To determine the effect of proofreading on spelling, a study was conducted with middle- and upper-middle-class students in four sixth-grade classes in two schools in Austin, Texas. Two classes were used as control groups, and two as experimental groups. Teachers of both groups participated in the planning sessions to prepare 14 lessons with materials. Instruction in the use of the dictionary and opportunities for written work were equal in both groups, but instruction in the experimental group emphasized proofreading techniques and involved the use of common-sounds spelling charts and a modification of Dolch's "check-guess" technique. After completing the 14-lesson program, students in both groups wrote stories from which the percent of spelling error was computed for each child's paper. For the experimental group, the time allocated for writing the story included the opportunity to proofread before the assignment was collected. Results indicated that boys who were taught the techniques of check-guessing and proofreading in spelling made significantly fewer errors than those who did not receive such instruction (evidence regarding girls was not conclusive), and that instruction in the use of the dictionary must be specifically directed toward the correction of spelling errors in order to be effective. (SW)
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Proofreading and Spelling: A Report and a Program

Most children in classrooms in the United States receive instruction in spelling from one of a fairly large number of spelling books which provide a complete program generally extending from the second to the eighth grade. These spelling programs are remarkably similar, with possibly two exceptions. On the one hand, there is some difference in the words presented from one textbook to the other. This difference is primarily observed in the grade levels selected for presentation of words rather than in the total of the words presented during the entire program. A second difference which may appear is reflected in the attention given to the teaching of spelling generalizations from one series to the other.

In most cases the words are presented in a list, the children practice the words and perform exercises to further their command of these words and possibly related generalizations, and they are tested on this same list of words. In most cases the test is in the form of a dictated list, although some books attempt to facilitate the problem of transfer by presenting the words in dictated sentences. Teachers in general do not seem to have much difficulty in achieving good results with most students insofar as the spelling of the words on the test. However, it is not unusual to hear a teacher complain that while the children can spell the words on the test they may misspell the same words in their written work.

The problem of transfer in spelling has long been of concern to educators whether they be teachers in a classroom, researchers in the universities, or writers of spelling books and curriculum guides. The reason most often presented for this problem is a failure to develop spelling consciousness in the children (2). Since research indicates that most spelling errors are highly individual, solutions to the problem of transfer have generally involved some aspect of proofreading written work (5). Unfortunately, the research has provided very little in the way of actual programs for teaching children to proofread or to help children develop a good spelling conscience.

Motivation to proofread, or what has been termed spelling consciousness, does not in itself seem sufficient. One of the writers is reminded of a twelfth-grade boy, an excellent student in everything but spelling, who was seriously retarded in this skill at the time of graduation from high school. The writer was amazed by the dog-eared condition of the pocket dictionary that this boy carried with him constantly for referral when writing. He was also struck by the fact that despite this dictionary the boy could misspell half the words in any given written composition. It was apparent that desire and use of the dictionary were not in themselves enough. Inability to use the dictionary in proofreading for spelling kept him from success.
PROOFREADING AND SPELLING

The evidence suggests that techniques of proofreading for spelling are not being offered to children in their regular spelling programs. The occasional teacher, motivated by her own desire and her own intuitive sense of what is right, may in her writing program introduce children to at least some techniques to help with the correction of spelling errors. However, in a recently completed study of thirteen commonly used spelling workbooks, Oswalt (3) discovered that only one of these series presented any specific lessons in proofreading during the entire six years of the program. In the Horn and Ashbaugh series, *Spelling We Use*, one lesson in proofreading for correct spelling was presented at each of the fourth- and fifth-grade levels. Even here, however, little in the way of skills were presented and instruction consisted of the teacher dictating a short letter which the children wrote and proofread for spelling errors. The dictionary was referred to as a source of the correct spellings.

Personke and Yee (4) have suggested that proofreading is one of the major learning channels of behavior in a complete description of the spelling process. They further suggested that inability to function in all channels of processing is a mark of a retarded speller.

Three needs in proofreading seem to predominate in the writing and research in spelling: (1) The student must attain a degree of motivation or attitude toward spelling which has been labeled "spelling conscience." (2) The student must attain certain techniques of proofreading which will enable him to operate efficiently in the proofreading of his written compositions. (3) The dictionary is the primary reference tool for such proofreading. Programs to satisfy these needs have not been offered, even though the needs have been identified. The program described here was designed to provide for these three needs. It consisted of fourteen lessons spaced over a three week period. However, it must be recognized that the promising results reported here would be lost without continued emphasis throughout the school years.

**Basis of the Program**

"Spelling conscience" was approached from the very first with the introduction of the program by presentation of a film on proofreading. Discussion following the film encouraged the children to note the importance of proofreading and correcting their written compositions. The teacher promised the children they would be taught techniques for improving their proofreading ability and introduced the first technique. During the course of the entire program a chart constructed by the children on the basis of this first lesson was constantly in view and referred to in each writing situation. Furthermore, the children were allowed time at the conclusion of any writing situation to perform the proofreading task. This was considered very important since it has been observed that very often although children are told to proofread their papers, they are actually not given the time to do so in the writing situation. The children were further instructed that upon completion of the proofreading of the paper they would write at the bottom of the paper, "Proofread for spelling," and sign their names.

Proofreading techniques were taught throughout the course of the fourteen-lesson program. In addition to dictionary skills, which are discussed below, the children were taught a modification of a plan proposed by Dolch (1) and referred to as
the “check-guess.” This technique took the form of underlining any word the writer was not certain he could spell so that he would know to check it later during the proofreading session. Since the concern in these lessons was with spelling, techniques of proofreading for punctuation, sentence structure, and grammar were not presented. The children were, therefore, instructed to concentrate on the individual word and its spelling.

Dictionary usage received a major portion of the skill learning time. Since it was felt that normal techniques in teaching children to use the dictionary are not adequate to the use of the dictionary in checking spelling, a new program in dictionary use was brought forth at this time. It should here be noted that the control group received a good deal of traditional dictionary instruction; the only aspects left out of their lessons were in the use of the dictionary specifically for correcting spelling. All children, both control and experimental groups, received instruction in the use of guide words, alphabetization, and finding synonyms.

The children participating in the proofreading programs then received instruction in using the dictionary for spelling. This was introduced with a presentation of a spelling chart listing the common spellings of all sounds in the English language. Each child was also given a personal desk copy of a dictionary which would be always ready for his use. The children were instructed in the use of the chart in combination with the dictionary to find words they could not spell. The essential technique was one of taking the best choice from among the alternate choices provided in the chart and checking in the dictionary to ascertain if this choice was correct. Choices were made in relation to the initial sound in the word. If a first alternate choice proved to be incorrect, the second alternate was chosen. This process was continued through alternate choices until the correct spelling was found. In the course of the lessons, children received opportunities to practice finding the spellings of words in which the first, second, and even third alternates might be the correct spellings.

**Procedures**

The study was conducted in four sixth-grade classrooms in two schools in Austin, Texas. The schools were located in areas which might be termed middle and upper middle class. Two of the classrooms were designated as control groups and two of the classrooms were designated as experimental groups. In order to overcome Hawthorne effect, teachers in both the control and experimental groups were included in the planning sessions for preparing the materials. Explicit lesson plans were prepared for both control and experimental groups. In many cases the lessons were identical, specifically in learning some of the dictionary skills. In all cases it was determined that instruction in the use of the dictionary and opportunities for written work were equal in both the control and experimental groups.

Prior to the beginning of the program the classes were compared by I.Q. and spelling achievement, based on scores attained on standardized tests in the previous year. Since comparisons of the final results were conducted only for those children who completed the entire program and participated in all evaluation exercises, comparisons of intelligence and spelling attainment were reported only for those children. Table I indicates no significant difference in the I.Q.'s of the children in the control and experimental groups. These comparisons were made for boys, girls, and both sexes since some sex differences were uncovered in the final analysis of the data.
Table I
Comparison of Mean Intelligence Quotients of Control and Experimental Groups: Boys, Girls, Total

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th></th>
<th>Experimental</th>
<th></th>
<th>Degrees of Freedom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Number</td>
<td>Mean I.Q.</td>
<td>s Number</td>
<td>Mean I.Q.</td>
<td>s</td>
</tr>
<tr>
<td>Boys</td>
<td>22</td>
<td>117.36</td>
<td>12.36</td>
<td>22</td>
<td>116.63</td>
</tr>
<tr>
<td>Girls</td>
<td>18</td>
<td>115.83</td>
<td>9.38</td>
<td>18</td>
<td>113.94</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>116.68</td>
<td>11.31</td>
<td>40</td>
<td>115.43</td>
</tr>
</tbody>
</table>

Table II presents a comparison of the mean grade level of the spelling achievement of the control and experimental groups. At this point it should be noted that while there were no significant differences between the total groups, the girls in the control group were significantly superior to the girls in the experimental group on the test.

Table II
Mean Grade Level Spelling Achievement in Control and Experimental Groups: Boys, Girls, Total

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th></th>
<th>Experimental</th>
<th></th>
<th>Degrees of Freedom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Number</td>
<td>Mean Grade Level</td>
<td>s Number</td>
<td>Mean Grade Level</td>
<td>s</td>
</tr>
<tr>
<td>Boys</td>
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<td>7.05</td>
<td>1.56</td>
<td>22</td>
<td>7.80</td>
</tr>
<tr>
<td>Girls</td>
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<td>8.48</td>
<td>1.70</td>
<td>18</td>
<td>7.39</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>7.71</td>
<td>1.76</td>
<td>40</td>
<td>7.62</td>
</tr>
</tbody>
</table>

*Significant at the .05 level of confidence.

Upon completion of the fourteen-lesson program, children in the control and experimental groups were presented with creative writing situations which were used for computation of spelling accuracy. Degree of spelling accuracy was measured as a percent of spelling error (P. S. E.) for each individual child tested. This percent was calculated by dividing the total number of spelling errors by the total number of running words on the creative writing paper. Group comparisons were made, following the techniques presented by Spache (6), by use of the mean percent of errors of the control and experimental groups.

The Program
The experimental program was initiated by the presentation of a film on proofreading and introduction of techniques to be used in the following days. These included the checking of words of uncertain spelling, correcting these words, and writing, "Proofread for spelling," under the completed composition. During the program, erasers were not used in the correction of errors. Children were instructed to cross out an incorrect spelling and write the correct spelling above the error.

Lessons 2, 3, 4, and 5 were directed toward dictionary techniques. These con-
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consisted of practice in alphabetical arrangement, use of guidewords, and finding synonyms. Lesson 6 was the introduction of the new dictionary techniques, finding difficult words by use of the common sound spelling chart. This chart presented all common spellings of English sounds. Each child received an individual copy and a wall chart was placed on the bulletin board. They were instructed in the use of this chart by taking the first best alternative and so on. The chart used was supplied by Scott, Foresman and Company and was an enlargement from a page of the Thorndike-Barnhart High School Dictionary.

Lesson 7 provided practice in looking for errors in a prepared copy presented by the teacher which contained spelling errors designed to give the children practice in using the chart. Lesson 8 gave practice in writing a dictated paragraph and proofreading it for spelling errors. Lesson 9 was the first attempt by the children to proofread for spelling a composition of their own. This first composition consisted of a book report prepared by each child. It should be noted that the children were advised prior to the completion of the time for writing so that they would have time for proofreading before the papers were to be turned in. Lesson 10 was another dictated paragraph where the spelling words were more difficult and presented more opportunity for practice with the dictionary techniques.

Lesson 11 involved the proofreading of lists of spelling words selected as being particularly difficult for elementary school children. Choice of words was also dictated by the desire to provide children with experiences where either the first or second alternative choice, according to their sound charts, would be the correct spelling. Lesson 13 again involved the proofreading of spelling lists. However, in this lesson words were chosen to provide opportunities where the second or even the third alternative would be the correct spelling choice. Lesson 12 provided another opportunity for proofreading their own written work when the children wrote summaries of a story read in their basal reader earlier in the week.

The final lesson in the program, prior to the evaluation lessons, involved writing a friendly letter. Instruction in letter form was presented through the use of the English text. The letter was written to a friend of the individual child, and was mailed in order to provide a more meaningful experience. In this case the letter was recopied following the proofreading in order to eliminate each crossed out word that might have indicated a corrected spelling.

In each case the lesson plans of the control group involved equal writing opportunity and equal dictionary practice opportunity. The only differences in the plans involved the use of the common sounds spelling charts and the emphasis on proofreading techniques. Each opportunity to write, from the first paragraph to the final letter, was enjoyed by both groups. Lesson 15 involved a creative writing story, motivated identically by teachers in control and experimental classrooms, and collected at the end of the set time. The time involved included, for experimental classes, the provision of opportunity for proofreading before the story was collected. This story was used for the tabulation of spelling errors and the count of running words used in the analysis of the study.

Results

As noted above, the percent of spelling error (P. S. E.) was computed for each child's paper by dividing the number of spelling errors by the total number of running words. From the individual P. S.
E.'s a mean percent of error was computed for control and experimental groups. Table III reveals the results of the comparisons of the mean percent of error between these groups. It can be noted that the mean P.S.E. of the boys in the control groups was 5.28 as compared with 2.13 for the experimental group. On a t-test of significance this difference was significant at the .01 level. Significant differences were also found to favor the total experimental classes when compared with the total control classes. The differences between the control girls and experimental girls slightly favored girls in the control group but were not significant. It should be noted here that the girls in the control group scored significantly higher on the standardized spelling test prior to the beginning of this program. It is possible that where as the program may not have provided enough growth for the experimental group to surpass the girls in the control group, enough growth was indicated to eliminate the differences which had existed prior to the program.

It is also significant that comparisons of variance indicated that the scores of boys in the experimental groups were significantly more variable than those of the boys in the control group. Since proofreading is a highly individual matter, it seems likely that improved techniques in proofreading would emphasize the individual differences which would naturally occur within a class. Girls, by nature being more meticulous than boys, might be expected to make fewer errors in their written work without such instruction. The data provided here are not sufficient to provide more than a guess in this direction.

It should also be pointed out that even though the experimental group received less writing time than the control group, due to the time allotted for proofreading their papers, the total number of running words was higher, although not significantly so, among the experimental group papers. Although no measures were made of the vocabulary level or number of different words written by each group, this should provide an area for future research.

**Conclusions**

While the number of subjects involved in this study was small, it is possible to make some tentative conclusions from the results. (1) Boys who were taught techniques for check-guessing and proofreading in spelling made significantly fewer errors than those who did not receive such instruction. The evidence regarding girls in similar
situations is not conclusive, although there is some indication that they too profited from the instruction. (2) Instruction in the use of a dictionary, unless specifically directed toward the correction of spelling errors, does not seem to be effective in the area of proofreading for spelling in written composition.

It is suggested by the writers that there is sufficient evidence in this study to warrant further investigation of the effectiveness of specific instruction in proofreading as a regular part of the spelling program. Future research should involve more pupils in a broader range of intelligence and spelling ability, investigations of the effectiveness of such programs throughout the elementary school program and over more extended time than the three week program reported here, and investigations of the effect of instruction in proofreading upon the range and magnitude of vocabulary used in written composition. In the meantime, teachers would be warranted, on the basis of this report, to inject an element of proofreading instruction in their regular spelling program.

References