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I am submitting herewith a thesis written by William Lane Hudson entitled "Readability of Consumer Newsletters Published by North Carolina Electric Membership Corporations." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Communications.

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READABILITY OF CONSUMER NEWSLETTERS PUBLISHED BY NORTH CAROLINA ELECTRIC MEMBERSHIP CORPORATIONS

A Thesis

Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

William Lane Hudson

March 1986

DEDICATION

The author would like to dedicate this work to his mother, Wilma Hudson, who provided every educational opportunity possible throughout the years.

ACKNOWLEDGEMENTS

The author would like to thank the newsletter editors from the North Carolina Electric Membership Cooperatives for supplying the necessary publications and data for this study.

Sincere gratitude goes to Dr. Paul Ashdown, thesis adviser, for his continuing words of encouragement and patience. Thanks to thesis committee members Dr. Jerry Morrow and Dr. Ron Taylor for their patience and cooperation, as the research task took longer than anticipated to complete.

The author understands now why spouses and family members are always included in the acknowledgements section of a thesis. A sacrifice of money, time and patience beyond normal endurance was required of the author's family.

ABSTRACT

The stability of the nation's electric membership corporations (EMCs) depends on financing and communication. A basic communication tool is the consumer newsletter.

The readability, or ease of reading, of newsletters published by 24 North Carolina Electric Membership Corporations was tested using the Gunning Fog Index (GFI).

The author compared:

1. the newsletter GFIs with the reading levels recommended by a readability formula researcher.

2. the newsletter GFIs with the educational levels of the people in the counties that receive the newsletters;

3. the GFIs of technical material and nontechnical material;

4. each newsletter editor's prediction of the grade level of his or her newsletter with that indicated by the GFI.

The results showed that the readability level for the majority of the newsletters was too high for the target audiences when compared to readability formula levels and to education levels. There was no significant difference between readability levels of technical and nontechnical material with both being too difficult for the target audiences. Editors also failed to predict the readability levels of their individual newsletters.

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I. INTRODUCTION AND PROBLEM STATEMENT

Businesses and organizations depend on written material to communicate with internal and external audiences. How "readable" or "digestible" such material is to the target audience is important. Researchers have sought to define, isolate and measure objective factors and attributes of writing that affect readability.

While concern for readability may not be a major priority for some businesses and industries, communications greatly influence the operating environment and thus the future for many organizations. Readability studies have found a susceptibility in business and technical communications, both internal and external, to readability fog.

Purpose of Study

The purpose of the study is to determine the readability of newsletters published by North Carolina electric membership cooperatives (EMCs), an electric industry that provides customers with power.

Need for Study

At the early 1980s, EMC leaders projected that the next 10 to 15 years would be the most difficult in the history of rural electrification.

Bob Partridge, past general manager of the National Rural Electric Cooperative Association (NRECA), which is the national EMC organization, gives communications a coequal place with financing in the creation and growth of rural electrification and recognized the continued need for both. "The cost of capital and the quality of communications will determine its future."[1]

Today the electric industry is facing a credibility crisis attributed to spiraling electric rates, failure of the nuclear industry, and a general loss of support for big business. The negative image has been caused by "too many promises made that haven't been kept."[2]

A 1983 Department of Energy (DOE) survey deals specifically with the image of the electric industry in America. A negative "consumer mindset" was found to exist based on the following consumer attitudes:

-Consumers do not feel the electric utilities are doing everything possible to provide cheap dependable power.

-Consumers feel that "electricity supply crises" are contrived as an excuse to justify rate increases.

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[1] Angevine, E., "People--Their Power." (National Rural Electric Cooperative Association: Washington, D.C.), 1980, p. 135.

[2] "Selling Nukes: Rescuing the Deteriorating Image of Nuclear Power." Fortune. 108:23, July 25, 1983, p. 23.

-Consumers feel that rates are high because of poor judgment and mismanagement by electric industry leaders.[3]

The EMC Consumer

The "cooperative philosophy" or "member as owner" concept of an EMC allows the members to participate in work of the local EMC. EMC members are allowed to vote for local EMC directors at an annual meeting. Some EMCs have Member Advisory Committees, speaker bureaus, Women's Committees, and Member Information Meetings.

EMCs have provisions for grievances of members. They include the right to "member-called" special meetings upon request by petition of a specified number of members (usually 10 percent).

Theoretically, members, as owners, can vote to sell the EMC to an outside buyer, such as a publicly owned or investor-owned utility.

Over the years 58 EMCs have been challenged by dissatisfied members and attempted "sell-out" attempts made. Eleven EMCs were sold. Even when such attempts do not succeed, antagonism between opposing factions often leaves deep scars in the communities.[4]

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[3] "Public Perceptions of Future Electric Supply, Utility Financial Conditions and Related Issues." (Department of Energy Office of Policy Planning and Analysis), 1983. p. 21.

[4] Angevine, Op. Cit., p. 52.

Member Dissatisfaction with EMC Rates

The original purpose of the Rural Electrification Administration (REA) program was to serve sparsely populated and unprofitable areas. Money was made available at 2 percent interest from REA. This low cost loan money subsidized the EMCs' programs.

By the 1960s the 2 percent rate was raised to 5 percent and the amount of REA money available was limited. Today, the EMCs must borrow approximately 80 percent of their money at market rates, outside the original REA program. (A limited amount of 2 percent money is still available for EMCs with hardship cases.)

Because most EMCs do not generate electricity, they must purchase it from generating and transmission (G&Ts) electric companies that operate power plants. The EMCs have little control over the wholesale cost of purchased electricity from these G&Ts.

The increasing rates are also a result of increasing internal costs. Most EMCs' systems were built in the late 1930s through the early 1950s. Original poles (average life -- 35 years), and transformers, etc. have to be replaced at today's prices.

Rural Migration Affects Rates

The EMC's rates also reflect the national trend of migration to rural areas away from the cities. This population growth (approximately one half million new members

yearly), which started in the early 1970s, requires rates reflecting new investment in equipment and labor to handle the additional load.[5]

EMCs Depend on Member Education

EMC leaders are calling for better communications and education of the membership to negate member unrest and dissatisfaction. For the EMCs to survive, the members must support the cooperative philosophy and understand the challenges faced by the EMCs.

Gaining the consumer's support and understanding is difficult. Because of technical concepts and problems unique to the electric industry, the utility communicator faces a special challenge in communicating with the average consumer.

EMC Membership Has Changed

The EMC membership has changed in two ways:

-Second generation rural Americans are not as supportive of the EMCs because they do not know as much about cooperative philosophy as did the original members.

-The EMCs' "new" migration membership knows nothing about the cooperative philosophy.

EMC Communications

A communications program incorporates many public

[5] Ibid., p. 132.

relations tools including news releases, speakers' bureaus, media appearances and news conferences.

On a regular basis many EMCs depend on a newsletter to communicate with their membership. The EMC member usually receives the newsletter with the monthly billing.

The Role of the EMC Newsletter

The newsletters carry a variety of information on rate increases, conservation tips, legislative action affecting rates, EMC technical developments and electrical safety advice. One purpose of the study was to determine if there is a difference in readability between material on technical and nontechnical topics.

The EMC newsletter is an effective communication vehicle. The newsletter is addressed to the member and reaches him or her at home. The newsletter is more permanent than broadcast communications. The EMC newsletter editor has editorial and environmental control in the newsletter.

The newsletter medium was chosen for the study because 1) readability studies of newsletter or newsletter related publications could not be found; and 2) most EMCs publish newsletters.

Business researchers using readability formulas have found their communications to be written on levels higher than those suggested by readability researchers.[6] And while

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[6] McKee, B.K., "Readability Formulas Can Aid Good Writing, Journalism Quarterly. 23:8-11, 1967, p.8.

education level is not proved an accurate predictor of reading skill, education of target audiences is also used as a benchmark to determine what is too difficult.[7]

Hypotheses

The study tested the following hypotheses: 1) most of the newsletters will be written on too difficult a level according to readability formula standards; 2) newsletter readability levels will not match the educational level of the target audiences; 3) technical articles will be less readable than nontechnical articles; and 4) the newsletter editors will not accurately predict the readability level of the newsletter they are responsible for producing.

Readability Formulas

The most commonly used readability formulas are the Flesch Formula, the Dale-Chall Formula and the Gunning Fog Index.

The Gunning Index was chosen for the study because it is the simplest to calculate. Informal studies, according to McKee, have found the "three methods usually give results that are close, within a grade of each other."[8]

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[7] Guthrie, J.T. and Kirsch, I., "The Concept and Measurement of Functional Literacy," Reading Research Quarterly. 13:485-507, 1977-1978, p. 505-506.

[8] McKee, Op. Cit., p. 8.

Limitations of Readability Research

The difference between readability "testing" and "analysis" is the difference between objective measurement and subjective evaluation.

Readability testing assesses measurable variables that influence the ease of reading and comprehension of written material. Analysis allows the researcher to make judgments based on his or her own experiences, values and educational background.

There are four limitations in using readability formulas: 1) Formulas measure only one aspect of writing--style; 2) Formulas measure only aspect of style--difficulty; 3) Formulas do not even measure difficulty perfectly; and 4) Formulas are not good measures of good style.[9]

Definition of Terms

Readability -- Readability refers to the "ease" with which a written message can be read and understood.

Readability Formula -- An arithmetic formula for measurement of readability using factors such as sentence length, number of polysyllable words, words that begin with certain letters, etc.

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[9] Klare, G.R., The Measurement of Readability. (Ames, Iowa: Iowa State University Press, 1963), pp. 24-25.

Dale-Chall Formula -- A readability formula based on sentence length and a word list of the 3,000 most commonly used words known to 80 percent of fourth graders.

Flesch Formula -- A readability formula based on sentence length and syllable count.

Gunning Fog Index -- A readability formula based on sentence length and number of polysyllabic words.

Danger Line -- The level or point of reading difficulty according to Gunning that written material is likely to be misunderstood or ignored. On the Gunning Fog Index (GFI), the danger line is the 13th level.

Easy Reading Range -- The 6th to 10th grade GFI range for copy. According to Gunning, most popular magazines of his time were written between the 6th and 10th grade levels.

Word Load -- In readability research, "word load" is a readability factor that refers to the characteristics (syllable count, prefixes, suffixes, personal pronouns, etc.) of individual words in sentences.

Newsletter -- A regular publication published for a target group. For this study, "newsletter" refers to the monthly EMC publication written and published by the EMC for the cooperative's membership.

Member -- Anyone who belongs to a cooperative (telephone, EMC, farm, etc.).

Cooperative Philosophy -- A cooperative is owned by those it serves and any profits are shared by those owners.

Electric Membership Cooperative (EMC) -- One of approximately 1,000 small electric utilities , most of which were formed as non-profit cooperatives following the establishment of the Rural Electrification Administration (REA) in 1935. The REA program made available low interest loan money to the locally organized non-profit electric co-ops.

Most EMCs do not generate their own electricity. They buy electricity from generating and transmission utilities (G&Ts) at wholesale cost. The EMCs distribute the electricity through their lines to the consumers served by the EMC.

The purpose of the REA program was to provide electricity to rural America. The cooperative's chief characteristic is the "member as owner" concept. Members have voting rights at the annual meeting where directors are elected. Note: EMCs are often referred to as "co-ops" and that is exactly what they are; however, they are not the only form of cooperatives. There are food cooperatives, telephone cooperatives and various forms of farm cooperatives.

Investor-Owned Utility (IOU) -- A utility company

organized to provide a return on capital to the investment community. Unlike a cooperative, which is owned by the users of the service, IOU ownership bears no relationship to use. Voting control of most power company stock is exercised by a few large financial institutions and insurance companies.

Public Owned Utility (POU) -- A utility that is owned and controlled by the taxpayers of a city, district, or other public area and operated as a function of the government. POUs are also called municipalities.

Nontechnical Information -- Newsletter information that explains conservation measures (storm windows, weatherization loans), safety practices (eye goggles, lawn mowers), EMC personnel advancement and member involvement.

Technical Information -- Newsletter information that explains the electrical system, load management, nuclear plant buy-in, computing bills, fuel adjustment charges, legislative action, and rate adjustments. All of these items affect the service or cost of electricity for the member/consumer either directly or indirectly.

Rural Electrification Administration (REA) -- A government agency established in 1935 to make available low cost loans for electric companies to build their lines into America's rural countryside.

National Rural Electric Cooperative Association (NRECA) -- The NRECA is the national cooperative organization made up all electric membership cooperatives in America. It is a clearinghouse for information, services and advisory personnel.

Reader Veto -- Gunning believes that reader veto, or the opportunity for the reader to decide whether or not to receive a publication, is a factor in a writer's motivation to produce readable material in publications.

II. LITERATURE REVIEW

Readability Formula Development

Readability formulas were developed as an objective measurement of the difficulty of reading material. Researchers have counted variables such as sentence length, polysyllabic words, personal references, and even words beginning with certain letters.

Readability research was conducted in the early 1920s by Berth A. Lively and S.L. Pressey. Their work was based on the percentage of difficult words not in the Thorndike list of most frequently used words in print.

In 1935, William S. Gray and Bernice Leary reviewed readability research to that year. They listed 64 readability factors that could be objectively singled out and counted.

Gray and Leary tested 44 of these factors and found 20 affected reading ease. Their study included the number of words that began with the letter "i." They stated that the more words beginning with "i" the more difficult the piece of writing. Reading ease, however, was increased with words beginning with "w,""h," and "b." Ironically, their work went unnoticed for almost 10 years because their book was not readable.[10]

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[10] Gunning, R., The Technique of Clear Writing. (New York: McGraw-Hill), 1952, p. 34.

Most early readability formulas were based on three to five factors. They required charts, long equations, and more time to administer than required to write the passage. Such difficult formulas only slowed their acceptance and widespread use.

It was not until the publication of Rudolf Flesch's formula[11] that interest in readability yardsticks surged. Since that time, more than 30 readability yardsticks have been developed, some only variations of others. George Klare summarized the development of the formulas and their advantages and disadvantages in his 1963 book, The Measurement of Readability.

The first readability yardsticks accepted for widespread use were the Flesch formula, the Dale-Chall formula and the Gunning Fog Index.

The problem with the Dale-Chall formula is with the word load. The word load factor is based on a list of 3,000 words that includes 125 polysyllabic words known to 80 percent of fourth-graders. This list intimidated many researchers.

The Flesch formula is based on sentence length, a count of references to people, and a count of prefixes and suffixes as a measure of word load. Flesch later

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[11] Flesch, Rudolf, "A New Readability Yardstick," Journal of Applied Psychology. 32:221-223, 1948.

modified his formula to include all syllables in a passage. This may have solved the problem of counting prefixes and suffixes, but it only made the formula a more tedious one. Also, the syllable counting did not account for difficulty created when polysyllabic words are encountered.

Familiarity and abstraction are directly related to word length. One and two syllable words comprise most daily word usage. One study found that of the 1,000 words most often used, only 36 had more than two syllables. Only one out of 25 in the Dale-Chall word list of 3,000 has three syllables or more.

The Gunning Fog Index uses school-grade levels established by a standardized reading test as a benchmark. Here is the Fog Index formula:

1. Jot down the number of words in successive sentences. If the piece is long, you may wish to take several samples of 100 words, spaced evenly through it. If you do, stop the sentence count with the sentence which ends nearest the 100-word total. Divide the total number of words in the passage by the number of sentences. This gives the average sentence length of the passage.

2. Count the number of words of three syllables or more per 100 words. Don't count the words that are proper names, that are combinations of short easy words (like "bookkeeper" and "manpower"), that are verb forms made three syllables by

adding -ed or -es (like "created" or "trespasses"). This gives you the percentage of hard words in the passage.

3. Total the two factors just counted and multiply by .4 to get the Fog Index.

Gunning sets the danger line for writing at the Fog Index of 12. Higher than this, and you risk losing your reader or having the material misunderstood.

Readability Yardstick Usage

The application of readability formulas has been focused primarily on textbooks and magazines for school children, and on newspapers. Educators have used the yardsticks to compare readability levels of material, both internal and external to the school system, to the educational levels of school children. Bittner and Shamo, using several readability formulas, measured the difficulty of an educational newspaper insert advertised for kindergarten through seventh grade. The average readability level of the insert was found to be too difficult for the targeted age group.[12]

Readability formulas have also been used to measure material against other writing.

Fowler found novels to be more consistently written on the same readability level than newspapers between the years

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[12] Bittner, J.R. and Shamo, G.W. "Readability of the 'Mini-Page'." Journalism Quarterly. 54:740-743, Winter 1976, p. 740.

of 1904 and 1965.[13] Fusaro and Conover compared tabloids and nontabloids and found different readability levels for lead stories but editorials measured the same.[14] Fowler and Smith concluded that readability of delayed and immediate reward news content from Time and Newsweek magazines varied within publications depending on the subject. Delayed-reward stories were more difficult than immediate-reward stories.[15] Copy from the AP and UPI wire services was measured for readability differences. Readability for both wire services tested more difficult than recommended by the readability formula. UPI measured more difficult than AP.[16]

Although a number of studies were found that did measure readability of technical and popular literature, no studies were found that related directly to newsletter readability.[17]

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[13] Fowler, G.L., "The Comparative Readability of Newspapers and Novels." Journalism Quarterly. 55:589-592, Autumn 1978.

[14] Fusaro, J.A. and Conover, W.M., "Readability of Two Tabloid and Two Nontabloid Papers." Journalism Quarterly. 60:142-144, Spring 1983.

[15] Fowler, G.L. and Smith, E.J., "Readability of Delayed and Immediate Reward Content in Time and Newsweek." Journalism Quarterly. 59:431-434, Autumn 1982.

[16] Hoskins, R.L., "A Readability Study of AP and UPI Wire Copy,"Journalism Quarterly. 50:360-363, Summer 1973.

[17] Kwolek, W.F., "A Readability Survey of Technical and Popular Literature."Journalism Quarterly. 50:255-263, Summer 1973.

Christ and Pharr did a readability study of Florida brochures intended for general distribution. Of the seven departments' brochures tested, only one was standard reading level, the rest were too difficult by the readability formula's guidelines.[18]

McKee, in a survey of the 60 largest U.S. companies listed by Fortune, found that 12 companies had used readability formulas to improve business writing. Of the 53 percent that responded to his survey, 65 percent rated them as valuable, 30 percent rated them no value, and 5 percent actually thought they were harmful. In the survey, only three formulas were mentioned - the Flesch Formula, the Dale-Chall Formula and the Gunning Fog Index.[19]

Research has found a variance in readability levels between publications, within the same publications, and between publications and the education level of the intended audience.

The readability levels suggested by the authors of the respective readability formulas were most often used as readability benchmarks. None of the research cited specific audience education levels except Bittner and Shamo.[20]

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[18] Christ, W.G. and Pharr, P., "Readability of Brochures Produced by State of Florida." Journalism Quarterly. 57:159-160, Spring 1980.

[19] McKee, Op. Cit., p. 8.

[20] Bittner, Op. Cit., p. 742.

"The Technique of Clear Writing"

Gunning was looking for a measure of readability that would be easy to use, reliable and practical.

Herbert Spencer, author of The Philosophy of Style, stated "A reader, brings to your writing limited mental power. He uses it in three ways: (1) in understanding the words you use, (2) in getting their relationships, and (3) in realizing the thought conveyed."[21]

A direct relationship exists between good writing and "reader veto." When writing is difficult, readers "veto" the publication by not reading it, and for subscription publications, this means the demise or success of the publication.

Gunning cites two lists by two different researchers of popular books and the GFI levels at which they were written.

The two lists of books spanned hundreds of years and many different authors, but yet all the books measured had GFIs between the fifth and tenth grade level. Most books tested at the fifth, sixth and seventh grade level.

Magazine Readership

Magazines have high readability because they depend upon readership for survival. All popular magazines tested

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[21] Gunning, Op. Cit., p. 10.

below the danger line for readability, (grade level 12 or lower). Copy written on a level higher than the 12th grade is likely to be misunderstood or ignored. An important point is that the readability of popular magazines was consistent from issue to issue.

Using his readability formula, the following relationships between educational level and reading ease were established (Table I).

TABLE I

READABILITY RANGES BY FOG INDEXES

	FOG INDEX	READING LEVEL BY GRADE
	17	College graduate
	16	College senior
	15	College junior
	14	College sophomore
Danger	13	College freshman
Line	12	12th grade
	11	11th grade
	10	10th grade
Easy	9	9th grade
Reading	8	8th grade
Range	7	7th grade
	6	6th grade

SOURCE: Gunning, R., The Technique of Clear Writing (New York: McGraw-Hill), 1952, p. 40.

Gunning's Principles of Clear Writing

Keep sentences short. The more words there are, the more relationships there are to be comprehended, and the more effort required by the reader.

Where possible, prefer the simple word. The emphasis here is the word "prefer." Do not use large words and complex sentences only from habit. Use them when needed and with purpose.

Use active, not passive verb tense. Gunning says passive verb usage in writing is because of: 1) carelessness; 2) habit; 3) lack of self-confidence; and 4) "fear of record."

Summary

What do people read? According to Gunning, people read material that requires less than a high-school reading skill. Even though the reader may have a high school education, a reader's desire to read written material is directly related to the effort required to understand the material, and thus, the easier the better.

Why is there "unreadable" material written?

Ironically, motivation on the writer's part is involved. A writer's desire to communicate better is related to the consequences for doing so.

III. METHODS AND PROCEDURES

Research Design

The study used the Gunning Fog Index to measure newsletter readability and a survey instrument to obtain newsletter editor demographics.

Because of the lack of a pretest-posttest and the application of any treatment or control group, this design does not offer cause-and-effect inference. Many uncontrollable variables could make it impossible to separate one influence from another influence. The reason a newsletter editor writes on a certain level cannot be determined. The research, however, can provide useful information much as a "photo snapshot" might provide, i.e. a picture of the "state of things." The descriptive design can raise questions for further research into causal relationships if a problem is uncovered.

The advantages to a descriptive study are: effects are eliminated from the final measurement; and the study is conducted under naturalistic communication conditions with normal vehicles, spokesmen and noise.

The study's purpose was not to test readability formulas but, using a readability formula, to determine the readability level of newsletters.

Notational Legend

A panel design with three cells is used to indicate there was no premeasurement or treatment before the measurements. The following legend defines the research design.

P1 = Census of North Carolina newsletter editors.

t = Stands for point in time with t1, t2, t3, etc., referring to specific different points in time.

M = Measurement

M1 = Self-administered questionnaire

M2 = Content analysis using Fog Index on newsletters

R = Request for two issues of EMC newsletters from each newsletter editor

	t1	t2	t3	t4
P1	------	-----	M1 | R	M2

Population Sample

The EMC editors from North Carolina were chosen as the population sample for the study.

The 28 North Carolina EMCs operate together under the auspices of the North Carolina Electric Membership Corporation, a clearinghouse for information, supplies and legislative representation on both the state and national scene.

Together the EMCs make up the state's 17th largest corporation. In 1985, this group was installing the nation's first state operated load management system. (A system of turning off and on air conditioners and heating systems during peak demand times to lower demand.) This group has also purchased 56.25 percent of the Catawba Nuclear Plant, York, S.C.

Twenty-six of North Carolina's 28 EMCs publish newsletters with a combined circulation of approximately 1.2 million households.[22]

Procedure

The 26 North Carolina EMC newsletter editors were mailed a questionnaire and asked to submit two consecutive issues of their newsletters.

Measurement

The Fog Index was used to determine readability of articles in the newsletters. At the time of the request for newsletters, the editors received a self-administered questionnaire.

One technical and one nontechnical article were chosen from each newsletter. The content of the article determined its classification as technical or nontechnical.

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[22] "EMC, Your North Carolina Connection For Economic & Community Development." (North Carolina Electric Membership Corporation), 1984, p. 4.

Each article was checked twice for accuracy of measurement. This included recounting of words, number of sentences and polysyllabic words. Calculations for the Fog Index were done by computer. Because percentages were rounded to the nearest .01 percent, totals may show a variance of $\pm$.02 percent.

IV. DISCUSSION OF RESULTS

Hypothesis #1

More than half of all newsletter articles measured will have GFIs higher than grade level 12, which according to Gunning is the danger line for readability.

Results

If we adhere to Gunning's premise that reader veto is an important pressure on a publication, then his chart (Table I, p. 20) for reading ranges can be a guideline for EMC newsletters.

Two articles were measured from each of the 48 newsletters submitted by the 24 EMCs. However, because of the length requirements (approximately 100 words) of the Fog Index, two newsletters yielded only one article each.

Of the 94 articles measured, 39 percent (or 37 articles total), had GFI levels above the danger line (grade level 12) established by Gunning. However, 35 percent (or 33 articles), had GFIs in the easy reading range, the 6 - 10 grade levels.

How are articles with GFIs above the danger line distributed among the 24 newsletters? And why should distribution be a concern?

Consistency of reading level is important for a publication. According to Gunning, popular magazines are

consistently written on the same grade level. There is little variance between issues and within the same issue. The reader knows what reading difficulty level to expect from each publication. But by contrast, the range of GFIs for articles in the newsletters varied from three grade levels to 18 grade levels difference. Only four of the 24 newsletters did not have at least one article with a GFI over the danger line (Table II).

TABLE II

DISTRIBUTION OF ARTICLES WITH GFIs 13+
AMONG EMC NEWSLETTERS

	Number of Articles In Each EMC Newsletter Over Danger Line			
	0	1	2	3
EMC Newsletters In Each Category	4	20	13	4

The EMC newsletters have two readability problems. Of the articles measured, 39 percent are over the danger line. Another 25 percent are written on the 11-12 grade level which is still higher than the easy reading range. This is more than half, 64 percent, written above the easy reading range.

Consistency of readability level is also a problem.

The individual newsletters carry material that varies between issues of the same newsletter from three to 14 grade levels (See Appendix A).

The findings do not support the hypothesis. Sixty percent of the articles did have GFIs above the easy reading range, but only 39 percent of the articles were above the danger line.

Hypothesis #2

The median GFI for each EMC's newsletter will be higher than the median years of school completed in each North Carolina county served by that EMC.

Results

Because the educational achievement in North Carolina is stated as a median, the median GFI for the newsletters was used for comparison.

The median for years of school completed in N.C. is 12.2 years (Table III). Studies have shown that there are weak to moderate correlations between educational attainment and reading ability. Accurate measures of readability are difficult to obtain and are different across sex, race, age and socioeconomic status. Educational attainment is used, however, as a benchmark in studies of literacy.[23]

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[23] Guthrie, Op. Cit., p. 488.

TABLE III

COMPARISON OF EDUCATIONAL MEDIAN & AVERAGE GFI MEDIAN

Median Years Of School Completed In North Carolina	EMC Newsletters GFI Median
12.2	12.5

For more indepth analysis, the aggregate data are broken down into GFI levels of individual EMCs and the educational levels of the counties they serve.

There are 28 EMCs serving 100 counties in North Carolina so there is overlap in counties served. For example one EMC serves part of 11 counties.

In Table IV, The GFI of the newsletter is compared with the educational level of the geographic target area. Half of the newsletters had GFIs higher than the median years of education completed for the counties receiving the newsletter (See Appendix B).

The median years of school completed for all counties is higher than Gunning's easy reading range of 6th to 10th grade level (Table I, p. 20). This would support the argument that educational attainment and reading level are different.[24] Gunning's research suggests a preference for easier reading material regardless of education.

[24] Gunning, Op. Cit., p. 493.

TABLE IV

EDUCATIONAL AND NEWSLETTER GFI MEDIANS BY COUNTIES SERVED

Publication Title	Avg Median Years Of School Completed For Combined Counties Served	Mean GFI For EMC Newsletter	Median GFI For EMC Newsletter
RUTHERFORDTON EMC	11.67	12.70	12.47
BLUE RIDGE EMC	11.31	13.14	11.29
BRUNSWICK EMC	11.50	10.50	8.34
CRESCENT EMC	11.74	13.39	12.16
JONES-ONSLOW EMC	11.85	16.08	14.49
DAVIDSON EMC	11.77	12.13	12.09
LUMBEE RIVER EMC	11.77	13.15	13.21
UNION EMC	12.04	11.13	10.83
CARTERET-CRAVEN EMC	11.92	9.39	9.60
FRENCH BROAD EMC	11.25	11.60	11.95
FOUR COUNTY EMC	11.50	15.10	16.99
RANDOLPH EMC	11.86	9.98	9.52
HAYWOOD EMC	12.18	13.41	14.95
PIEDMONT EMC	12.08	13.01	12.93
PEE DEE EMC	11.72	12.15	13.88
TRI-COUNTY EMC	11.67	13.07	13.76
WAKE EMC	11.87	10.61	10.17
ROANOKE EMC	11.02	10.40	10.41
HALIFAX EMC	11.25	13.61	13.59
EDGECOMBE-MARTIN EMC	11.55	16.29	16.51
CENTRAL EMC	11.98	11.35	11.27
ALBEMARLE EMC	11.62	10.31	10.47
SOUTH RIVER EMC	11.76	14.52	14.52
TIDELAND EMC	11.91	11.80	11.65

Twelve newsletters have higher GFIs than the educational median years of school completed in counties served.

Five newsletters had GFIs that matched the educational median years of school completed in counties served.

Seven newsletters had GFIs lower than the educational median years of school completed in counties served.

Four newsletters had GFIs on the 10th grade level and two had GFIs of 9th grade level. The lowest GFI was on the 8th grade level.

The hypothesis was not supported by the data. Half of the EMCs had readability levels higher than the median educational level attained in the geographic target areas.

Hypothesis #3

A greater percentage of technical articles will be above the danger zone than the percentage of nontechnical articles.

Results

Of the 94 articles selected from each newsletter, 46 were technical and 48 were nontechnical. In two newsletters only one article was measured because the readability formula required approximately 100 words for application and a second article of that length was not found in each of the two newsletters. There were 46 technical articles and 48

nontechnicals measured for this study. Percentages were used for comparisons.

As indicated in Table V, a larger percentage of technical articles (43.47 percent) had GFIs above the danger line than percentage of nontechnical articles (35.41 percent).

TABLE V

GFI LEVELS FOR
TECHNICAL AND NONTECHNICAL ARTICLES

	Grades 5-8	Grades 9-10	Grades 11-12	Grades 13+
Technical Articles	4.34%	26.08%	26.08%	43.47% Total: 99.97%
Nontechnical Articles	22.91%	16.66%	25.00%	35.41% Total: 99.98%

Technical terminology and concepts suggest that editors should have greater difficulty keeping technical information on a lower readability level than when writing on nontechnical topics. Table V shows that a greater percentage of technical writing is written above the danger line. The cause, however, cannot be attributed to increased polysyllabic words. Both sentence length and polysyllabic words are factors for GFI measurements above the danger line in both technical and nontechnical articles. (Table VI).

The usage of polysyllabic words in the technical and nontechnical articles written above the danger zone (level 12) was insignificant (Table VI).

TABLE VI

COMPARISON OF HARD WORDS AND SENTENCE LENGTH BETWEEN TECHNICAL AND NONTECHNICAL ARTICLES WITH GFIs 13+

	Average Words Per Sentence	Percentage of Hard Words
Gunning's Grade 12 Criteria	20	.09
Technical Articles	26.00	.10
Nontechnical Articles	25.48	.09

A comparison of GFI medians, modes and arithmetic means in Table VII for technical and nontechnical articles with GFIs above the danger line shows close measurements.

TABLE VII

MEDIANS/MODES/MEANS FOR ARTICLES WITH GFIs HIGHER THAN DANGER LINE

	Median	Mean	Mode
Technical GFI	14.78	15.53	13
Nontechnical GFI	14.00	15.69	13

As indicated in Table V, the percentage (43.47%) of technical articles over the danger line was greater than the percentage (35.41%) of nontechnical articles. A larger difference in readability levels is seen between technical and nontechnical articles at the lower end of Gunning's reading range scale, in the easy reading range.

The percentages for technical and nontechnical articles in the easy reading range (6th-10th grade) are close, but when the percentages below the 8th grade level are examined, a greater difference can be seen.

Of the technical articles, only 4.43 percent have GFIs below the 8th grade. Of the nontechnical articles, 22.91 percent have GFIs below the 8th grade level (Table V).

The hypothesis was supported by the data: 43.47 percent of the technical articles were above the danger line compared to 35.41 percent of nontechnical articles above the danger line.

Hypothesis #4

EMC newsletter editors will predict that their newsletters are written on a lower level than the grade level measured by the GFI.

Results

Nineteen (19) of the 24 newsletter editors predicted that their newsletters were written on a lower level than actually measured by the Gunning Fog Index (Table VIII).

Four editors predicted the average grade level of their newsletter.

One editor predicted the grade level to be higher than measured by the GFI.

The editors were asked to estimate the amount of time they spent on the newsletter. A correlation was not found between time spent on producing the newsletter and the average grade levels of the newsletters.

The hypothesis was supported by the survey results. Nineteen of the 24 newsletter editors predicted a lower readability level for their individual newsletters than determined by the readability measurement.

Summary

The EMC newsletters have several readability problems. According to Gunning's standards for readability, approximately 65 percent (61 articles) of the 94 articles tested were above the easy reading range and 39 percent (37 articles) tested above the danger line. Consistency of reading level is also a problem. There was a variance of readability levels from three to 14 grade levels. The newsletter readers never know what to expect.

When the newsletters' median GFIs were compared to the educational levels in counties served, half of the newsletters were written at a level higher than the median educational levels of their audiences.

Comparing the technical and nontechnical articles showed little difference in readability above the danger line. Gunning's reading ranges do not go above the 12th grade danger line. However, it was below the 8th grade level that the greatest difference was found. The findings did not indicate that differences in sentence length or hard words contributed to variance in the GFIs.

Lack of education and training do not appear to be the obstacle to better writing. Seventeen of the 24 respondents had four-year degrees, seven in journalism or English. The editors were not however, asked to specify if they had received any training or information regarding readability problems or formulas.

Validity

Internal validity is excellent. A census of one state's EMC editors, not a sample, was used for the study. Of 26 EMCs contacted, 24 participated.

The Fog Index, used as an unobtrusive measurement, offers objective data.

External validity is weak and cannot be generalized to other EMCs across the United States. Most important is that the study was not done with a probability sample, but a census sample. Independent variables would include background of editors, hiring practices of EMCs, training programs of EMCs, and a central state organization that might offer readability training.

Consumer and editor demographic and psychographic characteristics combined with regional EMC/consumer relationships suggest that the study should be replicated on a regional basis for validity.

Recommendations

A readability formula is not a pattern for writing. The formula cannot measure factors such as style and cadence. It can raise a red flag when readability may be an obstacle to communication.

More writing workshops on readability may be necessary to make newsletter editors aware of the need for emphasis on improved writing skills.

Motivation to improve readability levels may be lacking because the EMC newsletter audience is a captive one. The editor will probably receive more pressure from inside the organization to write at a certain level than from outside the organization. It is predicted that the newsletter editors' motivation for improvement will be weak until either management becomes aware of the need for improved readability or until the consumer has the option of cancelling the newsletter.

The consequences of continued readability problems in the newsletters may be decreased public confidence through loss of readership plus the loss of investment in a regular publication that is not achieving its purpose.

More research is necessary, not only into readability of newsletters, but into the public relations impact of the newsletter as an educational tool.

BIBLIOGRAPHY

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Periodicals

Abbate, F. J., "Communicating Credibility." Public Utilities Fortnightly. 113:32-35, April 12, 1984.

Bates, D., "Do it Right or Not at All." Public Relations Quarterly. 28:28-32, Fall 1983.

Bittner, J.R. and Shamo, G.W., "Readability of the 'Mini-page'." Journalism Quarterly. 54:740-743, Winter 1976.

Budd, J. F., "Are We Communicating More and Saying Less?" Public Relations Journal. 40:29-31, January 1984.

Christ, W.G. and Pharr, P., "Readability of Brochures Produced by State of Florida." Journalism Quarterly. 57:159-160, Spring 1980.

Culbreath, H. L., "A Consequence of Not Selling; Losing Touch." Public Utilities Fortnightly. 111:117, June 9, 1983.

Dale, E. and Chall, J. S., "A Formula for Predicting Readability: Instructions." Educational Research Bulletin. 27:37-54, February 18, 1948.

Davis, F. "A Simplified Flesch Formula." Journalism Quarterly. 55: 167-202, Spring 1978.

Farr, J. N., Jenkins, J. J., and Patterson, D.G., "Simplification of the Flesch Reading Ease Formula." Journal of Applied Psychology. 35:333-337, 1957.

Flesch, R. F., "A New Readability Yardstick." Journal of Applied Psychology. 32:221-223, 1948.

Fowler, G. L., "The Comparative Readability of Newspapers And Novels." Journalism Quarterly. 55:589-592, Autumn 1978.

Fowler, G.L. and Smith, E.J., "Readability of Delayed and Immediate Reward Content in Time and Newsweek." Journalism Quarterly. 59: 431-434, Autumn 1982.

Frantz, J., "Rx for Hospitals: Targeted Information Mailings." Advertising Age. 54:Sec 2:M48-49, November 28, 1983.

Fusaro, J.A. and Conover, W.M., "Readability of Two Tabloid and Nontabloid Papers." Journalism Quarterly. 60:142-144, Spring 1983.

Guthrie, J.T. and Kirsch, I., "The Concept And Measurement Of Functional Literacy," Reading Research Quarterly. 13:485-507, 1977-1978.

Hoskins, R.L., "A Readability Study of AP and UPI Wire Copy," Journalism Quarterly. 50:360-363, Summer 1973.

Karlinsky, S. S. and Koch, B. S., "Readability is in the Mind of the Reader." Journal of Business Communications. 20:57-69, Fall 1983.

Kwolek, W.F., "A Readability Survey of Technical and Popular Literature." Journalism Quarterly. 50:255-264, Summer 1973.

McKee, B.K., "Readability Formulas Can Aid Good Writing." Public Relations Journal. 23:8-11, July, 1967.

Miller, L. R., "Predictive Powers of the Flesch and Bormuth Readability Formulas." Journalism Quarterly. 57:508-511, Autumn 1974.

Peterson, B. K., "Tables and Graphs Improve Reader Performance." Journal of Business Communications. 20:47-55, Spring 1983.

Shamo, G. W., "Predicting Syllable Count by Computer." Journalism Quarterly. 52:344-346, Summer 1975.

"Selling Nukes: Rescuing the Deteriorating Image of Nuclear Power." Fortune. 108:23, July 25 1983.

Tankard, J. W. and E. F., "Comparison of Readability of Basic Reporting Texts." Journalism Quarterly. 54:794-797, Autumn 1977.

Annotated Bibliographies

Hill, P. M., McGrath, M., and Reyes, E., Cooperative Bibliography: An Annotated Guide to Works in English on Cooperatives and Cooperation. Madison, Wisconsin: Cooperative Extension Programs, University of Wisconsin-Extension, 1981, Pp. 202.

Groves, F., and Vilstrup, D., Cooperative Communications, Member Relations, Motivation and Behavioral Studies: Selected Annotated Bibliography with References from Related Fields. Madison, Wisconsin: Cooperative Extension Programs, University of Wisconsin-Extension, 1970, Pp. 93.

Books

Angevine, E., "People--Their Power." (National Rural Electric Cooperative Association: Washington, D.C.), 1980.

"EMC, Your North Carolina Connection For Economic & Community Development." (North Carolina Electric Membership Corporation: Raleigh, N.C.), 1984.

Gunning, R., The Technique Of Clear Writing. (New York: McGraw-Hill), 1952.

Klare, G., The Measurement of Readability. (Iowa: Iowa State University Press), 1963.

APPENDIXES

APPENDIX A

GFI LEVELS FOR ALL EMC ARTICLES

EMC/ Circ	Tech/ Nontech	Number Words In Sample	Sent In Sample	Avg Words Per Sent	Hard Words	GFI
RUTHERFORDTON	#1 TECH	110	4	27.50	12	15.36
36,000	#1 NONTECH	107	6	17.83	9	10.49
	#2 TECH	111	5	22.20	14	13.92
	#2 NONTECH	93	4	23.25	4	11.02
BLUE RIDGE	#1 TECH	99	5	19.80	9	11.55
35,000	#1 NONTECH	97	4	24.25	10	13.82
	#2 TECH	112	6	18.66	10	11.03
	#2 NONTECH	104	4	26.00	15	16.16
BRUNSWICK	#1 TECH	95	8	11.87	14	10.64
32,000	#1 TECH	113	5	22.60	6	11.16
	#2 NONTECH	109	10	10.90	0	4.36
	#2 NONTECH	104	8	13.00	9	8.66
CRESCENT	#1 TECH	109	6	18.16	10	10.93
29,300	#1 NONTECH	105	7	15.00	7	8.66
	#2 TECH	116	3	38.66	16	20.98
	#2 NONTECH	88	5	17.60	14	13.40
JONES-ONSLOW	#1 TECH	109	3	36.33	8	17.46
29,000	#1 NONTECH	101	2	50.50	11	24.55
	#2 TECH	94	4	23.50	5	11.52
	#2 NONTECH	115	6	19.16	9	10.79
DAVIDSON	#1 TECH	110	5	22.00	11	12.80
22,000	#1 NONTECH	95	6	15.83	12	11.38
	#2 TECH	103	7	14.71	7	8.60
	#2 NONTECH	105	6	17.50	23	15.76

APPENDIX A (Continued)

GFI LEVELS FOR ALL EMC ARTICLES

EMC/ Circ	Tech/ Nontech	Number Words In Sample	Sent In Sample	Avg Words Per Sent	Hard Words	GFI
LUMBEE RIVER	#1 TECH	103	4	25.75	6	12.63
22,000	#1 NONTECH	98	5	19.60	5	9.88
	#2 TECH	105	3	35.00	6	16.28
	#2 NONTECH	117	5	23.40	13	13.80
UNION	#1 TECH	95	6	15.83	8	9.70
21,000	#1 NONTECH	116	7	16.57	8	9.38
	#2 TECH	99	5	19.80	10	11.96
	#2 NONTECH	107	6	17.83	17	13.48
CARTERET-	#1 TECH	93	5	18.60	4	9.16
CRAVEN	#1 NONTECH	82	7	11.71	4	6.63
21,000	#2 TECH	107	5	21.40	4	10.05
	#2 NONTECH	110	5	22.00	8	11.70
FRENCH BROAD	#1 TECH	92	3	30.66	6	14.87
21,000	#1 NONTECH	87	6	14.50	4	7.63
	#2 TECH	90	4	22.50	4	10.77
	#2 NONTECH	117	6	19.50	6	9.85
FOUR COUNTY	#1 TECH	98	3	32.66	13	18.37
16,700	#1 NONTECH	126	4	31.50	15	17.36
	#2 TECH	94	4	23.50	17	16.63
	#2 NONTECH	103	6	17.16	3	8.03
RANDOLPH	#1 TECH	94	6	15.66	7	9.24
15,500	#1 NONTECH	97	4	24.25	8	12.99
	#2 TECH	92	8	11.50	12	9.81
	#2 NONTECH	107	6	17.83	2	7.88

APPENDIX A (Continued)

GFI LEVELS FOR ALL EMC ARTICLES

EMC/ Circ	Tech/ Nontech	Number Words In Sample	Sent In Sample	Avg Words Per Sent	Hard Words	GFI
HAYWOOD 12,500	#1 TECH	125	6	20.83	15	13.13
	#1 NONTECH	109	4	27.25	16	16.77
	#2 NONTECH	93	8	11.62	2	5.51
	#2 NONTECH	82	3	27.33	15	18.25
PIEDMONT 12,500	#1 TECH	103	5	20.60	9	11.73
	#1 NONTECH	99	6	16.50	16	13.06
	#2 TECH	93	4	23.25	12	14.46
	#2 NONTECH	100	5	20.00	12	12.80
PEE DEE 12,000	#1 TECH	111	5	22.20	14	13.92
	#1 NONTECH	89	4	22.25	11	13.84
	#2 TECH	90	5	18.00	13	12.97
	#2 NONTECH	92	6	15.33	4	7.87
TRI-COUNTY 11,900	#1 TECH	92	5	18.40	18	15.18
	#1 NONTECH	100	10	10.00	14	9.60
	#2 TECH	103	4	25.75	10	14.18
	#2 NONTECH	96	4	24.00	9	13.35
WAKE 10,300	#1 TECH	93	6	15.50	4	7.92
	#1 NONTECH	102	8	12.75	16	11.37
	#2 TECH	108	5	21.60	15	14.19
	#2 NONTECH	98	6	16.33	6	8.98
ROANOKE 10,000	#1 TECH	110	6	18.33	9	10.60
	#1 NONTECH	95	4	23.75	4	11.18
	#2 TECH	93	5	18.60	5	9.59
	#2 NONTECH	97	5	19.40	6	10.23

APPENDIX A (Continued)

GFI LEVELS FOR ALL EMC ARTICLES

EMC/ Circ	Tech/ Nontech	Number Words In Sample	Sent In Sample	Avg Words Per Sent	Hard Words	GFI
HALIFAX	#1 NONTECH	100	4	25.00	10	14.00
8,000	#1 NONTECH	87	3	29.00	8	15.27
	#2 TECH	100	5	20.00	10	12.00
	#2 NONTECH	112	6	18.66	16	13.18
EDGECOMBE-	#1 TECH	111	6	18.50	9	10.64
MARTIN	#1 TECH*	95	3	31.66	21	21.50
7,700	#2 NONTECH	104	3	34.66	18	20.78
	#2 NONTECH	92	4	23.00	7	12.24
CENTRAL	#1 TECH	103	4	25.75	7	13.01
6,200	#1 NONTECH	95	6	15.83	13	11.80
	#2 TECH	103	6	17.16	10	10.75
	#2 NONTECH	99	6	16.50	8	9.83
ALBEMARLE	#1 TECH	100	5	20.00	4	9.60
5,800	#1 NONTECH	100	5	20.00	9	11.60
	#2 TECH	94	5	18.80	9	11.34
	#2 NONTECH	99	5	19.80	2	8.72
SOUTH RIVER	#1 TECH	99	4	24.75	10	13.94
18,000	#2 TECH	115	5	23.00	17	15.11
TIDELAND	#1 TECH	95	5	19.00	14	13.49
15,000	#1 NONTECH	107	6	17.83	11	11.24
	#2 TECH	110	6	18.33	13	12.06
	#2 NONTECH	100	5	20.00	6	10.40

APPENDIX B

EDUCATIONAL MEDIANS AND GFI MEDIANS FOR EMC NEWSLETTERS

EMC	Counties Served By Each EMC	Median Years Of School Completed In Each County	Avg Median Yrs of School Completed In All Counties	Median GFI Of Newsletter Articles
RUTHERFORDTON	Rutherford	11.5	11.67	12.47
	McDowell	11.6		
	Polk	12.3		
	Cleveland	11.7		
	Burke	11.5		
	Caldwell	11.3		
	Catawba	12.1		
	Lincoln	11.6		
	Gaston	11.5		
BLUE RIDGE	Ashe	10.7	11.31	11.29
	Alleghany	10.6		
	Wilkes	11.1		
	Watauga	12.4		
	Caldwell	11.3		
	Alexander	11.2		
	Avery	11.9		
BRUNSWICK	Brunswick	12.0	11.50	8.34
	Bladen	11.3		
	Robeson	11.2		
CRESCENT	Gaston	11.5	11.74	12.16
	Mecklenburg	12.7		
	Wilkes	11.1		
	Yadkin	11.2		
	Alexander	11.2		
	Iredell	12.0		

APPENDIX B (Continued)

EDUCATIONAL MEDIANS AND GFI MEDIANS FOR EMC NEWSLETTERS

EMC	Counties Served By Each EMC	Median Years Of School Completed In Each County	Avg Median Yrs of School Completed In All Counties	Median GFI Of Newsletter Articles
(Crescent EMC -- Continued)	Davie	12.0		
	Rowan	11.9		
	Cabarrus	11.9		
	Lincoln	11.6		
	Catawba	12.1		
JONES-ONSLOW	Lenior	12.1	11.85	14.49
	Jones	11.1		
	Onslow	12.4		
	Duplin	11.4		
	Pender	11.8		
	Craven	12.3		
DAVIDSON	Rockingham	11.4	11.77	12.09
	Stokes	11.4		
	Forsyth	12.4		
	Guilford	12.5		
	Davidson	11.7		
	Randolph	11.6		
	Davie	12.0		
	Montgomery	11.2		
LUMBEE RIVER	Robeson	11.2	11.77	13.21
	Hoke	11.7		
	Cumberland	12.5		
	Scotland	11.7		
UNION	Mecklenburg	12.7	12.04	10.83
	Union	12.1		

APPENDIX B (Continued)

EDUCATIONAL MEDIANS AND GFI MEDIANS FOR EMC NEWSLETTERS

EMC	Counties Served By Each EMC	Median Years Of School Completed In Each County	Avg Median Yrs of School Completed In All Counties	Median GFI Of Newsletter Articles
(Union EMC -- Continued)	Cabarrus	11.9		
	Rowan	11.9		
	Stanly	11.6		
CARTERET-CRAVEN	Carteret	12.2	11.92	9.52
	Craven	12.3		
	Jones	11.1		
	Onslow	12.4		
FRENCH BROAD	Madison	10.8	11.25	11.95
	Buncombe	12.3		
	Yancey	11.0		
	Mitchell	10.9		
FOUR COUNTY	Duplin	11.4	11.50	16.99
	Sampson	11.5		
	Bladen	11.3		
	Pender	11.8		
RANDOLPH	Randolph	11.6	11.86	9.52
	Alamance	12.1		
	Chatham	12.1		
	Montgomery	11.2		
	Moore	12.3		
HAYWOOD	Haywood	12.1	12.18	14.95
	Buncombe	12.3		
	Transylvania	12.3		
	Jackson	12.1		
	Macon	12.1		

APPENDIX B (Continued)

EDUCATIONAL MEDIANS AND GFI MEDIANS FOR EMC NEWSLETTERS

EMC	Counties Served By Each EMC	Median Years Of School Completed In Each County	Avg Median Yrs of School Completed In All Counties	Median GFI Of Newsletter Articles
PIEDMONT	Alamance	12.1	12.08	12.93
	Caswell	10.9		
	Durham	12.6		
	Granville	11.4		
	Orange	14.1		
	Person	11.4		
PEE DEE	Union	12.1	11.72	13.88
	Anson	11.7		
	Richmond	11.5		
	Montgomery	11.2		
	Scotland	11.7		
	Moore	12.3		
	Stanly	11.6		
TRI-COUNTY	Wayne	12.2	11.67	13.76
	Duplin	11.4		
	Lenoir	12.1		
	Johnston	11.6		
	Jones	11.1		
	Sampson	11.5		
	Wilson	11.8		
WAKE	Granville	11.4	11.87	10.17
	Vance	11.3		
	Durham	12.6		
	Wake	12.9		
	Johnston	11.6		

APPENDIX B (Continued)

EDUCATIONAL MEDIANS AND GFI MEDIANS FOR EMC NEWSLETTERS

EMC	Counties Served By Each EMC	Median Years Of School Completed In Each County	Avg Median Yrs of School Completed In All Counties	Median GFI Of Newsletter Articles
(Wake EMC -- Continued)	Nash	12.0		
	Franklin	11.3		
ROANOKE	Hertford	11.4	11.02	10.41
	Bertie	10.6		
	Gates	11.3		
	Northampton	10.4		
	Halifax	10.9		
	Chowan	11.4		
	Perquimans	11.2		
HALIFAX	Warren	10.8	11.25	13.59
	Halifax	10.9		
	Martin	11.3		
	Nash	12.0		
EDGECOMBE-MARTIN	Nash	12.0	11.55	16.51
	Edgecombe	11.5		
	Martin	11.3		
	Pitt	12.3		
	Beaufort	12.0		
	Bertie	10.6		
	Wilson	11.8		
	Halifax	10.9		
CENTRAL	Chatham	12.1	11.98	11.27
	Lee	12.2		
	Harnett	11.7		

APPENDIX B (Continued)

EDUCATIONAL MEDIANS AND GFI MEDIANS FOR EMC NEWSLETTERS

EMC	Counties Served By Each EMC	Of School Completed In Each County	Yrs of School Completed In All Counties	Of Newsletter Articles
(Central EMC -- Continued)	Moore	12.3		
	Randolph	11.6		
ALBEMARLE	Chowan	11.4	11.62	10.47
	Perquimans	11.2		
	Pasquotank	12.0		
	Camden	11.5		
	Currituck	12.0		
SOUTH RIVER	Harnett	11.7	11.76	14.52
	Cumberland	12.5		
	Sampson	11.5		
	Bladen	11.3		
	Johnston	11.6		
TIDELAND	Beaufort	12.0	11.91	11.65
	Craven	12.3		
	Dare	12.5		
	Hyde	11.2		
	Pamlico	11.8		
	Washington	11.7		

APPENDIX C

EDUCATIONAL CHARACTERISTICS OF PERSONS 25 YEARS OLD AND OVER, BY COUNTY -- 1980

County	Total Persons 25 Years Old and Over	Percent: Less Than 5 Years of Elementary School	Percent: High School Graduates	Percent: 4 or More Years of College	Median Years of School Completed
State Total	3,403,219	5.9%	54.8%	13.2%	12.2
Alamance	61,025	4.6	54.0	11.8	12.1
Alexander	14,597	5.6	43.9	6.8	11.7
Alleghany	6,128	7.0	38.5	5.1	10.6
Anson	14,686	9.0	46.9	6.9	11.7
Ashe	13,975	7.0	41.0	6.0	10.7
Avery	8,340	7.2	49.6	9.5	11.9
Beaufort	23,942	6.6	50.5	8.6	12.0
Bertie	11,847	10.1	39.9	6.5	10.6
Bladen	17,518	7.6	43.9	7.0	11.3
Brunswick	21,014	5.9	51.5	8.0	12.0
Buncombe	101,638	4.0	59.4	14.6	12.3
Burke	43,464	7.8	46.0	8.8	11.9
Cabarrus	52,379	5.3	49.0	8.6	11.9
Caldwell	39,579	6.6	44.4	7.7	11.3
Camden	3,391	6.8	44.6	4.9	11.5
Carteret	24,898	3.2	57.1	12.1	12.2
Caswell	12,002	9.8	41.0	5.1	10.9
Catawba	62,457	4.6	51.8	11.3	12.1
Chatham	20,824	4.8	51.5	13.0	12.1
Cherokee	11,803	9.4	43.6	6.2	11.1
Chowan	7,395	7.4	45.1	7.8	11.4
Clay	4,296	6.3	46.4	9.8	11.6
Cleveland	48,742	7.3	47.4	9.2	11.7
Columbus	29,446	9.3	44.2	8.1	11.5
Craven	35,435	4.9	60.9	11.7	12.3
Cumberland	116,793	3.7	69.6	14.2	12.5
Currituck	6,622	3.9	50.4	4.9	12.0
Dare	8,676	2.4	64.7	15.4	12.5
Davidson	67,579	5.7	47.2	8.3	11.7
Davie	15,005	4.4	50.5	9.9	12.0
Duplin	23,809	7.4	43.7	6.9	11.4
Durham	88,524	4.6	69.1	24.1	12.6
Edgecombe	31,308	10.8	49.6	7.5	11.5
Forsyth	146,644	4.0	62.7	18.3	12.4
Franklin	17,814	8.7	43.2	7.0	11.3
Gaston	95,597	7.0	46.1	8.7	11.5
Gates	5,329	9.6	42.9	7.1	11.3
Graham	4,324	9.5	40.0	6.0	10.5
Granville	20,301	11.0	44.4	7.1	11.4
Greene	8,906	9.1	42.5	6.1	11.2
Guilford	186,981	4.0	63.3	19.7	12.5
Halifax	31,802	13.5	42.6	7.8	10.9
Harnett	32,685	7.4	47.4	8.8	11.7
Haywood	29,343	6.6	51.6	9.2	12.1
Henderson	38,061	4.2	61.5	15.2	12.4
Hertford	13,123	10.9	45.5	10.4	11.4
Hoke	10,291	10.4	47.5	8.9	11.7
Hyde	3,416	9.7	42.5	8.6	11.2
Iredell	49,992	5.3	50.1	9.2	12.0
Jackson	13,859	8.0	52.7	15.5	12.1
Johnston	42,390	8.2	46.6	7.1	11.6
Jones	5,531	7.6	41.8	5.8	11.1
Lee	21,513	5.4	56.9	11.5	12.2
Lenoir	36,846	9.1	52.2	10.3	12.1
Lincoln	25,095	5.4	46.9	8.3	11.6
McDowell	21,080	6.9	46.2	7.9	11.6
Macon	13,416	5.7	52.4	10.4	12.1
Madison	10,075	10.0	41.6	9.4	10.8
Martin	15,029	10.2	44.8	8.5	11.3
Mecklenburg	237,289	3.2	69.3	21.2	12.7
Mitchell	9,229	9.4	43.1	8.1	10.9
Montgomery	13,238	7.1	42.3	7.1	11.2
Moore	31,078	4.5	58.3	13.4	12.3
Nash	39,389	9.0	50.3	11.1	12.0
New Hanover	61,075	3.6	64.9	16.3	12.5
Northampton	13,180	14.8	35.0	6.1	10.4
Onslow	43,946	3.6	66.4	11.4	12.4
Orange	39,871	3.5	73.6	41.3	14.1
Pamlico	6,291	5.9	48.0	8.1	11.8
Pasquotank	15,894	5.9	51.1	12.9	12.0
Pender	13,178	6.0	47.4	7.2	11.8
Perquimans	5,778	7.6	41.5	6.1	11.2
Person	17,248	9.4	45.4	7.2	11.4
Pitt	47,013	7.4	56.8	17.7	12.3
Polk	8,727	5.7	58.5	17.1	12.3
Randolph	55,552	4.9	46.6	7.6	11.6
Richmond	26,610	8.2	46.4	8.0	11.5
Robeson	53,240	10.2	44.4	8.7	11.2
Rockingham	50,139	7.6	44.6	8.0	11.4
Rowan	61,434	4.8	49.4	10.5	11.9
Rutherford	32,835	7.6	44.9	8.2	11.5
Sampson	29,138	7.9	45.7	7.0	11.5
Scotland	17,365	10.8	47.8	11.2	11.7
Stanly	29,660	5.7	46.4	8.2	11.6
Stokes	19,521	7.3	44.9	5.4	11.4
Surry	35,345	7.8	41.0	6.3	10.9
Swain	6,127	8.2	44.5	8.8	11.1
Transylvania	14,098	5.0	59.3	14.1	12.3
Tyrrell	2,346	9.1	35.8	6.3	10.7
Union	39,294	4.5	52.8	9.1	12.1
Vance	21,273	9.1	43.3	7.8	11.3
Wake	172,846	3.2	72.5	28.6	12.9
Warren	9,588	11.2	37.4	6.3	10.8
Washington	8,209	8.9	47.5	8.5	11.7
Watauga	15,966	4.8	60.1	20.9	12.4
Wayne	53,415	6.9	56.8	10.8	12.2
Wilkes	34,978	7.9	43.4	7.4	11.1
Wilson	35,038	8.9	48.0	11.3	11.8
Yadkin	17,872	7.9	42.4	5.0	11.2
Yancey	9,328	9.1	43.0	6.6	11.0

SOURCE: North Carolina State Government Statistical Abstract, Research and Planning Services, Office of State Budget and Management, Fifth Edition, 1984, p. 154.

APPENDIX D

GFIs FOR TECHNICAL ARTICLES

EMC		Number Words In Sample	Sent In Sample	Avg Words Per Sent	Hard Words	Percentage Hard Words	GFI
RUTHERFORDTON	#1	110	4	27.50	12	0.109	15.36
	#2	111	5	22.20	14	0.126	13.92
BLUE RIDGE	#1	99	5	19.80	9	0.090	11.55
	#2	112	6	18.66	10	0.089	11.03
BRUNSWICK	#1	95	8	11.87	14	0.147	10.64
	#2	113	5	22.60	16	0.141	14.70
CRESCENT	#1	109	6	18.16	10	0.091	10.93
	#2	116	3	38.66	16	0.137	20.98
JONES-ONSLOW	#1	109	3	36.33	8	0.073	17.46
	#2	94	4	23.50	5	0.053	11.52
DAVIDSON	#1	110	5	22.00	11	0.100	12.80
	#2	103	7	14.71	7	0.067	8.60
LUMBEE RIVER	#1	103	4	25.75	6	0.058	12.63
	#2	105	3	35.00	6	0.057	16.28
UNION	#1	95	6	15.83	8	0.084	9.70
	#2	99	5	19.80	10	0.101	11.96
CARTERET-CRAVEN	#1	93	5	18.60	4	0.043	9.16
	#2	107	5	21.40	4	0.037	10.05
FRENCH BROAD	#1	92	3	30.66	6	0.065	14.87
	#2	90	4	22.50	6	0.066	11.66
FOUR COUNTY	#1	98	3	32.66	13	0.132	18.37
	#2	94	4	23.50	17	0.180	16.63
RANDOLPH	#1	94	6	15.66	7	0.074	9.24
	#2	92	8	11.50	12	0.130	9.81

APPENDIX D (Continued)

GFIs FOR TECHNICAL ARTICLES

EMC		Number Words In Sample	Sent In Sample	Avg Words Per Sent	Hard Words	Percentage Hard Words	GFI
HAYWOOD	#1	125	6	20.83	15	0.120	13.13
PIEDMONT	#1	103	5	20.60	9	0.087	11.73
	#2	93	4	23.25	12	0.129	14.46
PEE DEE EMC	#1	111	5	22.20	14	0.126	13.92
	#2	90	5	18.00	13	0.144	12.97
TRI-COUNTY	#1	92	5	18.40	18	0.195	15.18
	#2	103	4	25.75	10	0.097	14.18
WAKE	#1	93	6	15.50	4	0.043	7.92
	#2	108	5	21.60	15	0.138	14.19
ROANOKE	#1	110	6	18.33	9	0.081	10.60
	#2	93	5	18.60	5	0.053	9.59
HALIFAX	#2	100	5	20.00	10	0.100	12.00
EDGECOMBE-	#1	111	6	18.50	9	0.081	10.64
MARTIN	#1	95	3	31.66	21	0.221	21.50
CENTRAL	#1	103	4	25.75	7	0.067	13.01
	#2	103	6	17.16	10	0.097	10.75
ALBEMARLE	#1	100	5	20.00	4	0.040	9.60
	#2	94	5	18.80	9	0.095	11.34
SOUTH RIVER	#1	99	4	24.75	10	0.101	13.94
	#2	115	5	23.00	17	0.147	15.11
TIDELAND	#1	95	5	19.00	14	0.147	13.49
	#2	110	6	18.33	13	0.118	12.06
AVERAGE		101	4	21.93	10	0.102	12.85
MAX		125	8	38.66	21	0.221	21.50
MIN		90	3	11.50	4	0.037	7.92

APPENDIX E

GFIs FOR NONTECHNICAL ARTICLES

EMC		Number Words In Sample	Sent In Sample	Avg Words Per Sent	Hard Words	Percentage Hard Words	GFI
RUTHERFORDTON	#1	107	6	17.83	9	0.08	10.49
	#2	93	4	23.25	4	0.04	11.02
BLUE RIDGE	#1	97	4	24.25	10	0.10	13.82
	#2	104	4	26.00	15	0.14	16.16
BRUNSWICK	#1	109	10	10.90	10	0.09	8.02
	#2	104	8	13.00	9	0.08	8.66
CRESCENT	#1	105	7	15.00	7	0.06	8.66
	#2	88	5	17.60	14	0.15	13.40
JONES-ONSLOW	#1	101	2	50.50	11	0.10	24.55
	#2	115	6	19.16	9	0.07	10.79
DAVIDSON	#1	95	6	15.83	12	0.12	11.38
	#2	105	6	17.50	23	0.21	15.76
LUMBEE RIVER	#1	98	5	19.60	5	0.05	9.88
	#2	117	5	23.40	13	0.11	13.80
UNION	#1	116	7	16.57	8	0.06	9.38
	#2	107	6	17.83	17	0.15	13.48
CARTERET-CRAVEN	#1	82	7	11.71	4	0.04	6.63
	#2	110	5	22.00	8	0.07	11.70
FRENCH BROAD	#1	87	6	14.50	4	0.04	7.63
	#2	117	6	19.50	13	0.11	12.24
FOUR COUNTY	#1	126	4	31.50	15	0.11	17.36
	#2	103	6	17.16	3	0.02	8.03
RANDOLPH	#1	97	4	24.25	8	0.08	12.99
	#2	107	6	17.83	2	0.01	7.88

APPENDIX E (Continued)

GFIs FOR NONTECHNICAL ARTICLES

EMC		Number Words In Sample	Sent In Sample	Avg Words Per Sent	Hard Words	Percentage Hard Words	GFI
HAYWOOD	#1	109	4	27.25	16	0.14	16.77
	#2	93	8	11.62	2	0.02	5.51
	#2	82	3	27.33	15	0.18	18.25
PIEDMONT	#1	99	6	16.50	16	0.16	13.06
	#2	100	5	20.00	12	0.12	12.80
PEE DEE EMC	#1	89	4	22.25	11	0.12	13.84
	#2	92	6	15.33	4	0.04	7.87
TRI-COUNTY	#1	100	10	10.00	14	0.14	9.60
	#2	96	4	24.00	9	0.09	13.35
WAKE EMC	#1	102	8	12.75	16	0.15	11.37
	#2	98	6	16.33	6	0.06	8.98
ROANOKE	#1	95	4	23.75	4	0.04	11.18
	#2	97	5	19.40	6	0.06	10.23
HALIFAX EMC	#1	100	4	25.00	10	0.10	14.00
	#1	87	3	29.00	8	0.09	15.27
	#2	112	6	18.66	16	0.14	13.18
EDGECOMBE-	#2	104	3	34.66	18	0.17	20.78
MARTIN	#2	92	4	23.00	7	0.07	12.24
CENTRAL	#1	95	6	15.83	13	0.13	11.80
	#2	99	6	16.50	8	0.08	9.83
ALBERMARLE	#1	100	5	20.00	9	0.09	11.60
	#2	99	5	19.80	2	0.02	8.72

APPENDIX E (Continued)

GFIs FOR NONTECHNICAL ARTICLES

EMC		Number Words In Sample	Sent In Sample	Avg Words Per Sent	Hard Words	Percentage Hard Words	GFI
TIDELAND	#1	107	6	17.83	11	0.10	11.24
	#2	100	5	20.00	6	0.06	10.40
AVERAGE		100	5	20.28	9	0.09	11.99
MAX		126	10	50.50	23	0.21	24.55
MIN		82	2	10.00	2	0.01	5.51

APPENDIX F

READING RANGES AND EMC NEWSLETTER ARTICLES

Education Grade Level	Samples In Each Grade Level	Number And Percent In Each Category	Technical Samples Each Grade Level	Number And Percent In Each Category	NonTechnical Samples Each Grade Level	Percent In Each Category
5	1	33	0	14	1	19
6	1	35.10	0	30.43	1	39.58
7	4	-	1	-	3	-
8	7	-	1	-	6	-
9	10	-	6	-	4	-
10	10	-	6	-	4	-
*****Easy	Reading	Range******	**********	**********	**********	**********
11	15	23	7	12	8	12
12	9	25.53	5	26.08	4	25.00
*****H.S.	Graduate***	Danger Line	**********	**********	**********	**********
13	14	37	6	20	8	17
14	6	39.36	5	43.47	1	35.41
15	5	-	3	-	2	-
16	4	-	2	-	2	-

APPENDIX F (Continued)

READING RANGES AND EMC NEWSLETTER ARTICLES

Education Grade Level	Samples In Each Grade Level	Number And Percent In Each Category	Technical Samples Each Grade Level	Number And Percent In Each Category	NonTechnical Samples Each Grade Level	Percent In Each Category
*****POST	GRADUATE***	**********	**********	**********	**********	**********
17	2	-	1	-	1	-
18	2	8	1	4	1	4
19	0	8.51%	0	8.69%	0	8.33%
20	2	-	1	-	1	-
21	1	-	1	-	0	-
22	0	-	0	-	0	-
23	0	-	0	-	0	-
24	1	-	0	-	0	-
TOTALS	94	99.99	46	99.98%	48	99.98%

APPENDIX G

SOLICITATION LETTER

Newsletter Editor
Member Services Department
Lumbee River EMC
P.O. Box 830
Red Springs, N.C.

Dear Newsletter Editor:

I need your assistance in a project that I believe will benefit your work.

Have you ever wondered if what you are writing is being read? And just as important, is it being understood? Maybe I will be able to give you some evaluation of your writing after my project is completed.

Here is how you can help.

Please send to me two consecutive issues of your newsletter. Also please return the enclosed questionnaire with the newsletters.

Using a readability formula, each newsletter will be measured according to grade level. I will also be looking at the difference between technical and nontechnical articles. The reason for the survey is to compare your responses to the data collected from the newsletters.

I will send you the results of the project as soon as possible along with how your newsletter compares with other newsletters in North Carolina.

Call me at (919) 268 - 4571 if you have any questions or comments. I hope to hear from you soon.

Thanks,

Lane Hudson
Rt. 1 Bx 136
Gibson, N.C. 28343

APPENDIX H

EMC SURVEY OF NEWSLETTER EDITORS

1. How often does your EMC publish a newsletter?

   ___ Monthly ___ Bi-Monthly ___ Quarterly

2. How many members get your newsletter? _____

3. Are other people involved in writing your newsletter? ____ If so, who else is involved?

   _____

4. Are you responsible for writing the final draft of the newsletter?_____

5. On what grade level do you think such a newsletter should be written?

   __ 1-5 grade __ 6-8 grade __ 9-11 grade ___ 11+

6. On what grade level is your newsletter written?

   __ 1-5 grade __ 6-8 grade __ 9-11 grade ___ 11+

7. How much time, on the average, do <u>you</u> spend writing and editing each issue of your member newsletter before it goes to the printer?

   ___ less than 5 hrs ___ 5-8 hrs ___ 2 days

   ___ 3 days ___ 4 days ___ 5 days ___ 5 days +

8. What percentage of your members have achieved the following educational levels?

   __ 1-5 grade __ 6-8 grade __ 9-11 grade

   __ H.S. graduate __ some college __ college graduate

   __ technical school __ information not available

9. On what are the these percentages based?

   ___ Personal estimates ___ Estimates of others

   ___ Other sources if used: _____

10. What is your background (education, training, experience) as newsletter editor?

    _____

VITA

William Lane Hudson was born in Rockingham, North Carolina on February 18, 1952. He attended the public school system and graduated from Rockingham High School in June 1970. The following August he entered Pembroke State University on a music scholarship and in June 1976 he received a Bachelor of Arts degree in Communicative Arts.

After working three years with an outdoor drama and two years with Pembroke State University, he began study toward a master's degree in 1981 at the University of Tennessee, Knoxville. He worked as a graduate assistant in the Student Publications Department. The Master's of Science degree in Communications was awarded in March 1986.

The author is a member of Tau Kappa Epsilon Fraternity, Phi Mu Alpha Music Fraternity and the International Association of Business Communicators.

Hudson will pursue a career as a public relations consultant and writer.