to struggle," he says. Finally his captor stopped and dropped him to the ground.

In the dim light of dawn, Ostman gazed up at a group of creatures circling him and chattering unintelligibly. "I had never believed in the Indian legends of 'Sasquatch,' but I knew that's what they were," Ostman explains. "They looked like a cross between a man and an ape. Their bodies were

¹Richard T. Grow. Reading Instruction and Phonetic Control in Materials Based Upon Relative Frequency of Phoneme-Grapheme Correspondences. Ph.D. Dissertation, Utah State University, Logan, Utah, (1969), pp. 152-172.

covered with hair, and they had bulging muscles. They were bigger and taller than human beings; one of them must have been nearly eight feet tall."

"For six days I was held captive. Only in the confusion when one became violently ill from swallowing an entire tin of snuff that I had was I able to escape."

Ostman's bizarre story is but a single chapter in one of the world's most intriguing mysteries: Does there exist, in the Pacific Northwest a subhuman creature, perhaps an American cousin of the Abominable Snowman of the Himalayas? Like that fabled Snowman, such a humanoid could be a link between man and ape--a vital piece in the puzzle of man's evolution.

Scores of eyewitnesses have told of seeing giant, ape-like creatures and their unique, oversized footprints--some measuring 16 inches and more in length--in the mountain areas of the Pacific Northwest. In Canada, they are generally called Sasquatch, an English version of an Indian name. In the United States, many call them Bigfoot.

The case for Bigfoot. Although the stories of sightings are remarkably consistent and similar, there would appear to be little chance of people working together to perpetrate a hoax, since the reports have been so separated in time and location. No one knows how many people believe they have seen a Sasquatch because many are reluctant to talk about it. As one witness put it, "It's better to keep your mouth shut than have everybody say you're crazy."

Even so, John Green, editor-publisher of the Advance, the newspaper serving the Agassiz-Harrison Lake area of British Columbia, has collected more than 250 reports of sightings, photographs of footprints and other evidence, covering an area from Alaska to Mexico, from the Pacific Coast to northern Michigan. Like many others, Green started as a scoffer, changed to a believer as evidence mounted.

Here is a partial sample of that evidence:

The Daily British Colonist, published in Victoria, B.C., reported that on June 30, 1884, the crew of a train running from Lytton to Yale--about 80 miles east of Vancouver--had captured "a creature who may truly be called half man and half beast. His entire body, excepting his hands (or paws) and feet, is covered with glossy hair. His forearm is much longer than a man's and he possesses extraordinary strength." The creature, whom the railway crew named "Jacko," was exhibited in Yale, but no one has been able to find out what happened to him.

In July, 1924, near Mount Saint Helens, in what is now Gifford Pinchot National Forest of Washington, five prospectors reported that their cabin had been attacked by a band of man-apes that hurled rocks onto the roof, tried to force the cabin door by ramming it with their bodies, and screamed in loud wails at the men inside, who had earlier shot at two of their band. A posse of lawmen and reporters found the cabin badly damaged and hundreds of giant footprints all around it. The area came to be called Ape Canyon,

and scores of people have since reported seeing the man-apes in the vicinity. Several men have disappeared there mysteriously, leaving no trace.

One midafternoon in September 1941, at Ruby Creek, about 30 miles up the Fraser River from Agassiz, Mrs. George Chapman saw a large, man-like animal emerge from the woods. She and her three children fled from their home in terror. Her husband and friends from the village later found evidence that the creature had entered a shed and scattered about some salt fish from a barrel.

In October 1955, William Roe was hunting on Mica Mountain near the village of Tete Jaune Cache in British Columbia. He said he saw an upright figure only 75 yards away, weighing perhaps 300 pounds and covered from head to foot with dark brown, silver-tipped hair. "The thought struck me that if I shot it I would have a specimen of great interest to scientists the world over. I leveled my rifle. But when the creature turned its head to look in my direction, I felt that it was a human being, and I knew I would never forgive myself if I killed it."

Other less subjective evidence has been collected over the years in the form of hair and droppings. Scientists who have analyzed hair samples say they "come from no known animal." The droppings, human-like in form but large enough to come from a big horse, have contained vegetable matter and the hair of small rodents. No Bigfoot bodies have been found--but nature disposes quickly of dead animal matter.

Perhaps the most intriguing evidence is a 16-mm. color movie made in 1967 by Roger Patterson, a 34-year-old Yakima, Washington rancher. Long interested in Sasquatch-Bigfoot, Patterson had become convinced that the only way to prove its existence was to get clear photographs. In October 1967, he heard of fresh tracks along Bluff Creek in northern California. Patterson and Bob Gimlin, an experienced animal tracker, set out to investigate.

They scouted the area on horseback for a week and a half. Early in the afternoon of October 20, they came to a bend in the creek where a gigantic stump overturned by a flood, obscured the view ahead. Patterson's horse stopped and snorted, then reared and fell on its side. Moments later, Patterson saw what had startled his mount. "This creature was on my left, about 125 feet across the creek," he recalls. "Its head was very human, though considerably more slanted, and with a large forehead and wide nostrils. Its arms hung almost to its knees when it walked. Its hair was two to four inches long, brown underneath, lighter at the top, and covering the entire body except for the face.

"And it was a female; it had big, pendulous breasts."

Patterson reached into his saddlebag and grabbed his movie camera. The creature, meanwhile, was walking across a sandbar toward the hillside. Patterson began trotting after it, shooting pictures. At one point, the creature turned and stared curiously at the camera. Then it went into the woods and out of sight. Gimlin began to give

chase, but Patterson, who had used up all his film, told him to stop. "I don't want to be there without a weapon," he said.

Nine days later, Robert Titmus, a former taxidermist who lives in Kitimat, B.C., examined and made plaster casts of ten of the creature's huge footprints. Titmus has studied Bigfoot intensively since 1958, and considers himself an expert at spotting the occasional hoax. Said he: "I can conceive of no method by which these tracks might have been faked. Tests indicated that the creature that made them would have to weigh at least 600 to 700 pounds.

Screen tests. Patterson has since shown his film to scientists. The somewhat blurred, 29-foot segment shows the creature walking away with a man-like stride, swinging enormous arms. Although some scientists immediately branded the creature in the film a hoax, questioning the man-like fluidity of its movements, others kept an open mind.

"The presence of unknown humanoid creatures in the Pacific Northwest," says John R. Napier, director of the Smithsonian Institution's Primate Biology Department, "is a possibility that should not be discounted." After all, scientific annals are littered with the tarnished reputations of men who dismissed initial reports of the existence of the giant squid, the gorilla, the okapi and the giant panda.

Donald Abbott, anthropologist on the staff of the Provincial Museum in Victoria, B.C., told me he had entered the

investigation as a skeptic. He now says, "If the evidence of which I am aware has been the work of hoaxers, it would be one of the most elaborate hoaxes ever perpetrated. I find this possibility almost as incredible as that of the existence of such a creature."

An unclassified animal could be prowling the Pacific Northwest. For so rugged is the 150,000-square-mile area in which sightings of Bigfoot have been reported that major sections have never really been penetrated. In Washington, Oregon, and California there are 70,000 square miles of national forest, and for some sections the only maps available are those based on aerial surveys. British Columbia is even less developed. Nearly 250,000 square miles of its total area--a region almost the size of Texas--have just one main road and a handful of small villages. It is the kind of wilderness in which animals with only normal cunning easily remain out of sight of man.

The search goes on. Perhaps by the time you read this, Bigfoot's existence will have been proved. Roger Patterson, financed by \$75,000 from the Northwest Research Association, of Yakima, Washington, a maker of documentary films, is continuing his search. This time he is using lures, dogs, and tranquilizer guns, hoping to capture a living specimen.

Others have tried before to capture a Bigfoot, without success. The most notable was Tom Slick, the Texas oilman who mounted an expedition shortly before his death in 1962 after becoming convinced that there was as much evidence for

the Abominable Snowman in North America as he had found in two expeditions to the Himalayas.

"If such an animal exists, and is caught," W. C. Osman Hill, of the Yerkes Regional Primate Research Center at Emory University in Atlanta, has said, "it could well be one of the most important finds in history."

BIGFOOT²

(Rewritten Text)

For ages a legend has been related in the hills in Northern America. It tells about a big, hairy, living thing which runs erect, and looks near man in form. Is it really so or is it only a legend?

Albert Odman, then 75, said that "About 12:00 this thing began packing me off and heading for the woods." Albert, groggy and in his bag tried for his gun but fell short. Odman, a husky logger looking for tin in Canada in 1924, said that "This half man running erect and packing me over its back, went on over rugged terrain until about 3:00 a.m." Next Odman felt the pain from landing on his back as the thing let him drop.

In the dim morning rays, Odman sat shut in by several such sub-humans and they began chattering unintelligibly. He had been taken by the Bigfeet, a cross between a man and a gorilla but bigger than humans. They had bulging limbs and their bodies had long hair.

Six days later, when they fell ill from eating Albert's snuff, he got away.

Is this true? If it is, and the Bigfoot isn't simply a legend, they may represent an important bond with man's forgotten origins.

²Ibid., pp. 173-185.

Reports about seeing the Bigfoot and its big footprints with lengths over 16 inches seem common in Canada and in Northern America. Different places result in different terms for them, but the main term in the U.S. is Bigfoot.

This is the proof for Bigfoot. The reports about such sightings agree about his basic form; and it is difficult believing that such reports, so separated, originated with hoaxers. Counting sightings is difficult as such folks feel that it's better for them if they say nothing.

Even so, Joe Green collected 250 reports on sightings from Alaska, Mexico, the U. S., and Canada for his paper, the Agassiz Reporter. A disbeliever when he began, Joe can no longer shut out the mounting proof.

Proof such as:

The Daily British Sun, printed in Canada, reported that on May 30, 1884, "The men on a train running from Lytton and bound for Trail City had found and apprehended a thing which reportedly is half man and half gorilla. His body but for his hands and feet is protected with glossy hair. He has limbs longer than man's and the men appointed him 'Jacko and set him on display in Trail City." Jacko's trail vanishes at that point.

In October, 1924, near Saint Helens, 5 miners reported that their cabin had been set upon by gorilla men, and that rocks had been flung on the roof. Then they tried forcing their way in by ramming the cabin with their bodies and shouting in wails at the men within, for the men had shot

at one that morning. A posse with reporters found the cabin badly beaten up with big footprints around it. In this, the Gorilla-Man Valley, such reports about spottings and men vanishing seem common.

In October 1941, at Dry Creek which is up the Fraser River from Agassiz, May Chapman spotted a Bigfoot in the woods. She and her three kids fled from their cabin in fear. Her husband and hunters from the community later found signs that it had taken fish from a barrel in a shed.

In October 1955, Bill Roe went hunting on Flint Hill in Canada. He said he spotted an erect gorilla man only 75 meters away. Protected head and foot with hair, it had a heavy look and probably went about 300 pounds. Thinking, "What a specimen!," Bill took a bead on it, but the Bigfoot began looking his way. It felt so human that Bill took his finger off the trigger.

Other proof has been collected over the years in hair and droppings. Experts cannot identify them. The droppings, human in form but bigger, contain plant matter and rodent hair. Nobody had found a Bigfoot body--but then such matter decomposes and vanishes quickly in the hills.

Perhaps the main proof for Bigfoot is a 16-mm. photo taken in 1967 by Roger Patterson, a rancher. Long a believer in Bigfoot, Patterson decided he needed a clear photograph as proof. In October 1967, he found out about fresh tracks along Bluff Creek; so Patterson and Bob Gimlin, a tracker, set out for Bluff Creek.

They hunted for ten days when, on October 20, they went around a bend in the creek and a gigantic log hid the trail ahead. Patterson's mount snorted, shied, and fell on its back. Moments later Patterson spied what had shied his mount. About 125 feet across the creek ran a Bigfoot. It had a human head, mammary glands, and its hands hung at its knees when it ran. Hair 4 inches long protected its body but not its head.

Patterson got his camera out as the Bigfoot went across the sand heading for the woods. Patterson began trotting behind it shooting photos. At that point the Bigfoot, looking at the camera, went in the woods and behind the trees. Gimlin began chasing it but Patterson said "No! Not without a weapon."

Seven days later, Robert Titmus, a former tracker from Kitman, B.C., set about preserving the footprints. Titmus began reading about Bigfeet in 1958 and is an expert at spotting hoaxers. Said he: "They seem real, and the thing went around 700 pounds."

Patterson has run his photo proof for experts. Not overly clear, it displays a Bigfoot erectly running away. The experts ended up split about if it represented a hoax or not.

"Bigfoot represents a possibility not easily shut out," reasons Dick R. Hoggan, an expert in biology. "Biology records other things that men shut out but later found, such as the gorilla and the gigantic panda."

Don Abbott, an expert in man's origins, said that he can no longer be a disbeliever. "If the proof about Bigfoot is a hoax, it has been well perpetrated. We find it simpler believing in Bigfoot."

It is a possibility that an unclassified thing is in the Northern Pacific hills, for so rugged is this land that much in it has never been penetrated. Photos taken from the air represent man's total progress at finding out. Canada has woods bigger than Texas, with a main road and maybe only three communities. In such woods Bigfoot, with only normal cunning, has perhaps avoided man.

The seekers go on. Roger Patterson with \$75,000 backing from a Pacific company is among them. He is using dogs and drug guns hoping for a living specimen. Others tried but without results, among them Tom Lick, a Texas oilman. He mounted a hunt for Bigfoot in 1962. Tom found as much proof for the Bigfoot in North America as he had found for its kinsmen in Tibet.

"If the Bigfoot isn't a legend, and is taken, it will be an important day for mankind." So said W. C. Osman Hill, a University teacher in Atlanta.

MARIE³

(Original Text)

"I'll tell you now how it all began. At first the children didn't take to me. I was so big, I am always so clumsy; I know I am ugly too . . . and then I was a foreigner. The children used to laugh at me at first, and they began throwing stones at me after they saw me kiss Marie. And I only kissed her once. . . No, don't laugh." Myshkin made haste to check the smile on the faces of his listeners. "It was not a question of love. If only you knew what an unhappy being she was, you would be very sorry for her, as I was. She lived in our village. Her mother was an old woman. One of the two windows of their tumbledown little house was set apart, by permission of the village authorities, and from it the old woman was allowed to sell laces, thread, tobacco and soap. It all came to a few halfpence, and that was what she lived on. She was an invalid; her legs were all swollen so that she could not move from her seat. Marie was her daughter, a girl of twenty, weak and thin. She had been consumptive for a long time, but she went from house to house doing hard work--scrubbing floors, washing, sweeping out yards and minding cattle. A French commercial traveller seduced her and took her away, and a week later deserted her and went off on the sly. She made her way home begging, all

³Ibid., pp. 186-214.

mud-stained and in rags, with her shoes coming to pieces. She was a week walking back, spent nights in the fields and caught a fearful cold. Her feet were covered with sores, her hands were chapped and swollen. She wasn't pretty before, though; only her eyes were gentle, kind, and innocent. She was extremely silent. Once when she was at work she began singing, and I remember everyone was surprised and began laughing. "Marie singing! What, Marie singing!" She was fearfully abashed and did not open her lips again. People were still kind to her in those days, but when she came back broken down and ill, no one had any sympathy for her. How cruel people are in that way! What hard ideas they have about such things! Her mother, to begin with, received her with anger and contempt: "You have disgraced me." She was the first to abandon her to shame. As soon as they heard in the village that Marie had come home, everyone went to have a look at her, and almost all the village assembled in the old woman's cottage--old men, children, women, girls, everyone--an eager, hurrying crowd. Marie was lying on the ground at the old woman's feet, hungry and in rags, and she was weeping. When they all ran in, she hid her face in her dishevelled hair and lay face downwards on the floor. They all stared at her, as though she were a reptile; the old people blamed and upbraided her, the young people laughed; the women reviled and abused her and looked at her with loathing, as though she had been a spider. Her mother allowed it all; and she sat there nodding her head and approving. The

mother was very ill at the time and almost dying: two months later she did die. She knew she was dying, but up to the time of her death she didn't dream of being reconciled to her daughter. She didn't speak one word to her, turned her out to sleep in the entry, scarcely gave her anything to eat. She had to be constantly bathing her legs in hot water. Marie bathed her legs every day and waited on her. She accepted all her services in silence and never said a kind word to her. Marie put up with everything and afterwards when I made her acquaintance, I noticed that she thought it all right and looked on herself as the lowest of the low. When the old mother was completely bedridden, the old women of the village came to sit up with her in turns, as their custom is. Then they gave up feeding Marie altogether, and in the village everyone drove her away and no one would even give her work, as before. Everyone, as it were, spat on her and the men no longer looked on her as a woman even; they would say all sorts of nasty things to her. Sometimes, though not often, when the men got drunk on Sunday, they would amuse themselves by throwing farthings to her, just flinging them on the ground. Marie would pick them up without a word. She had begun to spit blood by that time. At last her clothes were in absolute tatters so that she was ashamed to show herself in the village. She had gone barefoot since she came back. Then the children particularly, the whole troop of them--there were about forty schoolchildren--began jeering, and even throwing dirt at her. She asked the cowherd to let

her look after the cows, but he drove her away. Then she began going off the whole day with the flock of her own accord, without permission. As she was of great use to the cowherd, and he noticed it, he no longer drove her away, and sometimes even gave her bread and cheese, what was left from his dinner. He looked upon this as a great kindness on his part. When her mother died, the pastor did not scruple to heap shame on Marie in church before all the people. Marie stood crying by the coffin, as she was, in her rags. A crowd of people had collected to look at her standing by the coffin and crying. Then the pastor--he was a young man, and his whole ambition was to become a great preacher--pointed to Marie and, addressing them all, said, "Here you see the cause of this worthy woman's death" (and it was not true, for the woman had been ill for two years); "Here she stands before you and dares not look at you, for she has been marked out by the finger of God; here she is, barefoot and ragged--a warning to all who lose their virtue! Who is she? Her daughter!," and so on in the same style. And would you believe it, this infamy pleased almost everyone! But . . . then things took a different turn. The children took a line of their own, for by then they were all on my side, and had begun to love Marie.

This was how it happened . . . I wanted to do something for Marie. She was badly in want of money, but I never had a farthing at that time. I had a little diamond pin, and I sold it to a pedlar who went from village to

village buying and selling old clothes. He gave me eight francs, and it was certainly worth forty. I was a long time trying to meet Marie alone. At last we met by a hedge outside the village, on a bypath to the mountain, behind a tree. Then I gave her the eight francs and told her to take care of it, because I should have no more. Then I kissed her and said that she musn't think I had any evil intent, and that I kissed her not because I was in love with her, but because I was very sorry for her, and that I had never, from the very beginning thought of her as guilty but only as unhappy. I wanted very much to comfort her at once and to persuade her that she shouldn't consider herself below everyone, but I think she didn't understand. I saw that at once, though she scarcely spoke all the time and stood before me looking down and horribly abashed. When I had finished, she kissed my hand, and I at once took her hand and would have kissed it, but she pulled it away. It was then the children saw us, the whole lot of them. I learnt afterwards that they had been keeping watch on me for some time. They began whistling, clapping their hands and laughing, and Marie ran away. I tried to speak to them, but they began throwing stones at me. The same day everyone knew of it, the whole village. The whole brunt of it fell on Marie again; they began to dislike her more than ever. I even heard that they wanted to have her punished by the authorities, but, thank goodness, that didn't come off. But the children gave her no peace: they teased her more than ever and threw dirt at her; they chased

her, she ran away from them, she with her weak lungs, panting and gasping for breath. They ran after her, shouting and reviling her. Once I positively had a fight with them. Then I began talking to them; I talked to them every day as much as I could. They sometimes stopped and listened, though they still abused me. I told them how unhappy Marie was; soon they left off abusing me and walked away in silence. Little by little, we began talking together. I concealed nothing from them, I told them the whole story. They listened with great interest and soon began to be sorry for Marie. Some of them greeted her in a friendly way when they met. It's the custom there when you meet people, whether you know them or not, to bow and wish them good-morning. I can fancy how astonished Marie was. One day two little girls got some things to eat and gave them to her; they came and told me of it. They told me that Marie cried, and that now they loved her very much. Soon all of them began to love her, and at the same time they began to love me too. They took to coming to see me often, and always asked me to tell them stories. I think I must have told them well, for they were very fond of listening to me. And afterwards I read and studied simply to have things to tell them, and for the remaining three years I used to tell them stories. Later on, when everybody blamed me--and even Schneider--for talking to them like grown-up people and concealing nothing from them, I said it was a shame to deceive them; that they understood everything anyway, however much things were concealed from them, and that

they learnt it perhaps in a bad way; but not so from me. One need only remember one's own childhood. They did not agree. . . I kissed Marie a fortnight before her mother died; by the time the pastor delivered his harangue, all the children had come over to my side. I at once told them of the pastor's action and explained it to them. They were all angry with him, and some of them were so enraged that they threw stones and broke his windows. I stopped them, for that was wrong; but everyone in the village heard of it at once, and they began to accuse me of corrupting the children. Then they all realized that the children loved Marie, and were dreadfully horrified; but Marie was happy. The children were forbidden to meet her, but they ran out to where she kept the herds, nearly half a mile from the village. They carried her dainties, and some simply ran out to hug and kiss her, say "Je vous aime, Marie," and ran back as fast as their legs would carry them. Marie was almost beside herself at such unlooked for happiness; she had never dreamed of the possibility of it. She was shamefaced and joyful. What the children liked doing most, especially the girls, was running to tell her that I loved her and had talked to them a great deal about her. They told her that I told them all about her, and that now they loved her and pitied her and always would feel the same. Then they would run to me, and with such joyful, busy faces tell me that they had just seen Marie and that Marie sent her greetings to me. In the evenings I used to walk to the waterfall; there was one spot

there quite hidden from the village and surrounded by poplars. There they would gather around me in the evening, some even coming secretly. I think they got immense enjoyment out of my love for Marie, and that was the only point in which I deceived them. I didn't tell them that they were mistaken, that I was not in love with Marie, but simply very sorry for her. I saw that they wanted to have it as they imagined and had settled among themselves, and so I said nothing and let it seem that they guessed right. And what delicacy and tenderness were shown by those little hearts! They couldn't bear to think that while their dear Leon loved Marie she should be so badly dressed and without shoes. Would you believe it, they managed to get her shoes and stockings and linen, and even a dress of some sort. How they managed to do it I can't make out. The whole troop worked. When I questioned them, they only laughed merrily, and the girls clapped their hands and kissed me. I sometimes went to see Marie secretly too. She was by that time very ill and could scarcely walk. In the end she gave up working for the herdsman, but yet she went out every morning with the cattle. She used to sit a little apart. There was a ledge jutting out in an overhanging, almost vertical rock there. She used to sit out of sight on the stone, right in the corner, and she sat there almost without moving all day, from early morning till the cattle went home. She was by then so weak from consumption that she sat most of the time with her eyes shut and her head leaning against the rock and dozed, breathing

painfully. Her face was as thin as a skeleton's, and the sweat stood out on her brow and temples. That was how I always found her. I used to come for a moment, and I too did not want to be seen. As soon as I appeared, Marie would start, open her eyes and fall to kissing my hands. I no longer tried to take them away, for it was a happiness to her. All the while I sat with her she trembled and wept. She did indeed try sometimes to speak, but it was difficult to understand her. She seemed like a crazy creature in terrible excitement and delight. Sometimes the children came with me. At such times they generally stood a little way off and kept watch to protect us from anyone or anything, and that was an extraordinary pleasure to them. When we went away, Marie was again left alone with her eyes shut and her head leaning against the rock, dreaming perhaps of something. One morning she could no longer go out with the cows and remained at home in her deserted cottage. The children heard of it at once, and almost all of them went to ask after her that day. She lay in bed, entirely alone. For two days she was tended only by the children, who ran into her by turns; but when the news reached the village that Marie was really dying, the old women went to sit with her and look after her. I think the villagers had begun to pity Marie; anyway, they left off scolding the children and preventing them from seeing her, as they had done before. Marie was drowsy all the time, but her sleep was broken--she coughed terribly. The old women drove the children away, but they

ran under the window sometimes only for a moment, just to say, "Bonjour, notre bonne Marie." And as soon as she caught sight of them or heard them, she seemed to revive, and regardless of the old women, she would try to raise herself on her elbow, nod to them and thank them. They used to bring her dainties as before, but she scarcely ate anything. I assure you that, thanks to them, she died almost happy. Thanks to them, she forgot her bitter trouble; they brought her, as it were, forgiveness, for up to the very end she looked upon herself as a great sinner. They were like birds beating their wings against her window and calling to her every morning, "Nous t'aimons, Marie!" She died very soon. I had expected her to last much longer. The day before her death I went to her at sunset; I think she knew me, and I pressed her hand for the last time. How wasted it was! And next morning they came to me and said that Marie was dead. Then the children could not be restrained. They decked her coffin with flowers and put a wreath on her head. The pastor did no dishonour to the dead in the church. There were not many people at the funeral, only a few, attracted by curiosity; but when the coffin had to be carried out, the children all rushed to carry it themselves. Though they were not strong enough to bear the weight of it alone, they helped to carry it, and all ran after the coffin, crying. Marie's grave has been kept by the children ever since; they planted roses round it and deck it with flowers every year.

MARIE⁴

(Rewritten Text)

I'll tell you of Marie from the beginning. In the beginning the youth didn't support me. I am so big, and clumsy, and I am ugly too. . .and then I am not of this country. The kids began laughing and flinging rocks at me when they found me kissing Marie. Yes, I did kiss her. . . No, don't laugh, Myshkin said of the grins on the mouths of his onlookers. I did it not as a lover. If only you had seen what an unhappy person Marie had been; you'd feel sorry for her too.

She spent her days in our community, with her mother's years then surpassing sixty. As a means of support, and with the consent of the city authorities, her mother ran a shop vending thread, tobacco, and soap out of her shack. It did not bring in much, only several cents, but they got by on this. Marie's mother, an invalid on account of bad legs, didn't get up from her seat.

Marie, then 20, had a weak and thin body. She had been ill for years, but she went about cleaning dwellings and tending sheep. A French commercial peddler took liberties with her, and took her away; leaving her a week later on the sly. She found her way back with mud on her, in rags, and with her shoes coming off. Living off the land during that

⁴Ibid., pp. 215-233.

week coming back hurt Marie. She had a virus when she got back and her feet and hands had cuts without number. Not good looking formerly she then began not speaking for days. I remember the day when Marie began singing and others began laughing saying, "Marie singing! What? Marie singing!". . . She didn't ever sing again.

Our city folk didn't display much sympathy for poor, ill Marie. A number of us can be without pity in that way. Neither did her mother display sympathy for Marie. Her mother began greeting her with cutting sayings such as, "You sinner, God will punish you."

As soon as the community found out that Marie had found her way back, they wanted for a look at her. They found Marie lying on the floor at her mother's feet, hungry, in rags, and weeping. When they ran in, she hid her head in her untidy hair and lay on the floor. Gazing at her with loathing, they dealt with her as if she had been a spider. Marie's mother didn't defend her, but rather sat in the room nodding her head and consenting.

The mother felt very ill and near death that May. Three months later she did die. With death so near, alas, she never tried getting closer with Marie. She didn't speak with Marie and sent her out in the entry for sleeping without feeding her. Marie did her mother favors by bathing her legs each day and by waiting on her. Her mother took such kindness but never had a kind greeting for Marie. Marie did not resent this, and as a result when I met her, she had a

very poor belief in her value. At the point when she no longer got out of bed, the grandmothers of the community sat with Marie's mother in turns. But they no longer fed Marie or let her clean up dwellings. They spat on her and the men no longer said proper things when Marie sat nearby. On Sunday after they had had too much beer, they began flinging coins at her. Taking them without a sound, she ran away crying.

Marie had begun bleeding internally. Marie's tatter of a dress hurt her feelings and she had no shoes. Then too, the kids, about forty of them, began jeering and flinging clods at her.

Without the herder's consent she began sneaking off each day with the flocks. The herder, seeing that she had value at this task, no longer spent his day driving her off, but rather fed her bread and curds remaining from his dinner. He took this as a big kindness on his behalf.

When her mother died, the preacher hurt Marie in church with his speech. Marie knelt crying by the coffin in her rags. A group of adults had begun looking at her. Then the preacher pointing at Marie and addressing the group said, "Marie is why her mother died." (A lie, for she had been ill for several years.) "She is in front of you but will not look at you, for she had been cut out by the finger of God. She is without shoes and in rags as a result of her sin," and thus he went raving on and on, making the group looking on happy.

But then things took a turn. The youth began backing me up for they had begun loving Marie.

This is the way of it. Marie had a need for money, but I never had a cent. I had a gem and I got \$20 for it from a man as he went about buying and selling things. As I said, I got \$20 for it, but it had a value of about \$80. I spent days trying and finally found Marie away from others. We met out of the city on a bypath behind a tree. Then giving her the \$20 I said, "Spend this for what you need but it is the sum total of what I can ever get for you." Kissing her I said that "she mustn't think I had improper designs on her, but my kiss meant only that I felt sorry for her, and that I had never, from the very beginning seen her as guilty but only as unhappy." I don't think she found my meaning, for she did not speak and sat looking only at her feet, blushing horribly. At the end of my speech she began kissing my hand and I took her hand but she took it away.

The youth had been spying on us. They began whistling, clapping hands, and laughing, and Marie ran away. I tried speaking with them but they began tossing rocks at me.

That very day the community found out about it. The brunt of it fell on Marie again, and they had a bigger disliking for her. They tried getting her hurt by the authorities, but thank God that didn't get off the ground.

But the kids began teasing and chasing her, she ran away from them; she with her weak lungs, panting and gasping for breath. They ran after her shouting and reviling her. I

tried speaking with them each day and they began believing what I said about Marie. It took weeks but I hid nothing from them and soon they began feeling sorry for Marie.

They began greeting her and wishing her good morning when they met. You can fancy Marie's feelings at this. Then three maids got a box of sweets and hid them for Marie rather than eat them. They said that Marie cried when she found the sweets, and that they felt good over it.

Thus with the passing weeks the youth had begun loving Marie and maybe loving me too. They began asking me about things and I began reading, looking for answers. This went on for the remaining three years. Later on the city folk began blaming me for treating them as if they had been adults; that is, concealing nothing from them.

The kids found me kissing Marie 20 days preceding her mother's death; but when 22 days later the preacher hurt Marie in church, the youth got angry with him and began tossing rocks at his dwelling. I don't defend this deed but the city folk said I had led the kids amiss. Dreadfully horrified by the feelings of the community youth for Marie the adults began forbidding them from seeing her. But they ran out the next day and found Marie with the flocks. They took her dainties and ran out for a hug and a kiss saying, "I am loving you, Marie!," and then turning ran back. Such a joyful and happy Marie I had never seen. Then they ran for me. You see, they found this joy in pretending as if I had been Marie's lover. I didn't tell them the fact that I

simply felt very sorry for her, but rather let it pass.

The young felt sorry that Marie had no shoes and only rags for a dress. Sneaking about, they got her both; I can't say by what manner. I tried finding out by asking, but they did not say.

I paid visits on Marie too. Very ill then she no longer did tasks for the herdsman; yet she went out each morning with the flock. By a rock jutting out in an overhang, she sat from morning until the flock went back at dusk. So weak by then, I normally found her with her head leaning on the rock dozing, and with her thin body breathing painfully. As soon as I ran near, Marie normally began kissing my hands and by then I no longer tried taking them away. When I thus sat with her she did indeed try speaking, but only ever so weakly. On such days the kids simply sat away off as look-outs. When we went away Marie fell back dreaming.

Soon Marie no longer went out with the flock, and the youth, hearing of it, ran for her shack and found her very ill and in bed. For days they spent the hours taking turns sitting with her. As soon as the community found out about her, the grandmothers went and sat with poor dying Marie. They began tending her for by then they had begun pitying Marie and they no longer tired preventing the kids from seeing her. The young passing by and bringing sweets cried, "Good day my pretty Marie!" and Marie by nodding said thanks.

Marie died happy and for this thank the youth; but she felt a sinner until the end. She died very soon. The day

of her death I found her at sunset and I, pressing her hand, said good bye. The next morning they said that Marie had died.

The youth took as a joint task the adorning of her coffin with blossoms and the making of a wreath for her head. The preacher paid Marie no insults but only a handful of adults sat in the church seats. At the end the youth tried taking the coffin out, but it finally took adults, so they ran along by the coffin crying.

Marie's vault had had fresh blossoms from the kids each day and they visit it as a troop each year.

A LEARNER ALWAYS⁵

(Original Text)

A world without books is hard to imagine. But as a young boy, Abe Lincoln lived in such a world. Except for the Bible or a newspaper, there had never been a book in the Lincoln cabin in Kentucky or in his home in Indiana.

Abe had never had a story read to him. Then one day a wagon broke down near his cabin. The family stayed with the Lincolns while the man fixed it. "The woman had books and read us stories," Abe said later. "They were the first I ever heard." And Abe was interested.

As Abe grew taller and stronger, he worked at different jobs. He was learning all the time. But not much of that learning was done in school. Schools cost money. The Lincolns were poor. Besides, there were no classes where he lived. A wandering teacher might give lessons for a few weeks in a vacant cabin, but that was all.

Abe had a chance to go to school for a while when he was eleven and again when he was thirteen and seventeen. This, with his stepmother's help, was enough for him to learn how to read and write.

Abe's father didn't think much of schooling or reading. So, much of the time Abe learned by asking questions. He

⁵Ibid., pp. 234-240.

used to sit on the fence and question any stranger who went by.

When there was a chance to go to school, Abe was always there early. He was quiet outside the school and at play-time. He seemed to like being alone and thinking. But if there was any trouble among the boys, Abe was likely to be the one who settled it. In school, Abe worked harder than anyone else. They all said that he was the best student in the class.

The lessons Abe had were mostly in reading, writing, and "ciphering," or arithmetic. But Abe seemed to know about many other things, too. For example, he once told his friend Kate Roby about the moon.

Abe liked Kate, and he used to go for walks with her. One evening they sat on the river bank, dangling their feet in the water. As they watched the moon go down, Abe began talking. He explained that the moon didn't really sink at all. He said that the movement of the earth made it seem as if the moon sank.

Kate thought this was a silly notion. She argued with Abe, but he stuck to his point. Kate hated to admit that she was wrong, but she did wonder how Abe knew so much. He hadn't learned about the moon and stars in school.

Abe learned about astronomy and many other things by reading. People said that he had read everything there was to read for fifty miles around. "The things I want to know are in books," Abe said. "My best friend is the man who'll

git me a book I ain't read." By the time that he was fourteen, he was reading every minute that he could. He'd even stop to read in the field while at work if he had a chance.

One time Abe borrowed The Life of Washington from a farmer whom he called Blue Nose because of the way his nose looked.

Abe kept the book on a shelf in the cabin when he wasn't reading it. It happened that there was a crack between the logs behind the shelf. One night rain came through the crack. It damaged the cover of the book.

Old Blue Nose said the damage was worth seventy-five cents. Abe worked for three whole days at twenty-five cents a day to pay the debt.

Abe was not discouraged. Learning was his interest. And reading and learning made him the great man that he was.

ABE⁶

(Rewritten Text)

A community without books is difficult imagining, but Abe Lincoln spent his beginning days in such a community. Not counting the Bible or a chronicle, there hadn't been a book in the Lincoln cabin in Kentucky or in his home in Indiana.

Abe hadn't even had a tale read aloud for him. Then a day came when a wagon broke near his cabin. The family resided with the Lincolns while the man corrected the problem. The wife had books and read aloud for them. Abe said, "As a result he became excited about reading."

As Abe became bigger, he spent time at assorted jobs. Abe accumulated more and more facts daily. On the whole, only a little such increase took place at school. Schools took money. The Lincolns were poor and didn't have enough. What is more Abe's community didn't have such classes. A visiting teacher did give lessons in a vacant cabin for about three weeks but not more than that.

Abe had a chance at school for a while, at the ages 11, 13, and 17. This added with his second mom's help, became enough for Abe's control in reading and penmanship.

Abe's dad didn't go much for schooling or reading. So Abe began seeking out alert individuals. For example,

⁶Ibid., pp. 241-247.

sitting on a fence he'd ask for answers from passers by.

When Abe did get a chance at school, he'd get there before the time school began. He didn't say much outside the school and at playtime. For playtime he found contentment in reasoning things out alone. But if a problem came up among the boys, Abe normally found a compromise for it. In school Abe did a lot, he even became the top boy in the class.

The lessons Abe had were reading, penmanship, and ciphering, or arithmetic. But Abe had read about other things too. For example when consulted with Kate Roby about the moon.

Abe had a liking for Kate, and they'd some evenings go for a hike. That evening they sat on the river bank dangling their feet in the spray as they heeded the moon disappearing. Abe said that the moon didn't really recede. He said that spinning by the earth made it seem as if the moon receded.

Kate found this lacking. She thus had a dispute with Abe but he defended his point. Kate hated giving in, but she did feel respect for Abe. He hadn't read about the moon and the earth in school.

Abe had become so alert in these things by reading. They said that he had read each book for 50 blocks around. Abe valued books. Abe said "My patron is the man that will git me a book I've not read."

By the time that he became 14, Abe spent his free time

reading. He'd even read on the ranch while at some task if he had the chance.

It's said that Abe took a book on loan from a man with the nickname Blue Nose.

Abe set the book on a ledge in the cabin when not in use. By chance a crack came between the logs behind the ledge. When the rain came it came between the logs by using the crack, and did some damage upon the book.

Blue Nose said he calculated the damage at 75¢. Abe did jobs for three whole days at 25¢ a day in payment for the debt.

Abe didn't give up reading. Reading had become his desire and it made him the important man he became.

Appendix BSelected Questions on Reading Passages

(Pox Prevention) The Conquest of Smallpox

Name _____

Grade _____

Circle the correct answer:

1. Doc Ludlow
 - (a) was a student of Gardner
 - (b) taught Edward Jenner
 - (c) was a dentist
 - (d) lived in London
2. Edward Jenner
 - (a) discovered cowpox
 - (b) prevented cowpox
 - (c) was a doctor
 - (d) lived in a big city all the time
3. All the doctors Jenner knew
 - (a) thought well of Jenner
 - (b) believed his notion
 - (c) thought as Gardner did
 - (d) wanted to get pox lymph from Jenner
4. Edward Gardner
 - (a) was a doctor
 - (b) was not a doctor
 - (c) did not believe Jenner
 - (d) was a friend of Hunter
5. Edward Gardner
 - (a) was a friend of Jenner's
 - (b) helped develop more cowpox
 - (c) inoculated people against pox
 - (d) did not know Edward Jenner
6. John Hunter
 - (a) was a famous doctor
 - (b) taught Edward Jenner
 - (c) thought well of Jenner
 - (d) all of the above

7. John Hunter
 - (a) helped control smallpox
 - (b) cured cowpox
 - (c) died during the story
 - (d) assisted Gardner in writing poetry

8. Some cowpox lymph
 - (a) prevents smallpox
 - (b) cures cowpox
 - (c) is red in color
 - (d) is found in smallpox

9. Who invented a cure for pox?
 - (a) Edward Jennings
 - (b) John Hunter
 - (c) Doctor Jenner
 - (d) Edward Gardner

10. Edward Jenner
 - (a) practiced medicine in the country
 - (b) worked in a hospital
 - (c) had several cases of smallpox
 - (d) invented inoculations

(BIGFOOT) IS THERE AN AMERICAN ABOMINABLE SNOWMAN?⁷

Name _____

Grade _____

Circle the correct answer:

1. Bigfoot footprints are reported in this story to be at least
 - (a) 16 inches
 - (b) 20 inches
 - (c) 24 inches
 - (d) 30 inches
2. Bigfeet reportedly have hair
 - (a) about like a man's
 - (b) which is glossy
 - (c) all over their body including their hands and feet
 - (d) all over their body except for their hands and feet
 - (e) more than one of the above answers is correct
3. People who see a Bigfoot
 - (a) always report it to the authorities
 - (b) normally run the other way and hide
 - (c) usually shoot at it
 - (d) sometimes don't like to say anything about it
 - (e) should stand very still and it won't notice them
4. In this story the man who found the Bigfoot body
 - (a) did so after looking a long time for one
 - (b) did so by accident
 - (c) did so while taking pictures of another Bigfoot
 - (d) it wasn't a man but rather a woman who found the body
 - (e) no such incident is reported
5. Horses seem to be
 - (a) Bigfoot's best friends
 - (b) not afraid of bigfoot
 - (c) extremely afraid of bigfoot
 - (d) unable to see or smell a Bigfoot
 - (e) this story doesn't say
6. Reports about Bigfoot's form
 - (a) agree basically
 - (b) vary widely
 - (c) agree in every detail
 - (d) are easily believed as being the work of hoaxers
 - (e) have never been compared

⁷Revised from Grow (1969) pp. 248-250.

7. A Bigfoot has reportedly
 - (a) never been captured
 - (b) been captured
 - (c) been put on display
 - (d) died in captivity
 - (e) more than one of the above are right

8. An animal perhaps related to Bigfoot has been reported
 - (a) around Cuba
 - (b) around Australia
 - (c) around Switzerland
 - (d) around Japan
 - (e) around tibet

9. Hair believed to be from Bigfoot
 - (a) can always be identified and thus reasoned away
 - (b) cannot always be identified and thus not always reasoned away
 - (c) has never been found
 - (d) is usually red in color
 - (e) more than one of the above is right

10. The lady mentioned in the story, upon seeing a Bigfoot
 - (a) stumbled across the body of another Bigfoot
 - (b) took her children and ran away from it
 - (c) hid from it
 - (d) got her husband's gun and shot at it
 - (e) no such incident was reported

Questions Devised For This Thesis

MARIE

Name _____

Grade _____

Circle the correct answer:

1. Marie was
 - (a) a foreigner
 - (b) a dancer
 - (c) married
 - (d) a young artist
 - (e) very poor

2. Marie's mother
 - (a) died
 - (b) was wealthy
 - (c) was married at time of death
 - (d) told Marie she loved her

3. At one time, Marie
 - (a) ran off with a French peddler
 - (b) married
 - (c) became wealthy
 - (d) danced beautifully

4. Marie
 - (a) watched the sheep flocks
 - (b) tended a store
 - (c) sewed for a living
 - (d) did nothing in the village

5. The villagers
 - (a) always loved Marie
 - (b) liked her a lot
 - (c) grew to feel sorry for Marie
 - (d) respected Marie

6. Marie died
 - (a) in old age
 - (b) from a heart attack
 - (c) at a young age
 - (d) after being married

7. Marie's mother called Marie
- (a) a woman
 - (b) a sinner
 - (c) a nice girl
 - (d) a hard worker
8. The boy in the story
- (a) felt sorry for Marie
 - (b) married Marie
 - (c) had children with Marie
 - (d) hated Marie
9. At Marie's funeral
- (a) all of the villagers were present
 - (b) the children laughed
 - (c) the children cried
 - (d) the old people wept

Questions Devised For This Thesis

(ABE) A LEARNER ALWAYS

Name _____

Grade _____

Circle the correct answer:

1. Abe's family first lived in
 - (a) Kentucky
 - (b) Virginia
 - (c) Texas
 - (d) Indiana

2. Abe's father was of
 - (a) a rich beginning
 - (b) an important family
 - (c) German heritage
 - (d) a humble beginning

3. Lincoln
 - (a) wanted to read
 - (b) hated school
 - (c) was always in school
 - (d) wanted to be a farmer

4. A woman passing by
 - (a) read to Abe
 - (b) taught Abe to read
 - (c) enrolled Abe in school
 - (d) made clothes for Abe

5. Abe's father
 - (a) graduated from high school
 - (b) graduated from college
 - (c) didn't go to school
 - (d) went to school part of the time

6. Lincoln sat on the fence
 - (a) to watch girls
 - (b) to read
 - (c) to ask questions of people
 - (d) to just relax

7. Lincoln

- (a) began important
- (b) was always rich
- (c) became a farmer
- (d) became important

8. Lincoln

- (a) read a lot of books
- (b) read a few books
- (c) didn't like to read
- (d) never learned to read

9. Lincoln

- (a) liked school
- (b) read many books
- (c) became important
- (d) all of the above

10. Lincoln

- (a) played all day
- (b) worked with his father in the fields
- (c) always went to school
- (d) never worked at all

Appendix CList of Words Used in the Phonetic Rewriting of
the Story THE CONTROL OF SMALLPOX, Hume (1963)

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
a	ā or ū	45	regular
about	ūbout	3	regular
accurate	ākūrāt	1	regular
action	ākshūn	1	regular
after	āfter	1	irregular
age	ājū	1	regular
all	ōl	1	irregular
along	ūlōng	1	regular
am	ām	1	regular
America	ūmērikū	2	regular
American	ūmērikūn	1	regular
among	ūmūmg	1	regular
amused	ūmūzd	1	irregular
an	ān	5	regular
and	ānd	13	regular
angry	āngrē	1	regular
another	ānūt ₂ er	4	regular
answered	ānserd	1	regular
Arme ia	Ārmēnēū	1	regular
as	āz	15	regular
asked	āzkd	3	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
assistant	ǎssistǎnt	3	regular
at	ǎt	13	regular
attending	ǔttǎnding	1	regular
Austria	Ǒstrǔǔ	1	irregular
bad	bǎd	3	regular
bandage	bǎndǎg	2	regular
bandaging	bǎndǎging	1	regular
been	bǐn	2	regular
began	bǎgǎn	4	regular
belief	bǎlǎf	3	irregular
believe	bǎlǎv	1	irregular
believed	bǎlǎvd	1	irregular
belt	bǎlt	1	regular
between	bǎtwǎn	1	irregular
bewilderment	bǎwǐldǎrmǎnt	1	regular
big	bǐg	2	regular
biggest	bǐggǎst	1	regular
bless	blǎs	1	regular
boil	boil	1	regular
bored	bǑrd	2	regular
boy	boi	2	regular
boy's	boi'z	1	regular
Bristol	BristǑl	1	regular
British	Britǐsh	2	regular
bunch	bǔnch	2	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
but	bŭt	13	regular
can	kǎn	1	regular
cannot	kǎnnōt	2	regular
captain	kǎptŭn	1	irregular
captives	kǎptivěz	1	irregular
care	kěr	1	irregular
catch	kǎtch	1	regular
certain	ser tun	1	irregular
chance	chǎns	1	irregular
chief	chēf	1	irregular
China	Chīnŭ	1	regular
clerk	klěrċ	1	regular
clients	kliěnts	2	irregular
college	kōlējě	1	regular
company	kŭmpŭnē	1	regular
complexion	kōmplěkshŭn	1	regular
cowpox	koupōxs	31	regular
contacted	kōntǎctŭd	1	regular
continued	kōntĭnŭd	1	irregular
contract	kōntrǎct	1	regular
control	kŭntrōl	1	regular
cook	kōōk	1	regular
corner	kōrner	1	regular
country	kŭntrē	5	regular
cow	kow	3	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
cows	kowz	3	regular
critics	kritiks	1	regular
cute	kūt	1	regular
dairies	dērēz	1	regular
dairy	dērē	3	regular
day	dā	2	regular
dead	dēd	1	regular
deadliest	dēdlēst	1	irregular
dealt	dēlt	1	regular
deaths	dēt ₁ s	5	regular
Denmark	Dēnmōrk	1	regular
did	dīd	1	regular
didn't	dīdnt	5	regular
died	dīd	2	regular
do	dōo	2	irregular
Doc	Dōk	24	regular
Doc's	Dōks	4	regular
doctrine	dōktrīn	2	regular
done	dūn	1	regular
don't	dōnt	4	regular
during	de ₅ ing	1	irregular
east	ēst	1	regular
Edward	Ēdwerd	9	regular
effect	ēfēkt	2	irregular
effects	ēfēkts	1	irregular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTICN</u>	<u>Classification in Story POX PREVENTION</u>
either	ēt ₂ er	1	regular
eldest	ělděst	1	regular
'em	'ěm	1	regular
emperor	ěmperōr	1	regular
employer	employer	1	regular
empress	ěmprěs	1	regular
end	ěnd	2	regular
ended	ěndūd	1	regular
England	Ēnglānd	2	regular
enough	ěnůf	1	irregular
event	ěvēnt	1	regular
everywhere	ěvrěhwěr	1	irregular
famous	fāmūs	1	irregular
far	fōr	1	irregular
fearsome	fěrsōm	1	regular
fellow	fěllōw	2	regular
felt	fělt	1	regular
festivities	fěstivītēz	1	regular
finally	finūlē	1	regular
finger	fingēr	1	regular
five	fiv	1	regular
flattering	flāterīng	1	regular
flaws	flāwz	1	regular
followed	fōllōwūd	1	irregular
for	fōr	15	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
foremost	fōrmōst	1	regular
forever	fōrēver	1	regular
forget	fōrgĕt	1	regular
formal	fōrmŭl	1	regular
found	found	3	regular
France	Frāncĕ	1	regular
free	frē	1	regular
French	Frĕnch	1	regular
fretting	frĕtting	1	regular
from	frōm	10	regular
fun	fun	1	regular
Gardner	Gārdner	7	regular
Gardner's	Gārdner's	1	regular
Germany	Germŭnē	2	regular
get	gĕt	2	regular
getting	gĕtting	1	regular
gifts	gifts	1	regular
give	gĭv	1	irregular
Gloucester	Glouchĕster	2	regular
go	gō	1	regular
going	gōing	1	regular
good	gōōd	6	regular
gossip	gōsip	1	regular
got	gōt	5	regular
grandparents	grāndpārŭnts	1	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
great	grāt	1	irregular
Greece	Grēēs	1	regular
grinned	grīnd	3	regular
grunted	grūntūd	2	regular
had	hād	32	regular
hadn't	hādn't	1	regular
half	hāf	1	regular
hand	hānd	3	regular
handled	hāndlūd	1	regular
hand	hāndz	1	regular
happen	hāpēn	1	regular
happened	hāpnd	1	regular
have	hāv	4	irregular
Havana	Hāvānā	1	regular
having	hāvīng	2	regular
he	hē	28	regular
health	hēlt ₂	1	regular
healthy	hēlt ₂ ē	2	regular
heard	he ₅ d	1	irregular
height	hīt	2	irregular
her	her	6	regular
hesitantly	hēsītūntlē	1	irregular
him	hīm	9	regular
his	hīz	8	regular
hold	hōld	1	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
home	hōm	1	regular
humans	hūmūnz	1	regular
hundreds	hūndrūds	2	regular
Hunter	hūnter	7	regular
Hunter's	hūnterz	1	regular
I	ī	7	irregular
ill	il	1	regular
illness	ilnēs	15	regular
ills	ilz	1	regular
imagined	imāgind	1	regular
immunity	imūnitē	1	irregular
in	in	40	regular
India	Indēū	1	regular
Indian	Indēūn	1	regular
induced	indoōsd	1	irregular
infected	infēctūd	1	regular
infectious	infēctūs	1	irregular
informed	infōrmd	1	regular
injected	injēctūd	1	regular
injecting	injēcting	1	regular
inoculated	inōkūlātūd	4	regular
inoculating	inōkūlātīng	1	regular
inoculation	inōkūlāshūn	13	regular
inoculations	inōkūlāshūns	3	regular
invited	invitūd	1	irregular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
is	iz	3	regular
it	it	13	regular
its	its	2	regular
itself	itself	3	regular
I've	I've	2	irregular
James	Jamz	9	regular
jealousy	jelocē	1	irregular
Jefferson	Jefersun	1	regular
Jenner	Jenner	47	regular
Jenner's	Jenner'z	5	regular
John	Jon	5	regular
joy	joi	1	regular
July	Juli	1	regular
just	just	1	regular
keeping	kepīng	1	regular
kids	kidz	1	regular
kind	kind	1	irregular
Kingscote	Kingsköt	1	regular
last	last	4	regular
last	last	4	regular
later	later	4	regular
Latin	Lätun	1	regular
lecturing	lëkte ₅ ing	4	irregular
led	led	1	regular
letter	leter	1	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
letters	lĕtĕr <u>s</u>	2	regular
life	lĭf	1	irregular
like	lĭk	1	regular
local	lōkūl	1	regular
London	Lōndōn	3	regular
look	lōōk	2	regular
looked	lōōkūd	6	regular
looking	lōōking	4	regular
looks	lōōks	1	regular
loop	lōōp	1	regular
lots	lōts	1	regular
loved	lūvd	2	irregular
Ludlow	Lūdlō	3	regular
Ludlow's	Lūdlō's	1	regular
lymph	lĭmf	2	regular
makes	māks	1	regular
making	māking	1	regular
man	mān	4	regular
manner	mānner	1	regular
many	mĕnē	1	irregular
mark	mārk	1	regular
mass	mās	1	regular
master's	māsterz	1	regular
matter	māter	9	regular
may	mā	r	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
meant	m̄int	1	irregular
medical	m̄edic̄ul	4	regular
medicine	m̄ed̄us̄in	4	regular
member	m̄emb̄er	1	regular
membership	m̄emb̄ers̄hip	1	regular
mild	m̄ild	2	irregular
Milan	M̄ul̄an	1	regular
milkers	m̄ilkerz	6	regular
milkmaid	m̄ilkm̄ad	6	regular
milkmaids	m̄ilkm̄adz	4	regular
moment	m̄om̄unt	4	irregular
month	m̄unt ₁	1	regular
more	m̄or	9	regular
moreover	m̄or̄over	1	regular
most	m̄ost	2	regular
museum	m̄uz̄um	1	irregular
must	m̄ust	2	regular
Napoleon	N̄ap̄ol̄un	1	regular
near	n̄ir	2	irregular
neared	n̄ird	1	irregular
nearing	n̄iring	1	irregular
nearly	n̄irl̄e	1	irregular
need	n̄ed	1	regular
needed	n̄ed̄ud	1	regular
neighbors	n̄ab̄orz	1	irregular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
Nelmes	Nělmz	1	irregular
never	ně <u>ver</u>	4	regular
Newport	Nōopōrt	2	regular
next	něks	1	regular
no	nō	2	regular
Norway	Nōrwā	1	regular
noted	nōt <u>ūd</u>	1	regular
notion	nōsh <u>ūn</u>	i	regular
of	ōv	41	regular
offered	ōffer <u>rūd</u>	2	regular
offers	ōff <u>ers</u>	1	regular
oh	ō	1	irregular
on	ōn	15	regular
only	ōnlē	1	regular
or	ōr	2	regular
ordeal	ōrdēl	2	regular
other	ūt ₂ <u>er</u>	6	regular
out	out	3	regular
over	ō <u>ver</u>	3	regular
paper	pā <u>per</u>	2	irregular
paused	pāzd	1	irregular
perhaps	per <u>hāps</u>	1	regular
periods	per <u>rēūds</u>	3	irregular
person	per <u>sūn</u>	2	regular
personal	per <u>sūnūl</u>	1	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
persons	persŭns	5	regular
Phipps	fips	1	regular
physician	fizishŭn	1	regular
physicians	fizishŭns	1	regular
planned	plānd	1	regular
played	plād	1	regular
playing	plāing	1	regular
point	point	2	regular
pointed	pointŭd	1	regular
popularity	pōpŭlārītē	1	irregular
pouted	poutŭd	1	regular
pox	pōks	45	regular
pray	prā	1	regular
president	prēsīdŭnt	1	regular
prevented	prēvēntŭd	1	regular
prevents	prēvēnts	1	regular
preventive	prēvēntiv	1	irregular
proceedings	prōsēdīngs	1	irregular
progress	prōgrēs	1	irregular
proof	prōōf	1	regular
protect	prōtēkt	1	regular
protected	prōtēktŭd	3	regular
protection	prōtēkshŭn	3	regular
protects	prōtēkts	1	regular
proudly	proudlē	1	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story</u> <u>POX PREVENTION</u>	<u>Classification in Story</u> <u>POX PREVENTION</u>
prove	prōov	1	irregular
publication	pūblikāshūn	1	irregular
publishing	pūblishing	1	regular
pupil	pūpil	1	regular
quotation	kōōtāshūn	2	irregular
rapped	rāpt	1	irregular
rapping	rāping	2	regular
rather	rāt ₁ er	1	regular
read	rēd	1	regular
readied	rēdēd	1	irregular
really	rēlē	2	regular
refuse	rēfūz	1	irregular
releasing	rēlēsing	1	regular
remembered	rēmēberd	1	irregular
requested	rēkwēstūd	1	irregular
response	rēspōns	1	irregular
results	rēzūlts	4	regular
ring	rīng	1	regular
road	rōd	1	regular
roared	rōrd	1	regular
room	rōom	1	regular
royal	roiūl	1	irregular
rumbled	rūmbld	1	regular
running	rūning	1	regular
said	sēd	15	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
Sarah	Sārā	1	regular
Sarah's	Sārāz	1	regular
sat	sāt	2	regular
say	sā	1	regular
saying	sāing	1	regular
seas	sēz	1	regular
seemed	sēmd	4	regular
seen	sēn	1	regular
sent	sēt	3	regular
ships	ships	2	regular
shouts	shouts	1	regular
showed	shōd	1	irregular
sir	sir	1	regular
skin	skin	4	regular
so	sō	6	regular
soon	sōon	2	regular
sounds	sounds	1	regular
south	sout ₁	3	regular
Spain	Spān	2	regular
Spanish	Spanish	1	regular
spreading	sprēding	1	regular
spreads	sprēdz	1	regular
standing	stānding	1	regular
started	stōrtūd	2	irregular
states	stāts	1	irregular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
stop	st ^o p	1	irregular
stopped	st ^o pt	1	irregular
stories	st ^o r ^e z	2	irregular
studied	st ^u d ⁱ d	2	irregular
studies	st ^u d ⁱ z	1	regular
study	st ^u d ^e	1	regular
support	s ^u p ^o rt	1	regular
suppose	s ^u p ^o z	2	irregular
Sweden	Sw ^e d ^u n	1	regular
tag	t ^a g	1	regular
take	t ^a k	3	irregular
taken	t ^a k ^u n	1	irregular
talent	t ^a l ^u nt	1	irregular
taught	t ^o t	1	irregular
teaching	t ^e ch ⁱ ng	1	regular
tell	t ^e l	1	regular
tested	t ^e st ^u d	1	regular
than	t ₂ ^a n	5	regular
that	t ₂ ^a t	25	regular
that's	t ₂ ^a ts	1	regular
the	t ₂ ^u	77	irregular
them	t ₂ ^e m	4	regular
themselves	t ₂ ^e ms ^e lvz	1	irregular
then	t ₂ ^e n	5	regular
there	t ₂ ^e r	1	irregular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story</u> <u>POX PREVENTION</u>	<u>Classification in Story</u> <u>POX PREVENTION</u>
these	t ₁ ēz	1	irregular
they	t ₂ ā	7	regular
thing	t ₁ ing	1	regular
things	t ₁ ings	2	regular
think	t ₁ ink	4	regular
thinking	t ₁ inking	3	regular
this	t ₂ is	4	regular
Thomas	Tōmās	1	irregular
tied	tīd	1	regular
to	tōo	3	irregular
told	tōld	5	regular
treatment	trēt ₁ munt	2	irregular
trial	trīl	1	irregular
trials	trīlz	1	irregular
trip	trīp	1	regular
triumph	trīūmf	1	regular
true	trōo	5	irregular
try	trī	3	irregular
trying	trīing	1	irregular
Turkey	Tūrkeē	1	regular
ugly	ūglē	1	regular
under	ūnder	1	regular
understand	ūnderstānd	1	regular
unhealthier	ūnhēlt ₁ er	1	regular
united	ūnītūd	1	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story</u> <u>POX PREVENTION</u>	<u>Classification in Story</u> <u>POX PREVENTION</u>
unlimited	ūnlimitūd	1	regular
untouched	ūntūcht	1	irregular
us	ūs	1	regular
used	ūzd	1	irregular
valued	vālūd	1	regular
varied	vārēd	1	irregular
varies	vārēz	1	regular
various	vārēūs	1	irregular
vary	vārē	1	regular
very	vērē	2	regular
vicious	visūs	1	irregular
Vienna	Vēnū	1	regular
voted	vōtūd	1	regular
wait	wāt	1	regular
was	wūz	1	irregular
way	wā	1	regular
wed	wēd	1	regular
week	wēk	1	regular
weeks	wēks	1	regular
well	wēl	1	regular
went	wēnt	7	regular
we're	wē'ēr	3	irregular
what	hwōt	1	irregular
when	hwēn	11	regular
whenever	hwēnēver	1	regular

<u>Word</u>	<u>Word Decoded</u>	<u>Frequency in Story POX PREVENTION</u>	<u>Classification in Story POX PREVENTION</u>
which	hwich	3	regular
while	hwil	2	regular
why	hwi	1	regular
widespread	widsprēd	1	irregular
will	wil	4	regular
willingly	wilinglē	1	regular
with	wit ₂	21	regular
without	wit ₂ out	1	regular
women	wimun	1	regular
won't	wōnt	2	regular
wouldn't	woodnt	1	irregular
wrong	wrōng	2	regular
yard	yārd	1	regular
year	yir	1	irregular
yearly	yirlē	1	irregular
years	yirz	7	irregular
yes	yēs	1	irregular
you	yōō	8	irregular
young	yūng	3	irregular
your	yōōr	2	irregular
your's	yōōrz	1	irregular
zero	zēō	1	regular

VITA

Wesley K. Roberts

Candidate for the Degree of
Master of Science

Thesis: Utilization of Phoneme-grapheme Relative Frequency
Data as an Effective Method of Developing Reading
Materials for Navajo Students

Major Field: Psychology

Biographical Information

Personal Data: Born at Cedar City, Utah, October
8, 1946, son of Lester W. and Lura V. Roberts;
married Cheryl L. Barron March 22, 1968.

Education: Attended elementary school in Cedar City,
Utah; graduated from Cedar City High School in
1964, received the Bachelor of Science degree
from Southern Utah State College, with a major
in Psychology.