Study to develop and determine the effectiveness of a sixth-grade beginning typewriting program presented through tapes and with very limited teacher supervision

Wanda Jean Sorensen

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UMI
A STUDY TO DEVELOP AND DETERMINE THE EFFECTIVENESS OF
A SIXTH-GRADE BEGINNING TYPEWRITING PROGRAM
PRESENTED THROUGH TAPES AND WITH
VERY LIMITED TEACHER SUPERVISION

By
Wanda Jean Sorensen
B.S. Ed. (Bus. Ed.), University of Idaho, 1967

Presented in partial fulfillment of the requirements for the degree of
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The typewriter was invented to satisfy the need for a more efficient writing tool than the pen, and it has served this purpose well for business and for personal use by adolescents and adults. But children of elementary school age need writing tools, too. As they learn to read, they realize the need to communicate their thoughts in writing. In school they are given a writing tool which is difficult to hold and manipulate—the pen. So, the process of sharing their thoughts becomes a task rather than a pleasure.

In our changing world, much progress has been made in the home and in the business office to make work easier through the use of machines. Yet our children continue to use the traditional tool in school. Should they share in this progress through the use of an efficient writing tool—the typewriter?! Mrs. Rosemary Cummins believes elementary students should be given the chance to learn to type. Many typing researchers and teachers today agree. Studies prove that elementary students can learn to type, and volumes of information support purposes for conducting typing classes for students before they reach high school grade levels.

In 1931, Wood and Freeman, after studying 6,000 experimental and 8,000 control students, indicated feasibility of elementary typewriting and some benefits derived from such programs. Other studies for years

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supported and supplemented this information. Typing, however, was not invited onto the elementary scene permanently. Two decades passed; and increasing numbers of educators were thinking the time had come "to consider typewriting as a basic skill, common learning; in the language arts instead of vocational preparation given exclusively at the senior high school level." Still, no large-scale action could be noted. Now, after yet another twenty years' time, this aspect of skill learning for purposes other than vocational has coalesced with increased mechanization, new emphasis on human efficiency, and growing need for advanced learning in our world. Yet, today, typing programs in elementary schools are widely dispersed and generally only research oriented and short term.

In the early days of the typewriter's history, teachers reasoned the best time to instruct students on the use of the typewriter to be just previous to entry into the business world. In this way, skills were sharp when students approached businessmen in search of employment. More and more typewriters were delivered to business and industry. Needless to say, additional typewriters also appeared in schools, due to expanding programs of typing instruction.

As typewritten letters replaced handwritten correspondence, and as print on paper grew to voluminous quantities, typewriter companies found new sales for their machines in homes. As a family luxury item, the portable typewriter enabled family correspondence to acquire a neat, easily read appearance. Just as other necessities have evolved from conveniences, the typewriter proved its usefulness in school work,

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business communication, and personal writing. Advertisements were created to insist that parents help their children in school by purchasing typewriters, and customers bought the machines with the entire family in mind.

The once unbelievable writing machine is a familiar sight in homes today. Not only is the clarity of its print desirable, but also is the speed with which it can reproduce ideas on paper. Efficiency seems to be the password in the modern time-card world of today; and many people have recognized the typewriter as a welcome helpmate to this end, for both vocational and personal uses.

Today, many skills are taught not only for the sake of skills themselves, but also for additional learning processes that can and often do take place as skills are mastered. A third typing directive, then, is apparent—that of students learning other thought processes while learning to type.

People attempt to acquire knowledge in as little time as possible. Some would-be typing students never find time to learn to type due to the struggle of subject priority in the terminal education period. Facing the choice of either omitting new specifics determined to be growing in importance in today's education or of dismissing basic manual skills such as typing, which are also conceived to be of value, man has augmented time by introducing some items earlier than previously, by lingering some time longer in the educational process, and by developing innovative methods of learning only significant items in the interim. If typing is adjudicated to be a highly significant item, space will probably be found somewhere for its instruction, whether the time established is the best or not. Merrill suggests:
At the present time, school boards and teachers of elementary school children are saying there is no room in the curriculum for the addition of such "frills." However, if parents and teachers begin to realize that typing is not a separate and distinct area of learning but rather a tool that increases the efficiency of learning in basic areas, particularly the language arts, ways will be found to teach typing to younger students, usually starting in the fifth grade.

... Those of us who have had our training and experience in the teaching of typing as a vocational tool cannot afford to be ostriches and keep our heads in the sand hoping that the fad for early typing will "blow over."

The teacher is concerned with the "how" of this educational challenge. He has learned that he teaches individuals, not groups of like persons; and his new teaching methods illustrate this change in emphasis. More time is involved in helping many individuals learn than is necessary when working with one large educable mass consisting of numerous identical divisions. Typing instruction must change according to area and student needs. Innovative methods make teaching more efficient, more significant.

Funds limit the extent of learning possibilities and situations. "Best" is often determined to mean "cheapest." Education does carry a price tag; and price must be kept below the point of diminishing returns in order to maximize value.

Similar to other areas of education and to education in its entirety, typing instruction is an experiment in time, in method, and in purpose. So, then, is this study.

PURPOSE OF THE STUDY

Each typewriting teacher and his class find themselves in a situation similar to many others, but identical to none. Yet, business demands uniformity by the discipline as a whole. Similarity tends to be established because teachers learn from others' experience, methods, and recommendations.

It follows that typing instruction should be flexible, yet definite in achievement. This training must be fully coordinated with individual student needs, school facilities, community desires, teacher abilities, and parental expectations. The challenge of providing valuable learning experiences becomes more complex because problems, goals, and peoples on our earth are not only subject to change but also effect change. Thus, ideas are often discarded and replaced before they have really been tried.

It is important, too, that educators fully evaluate new projects before stating the worth of such programs; "innovation" means "new," not "best." Sometimes, however, people feel so secure with conventional methods and beliefs that they stifle new ideas, failing to allow them a true chance for trial.

The purpose of this study, therefore, was to take one such new idea, develop it, study it in operation, and evaluate it. The new idea was to teach elementary students to type with the use of taped presentations and other limited materials, with no teacher physically present. Development involved planning the typewriting learning experiences, writing script, carefully coordinating the project with student needs, and recording the combined effort on tape for student instruction. During the operation phase, students learned the alphabetic and basic typewriting
keyboard by studying 30 recorded lessons during six weeks' time and practiced individually from the typewriting textbook for ten weeks' time after initial keyboard presentation. This study measured the feasibility of sixth-grade students learning to type via the fifteen-minute, basically self-directed typing lessons.

SIGNIFICANCE OF THE STUDY

To the knowledge of the investigator, a study had not previously been made concerning a typing program in which elementary students learn to type with professional guidance, yet with no teacher physically present during instruction. The significance, then, is that this study will report a case study and thereby might serve as a basis for future experimentation.

One of the most recent and most controversial ideas in business education is the placement of beginning typewriting in the elementary grades, either as a substitute for or as an introduction to the traditional high school typewriting classes. If students could successfully learn beginning typing skills at the grade school level, several advantages might result:

1. Students would be able to use their skill a greater number of years.

2. Pupils would have the opportunity to enroll in advanced typewriting classes or classes in other subject areas during the time they ordinarily would be learning basic typing skills in high school.

3. Elementary-age enthusiasm and eagerness to learn such a skill could enhance learning situations.

The study, therefore, was significant in terms of time analysis.

If such a grade school beginning typewriting course could be developed whereby students learn through basically self-directed activities
with very limited teacher supervision, the following specific objectives might be achieved, indicating method-related significance:

1. Learning on a more individualized basis would result. After learning the basic keyboard, each student could progress at his own rate.

2. Each student would find it easier to continue typing studies after a period of absence than he would in a normal classroom typing situation, because each could begin learning at the point where he had been studying before the absence occurred.

3. Teachers would have more time to assist students individually and to develop new or advanced programs.

4. Pupils within school districts which do not have adequate funds available to employ business teachers could be afforded the opportunity to learn to type via planned instruction.

5. Students in isolated areas, where student numbers would not warrant hiring a business teacher, would be able to learn to type by way of a systematic learning procedure.

If students could learn with no grades and no discipline guidance, the amount of learning would be based completely on each student's desire to learn. Implications are involved as to vocational, personal, and general learning areas. Significance in purpose, then, might be traced to the following elements:

1. Students might develop vocational goals or the first stages of future vocational skills.

2. Students who might not otherwise learn to type might develop a skill for their personal use.

3. Students who have communication problems might use the typewriter to overcome that learning obstacle.

4. In the process of learning to type, students might improve language arts skills and learn or improve other thought processes.
5. Interest developed by pupils in a typing class might transfer to other subjects and to school itself, encouraging students to want to learn.

STUDY DELIMITATIONS

This particular typewriting study was confined to meeting the requirements of students' needs at Jefferson Elementary School in Missoula, Montana. There was no comparison of the thesis-study project with a typical beginning typewriting class in a control situation. Rather, this study was devoted to development of a typewriting program which allowed the student to use the tools of the program with very little teacher assistance in learning the letter keyboard, to evaluation of that program according to commonly accepted typewriting standards, and to suggestions and implications pertaining to the typewriting program and relating to its effectiveness.

The study was further delimited by various school administrative restrictions. The typing program had to be established according to the desires and responsibilities of the administration and faculty, which could not always parallel the most advantageous situations as far as the study itself was concerned. The study program was only one portion of the total school program and, as such, had to necessarily adapt itself to the working structure of the school.

Jefferson Elementary School had its own brand of educational methods. Some could be seen in most schools, while some were unique to Jefferson. Undoubtedly this background affected study results. Here again, emphasis was placed upon developing a program suitable for one set of circumstances, to particularly fit the needs of those circumstances.
The subject of typing was a new one to this school; and the newness of the entire program cast its effects on the study, both negative and positive, as reflected both in the temporary features of the facilities and in the preparation and attitudes of all people concerned. The initiation of the program midway in the school year delimited the study in operation and in evaluation and made this situation to some extent atypical.
A generalization that is agreed on by expert trainers and teachers is that the eight-year-old level is probably the best (average) age at which to introduce children to typing as an efficient method of writing. Any given child, however, is ready for this step the moment his curiosity and determination to learn to type are keen enough.\(^5\)

I arrived at this statement of recommendations: That typing be taught to intermediate-level pupils, preferably to pupils in grade five.\(^6\)

... We came to the conclusion that the eighth grade is the proper place for all students to learn to type, not on an exploratory basis but as a part of the regular curriculum.\(^7\)

Obviously, studies disagree regarding the age at which most students can and should learn to type. Typing letters of correspondence as early as the age of four and one-half years, one girl began learning to type when she was only two and one-half years old.\(^8\) Yet, some students are not deemed ready to learn the skill when they enter high school.

Closely related to studies regarding instruction timing are authors' views as to purposes for learning to type and methods that can best be

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\(^5\)Harold H. Smith, "How Young Is 'Too Young to Type'?" Business Education World, 37:43, April, 1957.


implemented to satisfy those purposes. Is typewriting best learned as a job-related ability, or should most students be taught with personal-use goals in mind? In fact, is skill even the basic objective in learning to type? Should educators see the typewriter as a valuable device to be used in other learning areas? Typewriting is sometimes taught as an end goal for the skill; sometimes, as a means to an end, to aid in other learning experiences; and sometimes, with dual or even several purposes in mind.

Typing classes at times have been given a permanent berth on the regular school schedule. They have been placed on summer programs to make good use of leisure time through constructive learning activities. Some are on wheels, to move from one rural area to another, while others are elaborately equipped centers to which students travel from various sections of urban regions. In some typewriting classes for young students, the teacher is the program, where "the only possible limitation is the resourcefulness of the teacher." In others, commercially prepared materials yield total instruction. Large classes are taught routine principle en masse, or small groups of individuals can learn on an individualized basis.

The following pages summarize contributions to various aspects of typewriting instruction, as evidenced through related readings. It is interesting to note the repetition of the same "new" advances in business education throughout the past century. Thought by some to be a recent discovery, for example, the concept of teaching typewriting to

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improve language arts skills was advertised as early as 1875 when sales pitches attempted to sell typewriters as children's gifts for their value in teaching youngsters to spell and punctuate. The currently controversial elementary-school typewriting programs are descendants of the early 1900's when Bates Torrey's fourth edition of Practical Typewriting devoted an entire section to lower-grade typing. Business education literature indicates the mesh shaped by controversial specifics in reference to typewriting instruction today. It delineates past study in time, purpose, and method areas and further describes that interrelationship while forming implications for the future.

OBJECTIVES OF TYPEWRITING INSTRUCTION

Objectives are today recognized as essentials in instruction planning. The purpose guides the training. Blackstone states, "Objectives are only aims, and it is commonly accepted that an aimless person accomplishes little." This is probably as true today as in 1937. Objectives for learning to type, especially in the elementary grades, are most varied and usually remain quite general in character. One published list includes:

- to train students how to operate a typewriter
- to develop skill and proficiency in typing for home and school use
- to develop wholesome and healthy attitudes in job performance
- to develop sound and dependable work habits

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to develop an emotional control that would result in acceptable work to promote the learning process in other areas.\(^\text{12}\)

One must first determine why persons learn to type, and then reclassify those goals as related to elementary students. No generalization can be made concerning objectives for learning typing skills, since individuals have singular views. This report presents many of the most basic purposes to introduce the bases upon which typewriting instruction and learning take place.

When students enrolled in the first typing classes, they did so for one reason—to obtain vocational skill. With this aim in mind, teachers set out from the beginning to teach skill based on set rules and standards of performance. The standard way was the correct way. They initiated thoughts that many people still amen, based on the principle that learning to type could be of no value unless knowledge of practical skill application was also learned.

It is impossible now to know just how many typewriting students today will at some time use typing on the job, no matter what their objectives at the time they are students. No fine line can be drawn between vocational and personal-use goals of typing classes. Basically, the objective is the same—learning to type with a skill purpose in mind, learning to type when a practical, manual result is envisioned in the future. Only degree of skill is dissimilar. "Whether for vocational or personal use, typewriting is a manipulative skill applied to problem

situations."\(^\text{13}\) Many items taught in typing classes and labeled as personal-use are used every day in on-the-job circumstances, just as vocational skills can be used in personal typing.

It is imperative that consideration be given to the possible identification of a more basic objective for such courses—one that will embrace a larger more meaningful purpose dealing with both vocational and personal-use skill.

If typewriting is to continue to merit favorable consideration . . ., it must be recognized as an intensive program designed to benefit students having divergent, but equally meritorious, reasons for wanting to learn this popular communicative skill.\(^\text{14}\)

Some of those varying reasons which are not skill oriented are noted by writers who urge that typing "should not be considered an island skill for the sake of the skill itself."\(^\text{15}\) Yuen, for example, indicates that elementary-school typewriting

... emphasises [sic] the use of the skill for learning, not only the development of the skill itself. Here, I think, is the essence of the difference between typewriting at the elementary school level as compared to typewriting at the high school level as typewriting is now commonly taught.\(^\text{16}\)

Typing is recorded to be of help with other subjects, including arithmetic, history, geography, science, and art, generally because the ability to type seems to stimulate study and learning. One educator even

\(^{13}\)Clarence Maze, "Typewriting in the Junior High School," The Balance Sheet, 45:355, April, 1964.


suggests that being able to type is a health advantage, since typing posture may be better for students than cramped handwriting positions.\textsuperscript{17}

The most discussed and possibly hardest pushed topic in this category is that of learning to type for the purpose of further development of language arts learning. Studies indicate that students learn something in language arts automatically when they learn to type and that, if language arts are emphasized when typing skill is being learned, language arts improvement is significant with no loss to typing skill.\textsuperscript{18} Apparently, anything that benefits one of four facets of elementary school language arts—listening, speaking, reading, and writing—also aids the others. For example, while teaching typewriting by dictation and English as a foreign language in Bolivia approximately ten years ago, Williams discovered that typing correct sentences increased his students' knowledge of written and spoken English.\textsuperscript{19} According to Yuen, Tate sees special significance of typewriting's part in remedial reading and language work for students in the intermediate grades.\textsuperscript{20}

It is often surprising to view how much students digest when they really see a reason for learning.

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Typing is a new study approach to students, and enthusiasm is unbelievable; this all leads to great competition to type faster and faster. But how can a child type at forty words a minute and read at just twenty? The simple answer is he can't, and so time and time again we have seen the slow reader really dig in and pull his reading rate up until he is able to read rapidly enough to keep up with the speed of his thinking and typing ability.\footnote{George E. Wiant, "Recipe for Personal Typing in the Junior High School," The Balance Sheet, 44:336, March, 1963.}

Learning to type also seems to give very young children a feeling of reading readiness. Hutchings describes this as follows:

Primary children usually know more than they are able to write; but, by using the typewriter, they are able to write the letters of the alphabet, even words and sentences, before they know letters and certainly before they are able to write.

Because the skill of children in reading script is behind their ability to read printing, a child is enabled to grasp the ideas of spelling, spacing, capitalizing, punctuating, and paragraphing simultaneously with his acquirement of a knowledge of reading, by having practice in reproducing his reading lesson on a typewriter.


Another example illustrates that students learn to spell as they type, by way of becoming aware of changes in printed words. Teachers
use typewriters to assist students in learning to spell because, from their teaching experience, they think students can "master words if they are given the chance to see, hear, feel, think, pronounce, use, write or type and correct words." After extensively studying reports of elementary typing experiments, Hutchings believes that spelling is the one subject area possibly affected most by typing skills, followed by English and composition, with reading in third position.

In Erickson's detailed study determining the extent that selected educational values may accrue from the typewriter's use, he indicates that capitalization and punctuation did improve from typing practice at the .01 significance level and that speed of composition also improved. The typewriter, though, seemed to have its greatest value in the increase in quantity of written work produced. At the .01 level, reports increased in length; they were also better organized and easier to read when typed by students. Although use of the typewriter, according to his study, did not indicate a statistically significant effect upon academic achievement in language arts, he forecasts that long-term results might be contrary to this initial evidence. However, other researchers report no statistically significant effects of typewriting on general


Erickson also suggests:

The typewriter may lead to an increase in creative writing since elementary school pupils find handwriting laborious and time-consuming. Fifth-grade pupils tend to avoid activities involving handwriting, and when they do write, they write less than they otherwise might write were a more effective tool of written communication, such as the typewriter, available for use.

He further summarizes that experimental typing students exceeded the control group, who did not know how to type, in spelling, capitalization, and usage according to increments of growth on Iowa Tests of Basic Skills. The control students, on the other hand, excelled in vocabulary, reading comprehension, and punctuation improvement.

Finding similar, yet not identical, results, Schimmelpfennig writes:

The most noteworthy increase was in the punctuation and spelling area. Because the students constantly had a visual perception of the words and parts of words as they typed them, we expected improvement in spelling; also, regular proofreading tends to make students conscious of spelling errors and frequently calls into play their natural awareness of when a word "looks wrong."

According to his study, students registered the least gain in capitalization and word-usage. Students completing this summer typing course did not lose any grade equivalency over summer months.

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One experimental study, for which teaching materials were designed especially for elementary pupils and contained words from their spelling lists, interprets Stanford Achievement test scores to carry the following meaning:

For every 20 minutes of typing practice in four months, the children got the equivalent of 20 extra minutes practice on word meaning, 25 extra minutes of paragraph meaning, 35 minutes of extra spelling practice, and 10 minutes of extra language practice—all in the same 20 minutes of typing practice; and they learned to type correctly and well.30

Krevolin summarizes this study's results and indicates that experimental typists outgained their nontyping counterparts in the following amounts: spelling, seven extra months; reading comprehension, five months; word knowledge, four months; and sentence mechanics, two months. He also adds Rowe's results where students displayed seven months' gain in vocational growth and four months' increase in reading.31

Baty studied incidental learning of vocabulary by beginning typing students by giving one class practice material containing unfamiliar words in copy which made meanings clear, giving another class similar copy in which no meaning was apparent, and giving the third group no supplemental material. A difference in vocabulary test gains existed, at the .0005 significance level. Almost no correlation was recorded between gains in vocabulary and typewriting skills. The first group registered a .3767 correlation of vocabulary gain with IQ, while the


second group maintained only a .0369 relationship.  

Others, who repudiate language arts as a major basis for typewriting study, see the value of typewriting in the area of manipulative competencies and related learning which includes, rather than emphasizes, language arts experiences.

... but typewriters are too expensive and instruction time is too valuable to utilize this method of teaching spelling, punctuation, grammar, and the like. In other words, if the manipulative skill cannot be utilized in the communication process after the skill has been attained, it would appear that there is little justification for offering typewriting instruction at any level.

A Florida high school teacher states that he found typing to be "a suitable topic for all who wanted it, as long as the primary purpose was not just exploration." He issues another warning when he adds, "Typing ... is too important a communicative device to teach as a fun subject or just for the exposure."

Yet, Moore, a Yale sociologist, has spent much time exploring with the typewriter. His situation is unique in that his classroom is a laboratory where he experiments with learning. He believes "competence" to be one of man's primary motivation drives; and he is attempting to prove that children can learn to type, as well as perform a host of other skills, through the heuristic approach to learning they naturally use when learning to speak. His limited number of students do, in fact,  

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learn to type and read by using typewriters when they are only two to five years old. Describing his techniques as "laboratory toys," Moore hopes research will find ways of making them less expensive and less cumbersome and someday available to most children.35

In the classroom, too, typing has previously taken on exploratory characteristics. Sprague taught eighth-grade students in such a class for four and one-half months to determine which pupils were interested and qualified for enrollment in high school business courses. She believes the course failed regarding these initial goals because, rather than measuring innate interests of students, it developed new interests. She concludes the class was even more valuable than originally expected.36

Rather than exposing a wide range of students to a small amount of exploratory information, some programs aim instruction of extensive scope to only selected students. The purpose of such programs is generally termed to be assistance to the disadvantaged. In Richmond, Virginia, for example, a letter sent to principals indicated that students who were eligible to enroll in a special typing course should (1) not be able to afford the expense of learning any other way, (2) be interested in learning to type, (3) be able to profit from such a class, and (4) have IQ test scores of 90 or better.37

Intelligence levels are often a selection base. Mentally gifted


children do especially well in typing and should possibly be taught this skill in the elementary grades because they can certainly learn to type, generally with ease, at this level. This is one area where gifted children can be challenged by education early in their formal training. Here is a skill that bright children can use and find extremely helpful, as the printed word seems to be a large part of gifted young people's scholastic and job-related success. Generally given more freedom in learning and encouraged in creativity, these students have good ability to imitate and are highly competitive, though they sometimes are perfectionists to an exaggerated degree.

Other schools are looking at the picture from across the way by offering classes only to those whose intelligence quotients tally less than average, on the assumption that many of these people are particularly suited to repetitive tasks. One study indicates that 25 per cent of a class of educable mentally handicapped children (IQ's of 60 to 80) ten to thirteen years of age could learn to type. Apparently, too, there is some transfer of learning, as these children improved significantly in language mechanics and arithmetic computation as well as in social maturity. 38

Kohler also has worked with the mentally retarded and thinks they respond well to typing because it is a grown-up task, affords immediate success, and, "like a puzzle" contains simple logic that is enjoyable to understand. The typewriter helped to teach rhyming words because

the same finger patterns are used for identical word endings. The
machine simply makes sense to these children, as Kohler further explains:

I found the typewriter's usefulness in academic work was
limitless. It was a perfect instrument for teaching the alphabet and the numerals. The large shift key was tailor-
made to emphasize capitalization. The period, with a key
of its own, became a real part of the sentence. The space
bar helped bring order for the child who usually saw the
written page as a blur of marks and spaces. The typewriter
helped pupils put letters into words, words into sentences,
and then sentences into paragraphs, step by step, with
understanding because they had done it. And the type looked
like the words the child was expected to read in books—he
was not required to write one way and read another. 39

Reid lists five main reasons that slow learners, generally with
IQ's from 80 to 95, have difficulty typing. (1) The low intelligence
alone generally indicates they have trouble with reading, spelling, and
grammar. (2) Directions are difficult for them to understand. (3) Fin-
gering and (4) motor ability are more difficult for these youngsters.
(5) Most students in this group fear failure. 40

Typewriting has been used for physical rehabilitation purposes for
quite some time, but it is just now receiving new interest. The initial
obstacle for handicapped learners is their fear of failure. Once the
teacher helps students past the first stages of instruction, he needs
to use no specially prepared materials because these students work best
with an average class. "Failure in working with disabled students points
more to the limitations of the teacher than to the limitations of the
handicapped student." Persons with only one hand, with disabled

Gerald Kohler, "Two Motivators for the Mentally Retarded: Adding

Elizabeth T. Lovitt, "Typewriting Training for the Disadvantaged,"
appendages, and in wheel chairs have learned successfully to type, along with stutterers, cerebral palsy victims, and epileptics. Researchers have discovered that "manipulative and speech disabilities are . . . nearly identical," as in the case of stutterers who seldom become proficient at the typewriter because their fingers stutter on the keys. They reason, then, that "the cause and treatment of one should have bearing on the other." This was the purpose of teaching a typing skill to a 24-year-old with crippling arthritis who could not insert the paper into the typewriter. This was the reason for excitement when she was typing 50 words a minute one year later.41

Other typing goals, such as development of cooperation, proper job attitudes, and reliable work habits are hard-to-measure values that add breadth to the scope of purpose. One summary of a fifth-grade typing program includes these purposes:

Based on classroom observations, the use of the typewriter seemed to have a positive effect in helping the pupils develop neatness and accuracy, proofreading skill, the ability to follow directions, respect for and care of the typewriters, cooperation, and the ability to work independently.42

Although some authors caution against presentation of typing in the earlier grades because bad typewriting habits might be formed, Erickson sees the topic in a new light:


Elementary school pupils need typewriting instruction if they are to learn to use the typewriter properly and if the development of bad habit patterns, which may seriously inhibit skill growth, are to be avoided. The development of proper basic techniques in operating the typewriter seems to be of special importance.\(^3\)

Some students are encouraged to enroll in typewriting classes because typing can be a vigorous and challenging experience, one in which the academically discouraged student might become actively involved. Typing, as seen by the potential school dropout, might be a skill with some practical application, a skill that might interest him in learning.

Purposes for education are sometimes merely words on paper which are mechanically produced by educators as evidence of their own reason for existence. It follows that students' purposes for wishing to learn to type might be entirely different than those their teachers list for them. For instance, one high school teacher wrote of occasions when typing classes were offered to improve the readability of written work and students' capacity to compose. However, those classes were taken by students for personal use and to develop a communication skill to use whenever and however they happened to require it in the future.\(^4\)

Also, student-evolved objectives often change as instruction progresses.

Purposes of typing classes, then, range from discernible skills and less definite learning experiences to development of "proper attitude toward self, typing, school, and life."\(^5\) Hutchings concludes:

\(^3\)Ibid., p. 55.


All in all, it appears that the typewriter has a place in the elementary curriculum both for improvement achievement in the various subjects and to aid in the development of essential personal qualities.

Typewriting is an interest operation in itself. This, in turn, stimulates a greater interest in all school subjects and greater enjoyment in school in general, an interest that results in improved learning and an increase in the span of attention to school work. Perhaps it is this interest that is the secret of the superior progress shown by child typists.46

Purpose generalizations are formed and revised to become specific systems of instruction which sometimes give students skill appropriate to their intended purpose of learning. Whether any given student receives the benefit from this experience that he wants and, in reality, needs is usually not noted. If he does not, a breakdown has occurred in the purpose, time, and method cycle; an obstacle has protruded into educational significance.

GRADE LEVEL OF TYPEWRITING INSTRUCTION

The exact age at which students can learn to type with optimum efficiency and still realize a maximum number of years in which to use the benefits derived therefrom has not been determined. Most authors who write on the subject emphasize their belief that typewriting can and usually should be taught sometime before the senior high school years and agree with Maze who says that "because of the potential personal-use application of this skill by many students, the instruction should be given as early in the educational program as the maturity level will

warrant." They are in great disagreement as to exactly when this training should be introduced as part of students' learning experience, having recorded what they term as success by students at ages varying from four to fourteen. Study to determine just how this success has been measured and the results of such measurements, along with consideration of determinants of success in typewriting classes, might better indicate at what level typing can, and should, rightly, be learned.

Kraft performed an interesting study to see if typewriting instruction before high school gives students a jump on learning vocational skills. He states that those with previous typing instruction were able to type at significantly faster rates on three-minute timed writings than were those without prior typing direction. This difference decreased from 10.429 words to 4.714 as the high school lessons progressed; there was no significant difference on five- or ten-minute writings, nor on production accuracy.48

Since vocational goals are not the only reasons for achieving typing skill today, the move to transplant beginning typing courses to junior high or elementary grades is being made. The eighth grade seems to be a popular level for typing courses. Sprague says, "... we believe that the eighth-grade students learn more quickly than high school students when instructed by the same methods;" and Krevolin


adds, "and the junior high school may very well be the best place to
 teach it [typewriting]—if the teacher can bring himself to equal the
 enthusiasm which comes naturally to 14- and 15-year-old children!'" He
 found that after twenty-nine days of instruction, his eighth-grade students
 were averaging 31 gross words a minute with 1.7 errors.50

 Others feel that if students can learn at even earlier grades, they
 should be instructed in typing skills before the eighth grade to reap
 the benefits thereby derived for a greater number of years.
 Schimmelpfennig, as he indicates in his article, agrees with various
 other authors that students within sixth to ninth grades can learn to
 type. The following table indicates the degree of straight-copy skill
 achieved in his study at various grade levels on a one-minute, errorless
 basis.

<table>
<thead>
<tr>
<th>Grade 6</th>
<th>Grade 7</th>
<th>Grade 8</th>
<th>Grade 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slowest Student</td>
<td>11</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>Fastest Student</td>
<td>45</td>
<td>55</td>
<td>41</td>
</tr>
<tr>
<td>Average</td>
<td>26</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>Boys' Average</td>
<td>21</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Girls' Average</td>
<td>30</td>
<td>34</td>
<td>33</td>
</tr>
</tbody>
</table>

After 37 sessions, which included 25 skill, speed-building and 10
production lessons conducted by a classroom typing teacher using Pepe's
text with no grades and no homework involved, most students could meet
office standards in production and could complete production assignments
in limited amounts of time with a small number possibly able to qualify
for actual office work. They learned and used necessary operating parts
of the typewriter, typed by touch, and obtained skill that could be used

50 Nathan Krevolin, "Integrating Personal Typing in the Junior High
In Pondham, California, ten- to thirteen-year olds have been learning to type in a program that has been in operation for fifteen years. Administrators of the program evaluate the instruction as being successful, since students in the elementary typing program earn top typing awards in high school and as a group, although they are of rural backgrounds wherein many parents have not completed elementary school, perform academically better than average in high school.\textsuperscript{52}

Based on personal rather than vocational aspects, skills in typing courses are evaluated by teachers according to student typewriting speed as compared with handwriting speed. For instance, Ellenbogen believes a student has learned a worthwhile skill if he can type twice as fast as he can write longhand.\textsuperscript{53} If this is valid evaluation, Ericksons' fifth-graders, who, according to the Ayres Handwriting Scale, typed two and three times as fast as they could write, were successful. Not only could they write faster, but their handwriting skill also improved in quality.\textsuperscript{54} In further comparison with handwriting, one annotation reviews Bane's conclusion that children are able to type at an earlier age than write.\textsuperscript{55}

\textsuperscript{Herbert R. Schimmelpfennig, "Typing for Grade School Students," Business Education World, 40:12-13, June, 1960.}


\textsuperscript{Abraham Ellenbogen, "... An Experiment in Teaching Typewriting to Younger Students," Business Education Forum, 23:13, November, 1968.}

\textsuperscript{Lawrence W. Erickson, "The Typewriter--A Tool of Learning in the Elementary Grades," The Balance Sheet, 42:55, October, 1960.}

Physically speaking, young students seem not to be handicapped. "In fact it may be said that the great majority of the motor adjustments needed in typing are similar to the gross pushes and pulls by which young children manipulate objects of any sort," writes Haefner.\textsuperscript{56} Merrill says that elementary students have problems, instead, that are similar to those of adults and high school students learning to type. He further explains that they automatically adjust to, say, using their small-size hands on the keyboard by modifying some reaches and some techniques, such as the shift reach.\textsuperscript{57}

Others combine physical with emotional maturity as determinants in direct proportion to students' typing progress. When Smith taught 30 fifth- and sixth-grade students in a summer program, his students, although all of above-average intelligence and expected to perform in a better-than-average manner, earned grades that formed a normal distribution according to students' physical and emotional maturity.\textsuperscript{58}

What young students as a group may lack in maturity is balanced by abounding eagerness to learn, as is conspicuous in many writings. "The achievement of the grade school students in the four-weeks period surpassed that of the high school level personal typing classes in an equal period by the same instructor during the regular school session," Merrill reports and ties this to the enthusiasm of elementary-age


Tucker extends a similar comparison to typical college freshmen. This same zeal for learning and using typing skill was apparent in other studies of fifth-grade students who came to class early for practice and asked to take typewriters home.

Pupil intelligence is often listed as a determining factor, as it has been found to be a direct influence on typewriting skill. Those with higher intelligence quotients have been able to type faster and to better apply themselves to composition work. In one class, the upper one-third typed 9 to 15 words a minute faster than the lower one-third of the group, who tended not to type by the touch system. All students did learn to type and, after 31 2/3 hours of formal instruction, grossed 20 to 80 words a minute on one-minute familiar copy with means of 40 words per minute and two errors. On new material, the gross ranged from 16 to 49 words a minute and averaged 28.

Foss, a high school teacher who conducted a five-year study on typing instruction introduced before the high school grades, agrees. "As is true in college, senior high school or any other environment where a skill subject is to be learned, the better prepared, higher ability and more alert student will do a better job." He states that intelligence not only affects typing itself but is also almost directly


related to speed performance. In a comparison of intelligence and reading ability with typing skills, one master's thesis lists coefficients of correlation with typing rate to be from .41 to .826, depending on the test and from .021 to .378 with accuracy. White added student interests to mental abilities and found that the Mental Abilities test, the Interest Test, and the first-year high school grade average were all statistically significant, in that order, to final typing grades.

Some instructors who have used high school textbooks to teach younger students propose that reading level is not related to typing skill since their students learn to type words for which they know no meaning. Rundle found very little correlation in typing speed and speed in reading, and her results therefore substantiate Dr. Donald C. Fuller's study which states that the slowest reader in his group was able to read better than twice as fast as necessary for the fastest typist.

Maybe typing courses should be offered at the pre-high school level, but to only select students. This is Andrew's idea. She thinks for such typing classes instructors should carefully select students who

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need the training, can benefit the most, and will not be repeating the same learning process in high school.  

Perhaps there are more angles from which to approach the subject than just from that of the educator. Should the learner's ideas be incorporated in education? Or should only student ability be considered? Maybe student views should be studied. It seems that students would schedule typing programs earlier than most educators have done. For example, Potocnik writes of a questionnaire study in which more than half of 241 ninth-grade students indicated that they would have liked to enroll in typing classes before the ninth grade.

Graduates of elementary typewriting programs praise their worth. Some rate typing as being the most valuable elementary subject for them and add that they feel it has helped them in high school spelling, composition, and other subjects where written work is a factor. They claim to use it a great deal in their correspondence.

If it is, then, possible for students to learn to type before they reach high school, some people have expressed their ideas that students most certainly should do so. One author writes:

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67 Margaret E. Andrews, "What About Junior High School Typewriting?" UBEA Forum, 8:30, October, 1953.

By learning a usable skill at an early date, students are more ready for whatever life may have in store for them. Teachers in other subjects will certainly welcome typewritten work; and, with this course completed at an earlier date, students will have the opportunity for a course in some area in senior high school that otherwise might not have been fitted in their program.69

Wiant expands these general ideas in his reasons for moving typing down the staircase of education. Included are: taking advantage of young students' enthusiasm, solving problems of time and space in curriculum, giving students more time to benefit from their skill, and finding a class that will involve the otherwise disinterested student while he is still very young.70

METHODS OF TYPEWRITING INSTRUCTION

Questions regarding the most beneficial time at which to present typewriting instruction to students are accompanied by inquiries regarding techniques by which that instruction should be given to students.

Should typewriting be taught in the junior high school? If this question refers to typewriting as it has been commonly taught in the junior high school, the answer is "No." If, on the other hand, it asks whether a worth-while course in typewriting can and should be included in the junior high school curriculum, the answer is emphatically "Yes."

Altieri's quotation71 is only one of many that reveal plans for typewriting revision as related to the very interdependence of time,


purpose, and method variables.

This report has previously established the keen interest with which young students greet typewriting. They seem to appreciate the typewriter as a delicate instrument which they can use to express ideas. In addition, their determination to improve their own achievement seems to be more important in developing their skill than is the desire to perform better than classmates.

Students' attitudes are not the only requisite for successful learning. Parent and teacher opinions should be equally responsive. Studies disclose parental opinions generally to be apprehensive until children begin to display some degree of skill and until their interest in school and other subjects seems to increase.

Teachers, on the other hand, tended to remain cautious and skeptical in the 1920's when typewriting was first introduced to children before they reached high school. Slowly, educators began to discover that typing students were learning more than typewriting. Now, it has become somewhat fashionable for teachers to promote elementary typing programs; many teachers try to develop and improve such classes for younger students, encouraging this new concept in typewriting instruction. Their newly developed zeal has been generated since they have been favorably impressed by increased quantity of written work completed by students, as well as by neatness and readability of that work.72

Teachers, then, are actively involved in study, research, and experimentation in the attempt to find most suitable methods for teaching

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typewriting to young students. Most authors begin their writings concerning technique and method discovery by establishing text and equipment used in their particular programs.

Generally, teachers agree that classroom equipment and facilities most conducive to learning for younger students are very similar to those used in good high school typewriting instruction. Of course, desks and chairs should be sized to the smaller students. Although desks used in normal elementary classrooms can hold typewriters, students find the learning task easier if adjustable or special desks designed for typewriting, including working space, can be obtained, thus allowing typewriters to be at proper height for efficient use by each student. Both electric and manual typewriters have been used with apparently equal success, although some educators insist that portable electric machines are better adapted for small students, especially those with muscular coordination problems.

Individually, teachers have found that students reach some degree of success by learning to type with the aid of nearly any type of textbook. Some suggest that standard high school texts and instructional materials be used, with additional interpretation by the teacher to compensate for vocabulary limitations. Others prefer to use junior high or elementary textbooks, written with the junior students in mind. Some typewriting programs are reported to have been quite successful for their students when no textbook was used.

"Teachers must remember that a school only adopts a book; a good teacher adapts its contents to his philosophy and needs. A textbook is
resource material; it is not the be-all and end-all." The teacher is believed by many to be the personalization of the typing course, the travel guide that makes the tour through learning a pleasant and worthwhile experience. As he collects, modifies, organizes, and presents information to his students, he best uses commercially prepared materials as supplements to his own methods and innovations.

Counter to Moore's belief in trial-and-error learning, Book wrote:

"... there still exists in all the learning done in the schools a great amount of wasteful trial and error learning, and the use of practice instructions which, though successful, are far from the best methods of directing learners that could be devised. Learners cannot discover unaided the best procedure to follow in any instance of learning. Moreover, teachers cannot discover by the trial and error method or by experience the best methods of directing their learners."

So, then, have teachers studied learning and searched to develop valuable lesson materials and superior teaching techniques.

Lesson content must be determined by the purpose for, as well as the timing of, the typewriting instruction. Where personal skill is the program's end goal, teachers have emphasized personal production skills; and their teaching methods have been developed along this same idea. Short-report and personal-letter forms and styles are a basic part of instruction immediately after students have mastered the keyboard. If teachers believe their students are interested in learning a refined skill, possibly to be used later in vocational pursuits, they generally have insisted upon lengthy drills, proper typewriting posture, and rigid


production rules for style and form. When application of skill is deemed important, as in personal-use and vocational classes, exercises include paragraphing, vertical and horizontal placement, letters, hyphenating, manuscript typing, carbon paper use, and tabulations. Those instructors who teach typing basically to give their students a new tool of composition and creative writing never stress straight-copy typing and have found that even speed can be increased via original writings. In such cases, creative methods of learning the very basics of typewriting encourage future creative use of the machine by students.

... It is what the pupil does, what he sees to be done, how he evaluates his own performance after each accomplishment that brings about learning. So the more activities we provide that call for thinking, evaluation, and judgment on the students' part, the more he is likely to grow in skill and knowledge.75

Some change in content might be made to better adapt to younger students. Schimmelpfennig indicates that sixth- and seventh-grade students cannot absorb material and directions as well as those in the eighth and ninth grades. He agrees with various other authors that students within any of these four grade levels can learn to type successfully, but that emphasis and techniques used in the training process should differ according to the age of the students involved. Since the pupils in the lower grades have not developed coordination and motor dexterity equal to that of older students, he suggests more rhythm and technique drills be used by the sixth- and seventh-grade students.76


Peak also thinks typing methods should be adjusted according to age differences. Teaching the keyboard at the younger students' rate and using variation of class routine are important. She also lists the use of less rigid criteria, less intensive drill, short study periods at the beginning of instruction, relationship of the classroom to typical situations, and "tact" in conveying purposes as important method transformations to be made by the elementary typing teacher from the regular high school fashion of presentation.

In order to teach a structured lesson, Ellenbogen says, "a teacher must mentally and physically plan out every step. The lesson should proceed from the simple to the complex, and the children must accomplish the aim toward which the lesson started." He further asserts that every lesson should include warm-up drills, correct posture reminders, machine-adjustment practice, class routines and management, group and individual drills, short timed writings for speed, and accuracy copy practice.

Lesson plans list copy and creative drills, production work, "flash" performance, drill from oral response, and essay development along with more traditional, textbook-oriented practice. Lloyd stresses touch control and correct technique when supervising instruction in the intermediate grades. "Erect posture, body squared, feet braced, machine straight, fingers well curved, and nails firm" are terms he uses.


Sometimes the entire keyboard is regarded as suitable for young students' learning purposes; sometimes only the alphabetic keyboard plus standard punctuation keys are considered as necessary. Names of machine parts seldom receive emphasis.

Lessons vary in length from 20 to 90 minutes. Course length seems to range anywhere from several hours' to several years' time. Researchers have established periods from 5 to 45 days for an entire average typing class to grasp the introduction of the keyboard. Lloyd regards 70 to 80 lessons, each 25 or 30 minutes in length to be a preferable training period. Daily work at the machine is best, he believes; and training should not be less frequent than on alternate days. Follow-up practice should include at least one period per week. Maze believes that one semester is usually enough time to develop a basic skill. Others have put a floor on the length of typing training by stating that 500 minutes are not enough. Some indicate that, once pursued, the skill of typing writing should be studied intensely by students.

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... It is dubious whether he [the student] should enter any course unless he can go on practicing whatever small skill he learns until he can type at least 50 gross words a minute for five minutes on simple straight matter, with an average of only three mistakes in such a test. Until then, the skill habits will not be well enough grounded in kinesthetic memory and automatic responses to be remembered beyond a few months.84

Krevolin writes that typing instruction should not be an entity apart from all other student learning, but that, instead, it should be incorporated with all other studies to make a more meaningful experience for students and to initiate practical application to other areas of learning. He suggests teachers in various subject areas consolidate assignments so that studies correspond throughout the school experience. In this way history reports, for example, might be studies in grammar and style for English class and exercises in manuscript for typewriting class, as well as written evidence of students' understanding of historical data.85 Other writers agree and add that placement of typewriters near the language arts area of the school, where dictionaries are readily available, provides reinforcement to and from various subject areas. Typing skill can be enhanced by teachers of other studies encouraging work be typewritten for their classes.

In his research of typing literature, Krevolin found that a personal-use, one-semester course of typing, with instruction periods 20 minutes in length taught by a regular elementary school teacher, would probably be most advantageous. Writings he studied indicated typewriters

84Harold H. Smith, "How Young Is 'Too Young to Type'?" Business Education World, 37:43, April, 1957.

should be made available for pupil use outside typing class time, that summer programs should be instituted when typing classes cannot be integrated into the regular school schedule, that elementary school typing textbooks, recorded lessons, and detailed teacher's guides should be used in the program, and that typewriting should be taught either to students in one class in a central location or to small groups in one area of the regular classroom.\(^6\)

After conducting his own typing class on the fifth-grade level, Krevolin lists the following teaching techniques, among others, to be highly effective:

- Each child served as a technique checker-upper on his seat companion.
- "Think-and-type" exercises introduced early in the course stimulated composition and creative thinking.
- "Fun" activities, such as occasional art typing, helped to stimulate interest.
- A "positive" approach seemed particularly effective. Pupils responded to remarks such as, "Good!," "Fine work," and "That certainly was a good effort."
- Extrinsic motivating devices, such as pins for good typists, proved to be of value.
- Pacing pupils with records, including music, aided in teaching.
- Audio-visual materials, such as charts and a flannel board, held the attention of the boys and girls.
- A demonstration of electric typewriting was highly effective.
- An attractive display of typed papers on a bulletin board motivated pupils to do extra typewriting.\(^7\)

A "show-how," rather than "tell-how" approach is good, supplemented by teacher pressure from the aisle for students' good work, according to Lloyd. Short, repeated efforts are best with sustained typing never


\(^7\)Ibid., p. 13-14.
exceeding seven minutes' time, therefore preventing muscular fatigue. Standards should remain high; all practice, purposeful. Speed and accuracy drives should come in balanced situations. Motivation can be sparked through team contests and scored papers.  

Colored rings and painted fingernails of various colors aid students in remembering which fingers should strike given keys. The piano has effectively aided proper rhythm and stroking techniques. Some special-instruction typewriters are designed so that keys lock until the learner strikes the correct key with the right finger. Another new device resembling a keyboard chart is wired so that letters light up on the chart as students are instructed to type those letters.

Teachers should realize that young typing students' interest is unstable, for they have an unsatiable desire to explore. They are often emotionally immature, in a period of physiological change. Learning difficulties, especially at this age, seem to be handled best on an individual basis. Concern for individual differences, too, is the topic of more chapters in teaching methods books than previously has been the case. Stroop's article explains that challenge of individualization:

Perhaps the most exciting thing about teaching is the fact that no two students are ever exactly alike. Yet, our entire American system of education is based on the assumption that members of each class are more alike than different. The challenge is obvious: What can be done for the individual without penalizing the group?

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Stroop answers her own query. She lists typing differences as being disparities in personality, learning manner, and learning speed. The first should be treated with the correct amount of attention and a special tone of voice, so that each student will learn to type in spite of any personality handicaps. The second, she says, must be a continual thing; and the last, a matter of timing whereby maximum learning will take place.90 A vocational educator, on the other hand, sees the challenge in working with individual learning situations as being one of retaining the interest that each student displays the first day of typewriting class.91

The difference in learners' abilities is the focal point for which Blume sees concern, because there are students "who have not yet reached the adolescent stage, whose fingers are nimble, but whose minds are very immature; pupils who are in the awkward stage, where there seems to be no coordination between mind and muscle." Others have matured and are physically well synchronized. His three categories of ability are included in other writings—the skillful student who learns without problems; the average who requires only brief explanation; and the slow for whom the alert teacher needs to have extra time for assistance. This high school business teacher judges that self-reliance and confidence are important and states:


When the pupil has a clear and concise knowledge as to how his work is to be done, he proceeds with confidence. He also has the assurance that should he run into any difficulties that he cannot solve by himself, the teacher will be on hand to guide him in the solution of his problem.92

If the purpose of teaching typewriting is to help handicapped learners, Lovitt suggests that the teacher must recognize three characteristics, whether handicaps be physical, visual, or mental. First, he must completely understand the handicap and not shy from it. Second, he must provide a good relationship of student-teacher attitudes. Empathy, not sympathy, when combined with challenge helps a child learner. Then, by providing lots of encouragement and immediate goals within students' reach, the teacher should build motivation.93 The handicapped should learn to type, thinks Mongo; and, when they do, it is with the help of teachers who "in the process of attempting to teach a precise skill . . . to young people who are somewhat imprecise, . . . encounter unusual opportunities to be creative, tolerant, understanding, and truly professional."94

Teaching personnel are being scrutinized in an attempt to develop the most efficient presentation of typewriting to young people in all learning situations. Some writers indicate that trained teachers psychologically familiar with the process necessary in learning to type are the only people who can adequately teach the skill to others.

94Ibid., p. 139.
It is imperative that typewriting be taught by competently trained typewriting teachers, whether at the junior high or senior high school level. Because business teachers have the special training necessary for teaching typewriting regardless of its application, it is important that business education continue to assume the responsibility for providing programs by means of which typewriting skill for either vocational or personal use may be attained.  

Others add that students can recognize skill competence of a teacher and that this respect for development of skill is in direct proportion to that competence, implying that a highly skilled teacher should be employed for most efficient learning to occur.

Opinions vary regarding this point, however. In Yuen's summary of elementary school typewriting, he indicates that Artuso, Tootle, and Unzicker all agree that elementary teachers should be trained in methodology of teaching typing because they can adequately teach their students typing skill. He quotes Artuso's comment concerning his inservice training sessions for teachers of intermediate grade level students: "Particular emphasis was given to the ease with which a teacher who did not know how to type could give instruction in typing to pupils of this grade level." He includes Tootle's report that "... any teacher who studies touch typing could study the notes and understand the objectives and teaching techniques involved in each lesson."  

Some authors, therefore, appear to believe that elementary school

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typewriting classes can successfully be taught by elementary classroom teachers. However, it also appears that most business educators feel the teacher should have experienced previous typewriting instruction as a minimal requirement and, if at all possible, should have access to readily available guidance and advice from a state-certified business educator.

The teacher of today is not expected to do the whole job alone. Instead, pupils help their peers; and both factions benefit. In many schools, individuality has come to mean laboratory situations. Students no longer must depend upon persons for every bit of information they receive. All areas of learning—skills, comprehension, theoretical thinking, and application—can reach students by way of self-directing devices. Some textbook lessons are "programmed" to the extent that each student can proceed to new material after he can pass a "checkpoint." Records, pictures, transparencies, and tape recorders often with headsets are generally greeted with delight by students. The Skill Builder Controlled Reader, for example, is a 35-millimeter filmstrip projector that appears to help students increase typing speed by projecting copy at a given rate, from 8 to 108 words a minute.

"Mechanical devices will never replace a teacher in a true learning situation," Fedorczyk explains, since the good teacher observes, analyzes, and interprets pupil difficulties while using the generally recent inventions. ". . . the utilization of self-teaching devices to supplement and implement teacher instruction may bring about achievements in learning
which have long been the dreams of philosophers.\textsuperscript{98} Most authors agree that in order to use recordings efficiently teachers should use them strictly as supplemental materials. After a lesson preview, recorded material can provide a basis for instruction while the teacher moves about the room answering questions and solving problems for the students. Recorded information sometimes fills a need for remedial or extra practice. Generally, it is important for the teacher to remember that a recording does not perform his teaching job for him. One taped presentation of the alphabetic and punctuation keyboard requires eleven 20-minute sessions and allows teacher flexibility, easily accomplished make-up assignments for absences and latecomers, and remedial practice.\textsuperscript{99}

Authors are sometimes concerned with possible problems handed to the high school typing teacher when students have previously been introduced to the skill. If the student does learn bad habits, will that teacher have trouble correcting his posture to assure that his skill is the best possible for him? Will the student be content to learn a minimal skill obtained at an early age and thereby fail to increase that skill to a vocational level later in his educational work? Will the student be introduced to the skill before learning readiness occurs and therefore become discouraged, never learning to type?

Some educators have answered "Yes" to these uncertainties. Others, however, suggest that elementary, junior high, and high school teachers


could and should coordinate their typing programs so that students can enter the program when they choose, can terminate that learning experience when they have accomplished their particular goals, and can continue to develop until they are satisfied with their skill level, undergoing neither interruptions nor unnecessary repetition of study. These people suggest that imagination and ingenuity are necessities on the part of the teacher, as is the case in all worthwhile learning. Accordingly, the efficient teacher is one who possesses these attributes of planning and teaching and, if given the opportunity to do so, will see that the aforementioned problems are nonexistent.

COORDINATION OF OBJECTIVES, GRADE LEVEL, AND METHODS

A brief study of some typing programs might further indicate method, time, and purpose combinations used currently and in the past by elementary typing teachers.

When teaching his eight-year-old daughter to type, Gratz used Leslie and Pepe's text for 28 class periods, each 45 minutes in duration. This, of course, was not a typical situation since he was teaching his own daughter and had only one student. Nevertheless, he reports that an eight-year-old can learn to type with much supervision and suggests that training be given in the morning to avoid rapid fatigue, that sessions be 30 minutes in length to correspond with the interest and attention span of young children, that the control element be introduced early in the course before bad habits occur, and that extra drills for the little fingers be used. In the early lessons, the girl maintained extreme interest, even for the entire 45 minutes' time. It was not until the twelfth lesson that she seemed to realize the importance of correct
stroking of the keys. Control typing, in this case, was not introduced until the thirteenth lesson.\textsuperscript{100}

A California demonstration school, Frederic Burk Elementary, conducted an experimental class in typing for fourth graders. On the average, they were urban upper-middle class students with above average intelligence and tensions. Thirty-minute sessions were taught three days a week by a teacher who knew how to type but who was not trained as a typing teacher. Special materials were developed which did not include any difficult words. The mechanics of learning to type were presented in six hours' time, followed by ten hours' further training. The teacher indicated that typing seemed to improve students' listening skills, ability to pay attention, "eye sweep," intrinsic grammar motivation, and desire to express ideas.\textsuperscript{101}

In yet another situation, 25 gifted sixth-grade students received a total of 15 class periods of instruction, two to three times a week for six weeks' time. Formal class presentation averaged 48 minutes in length, supplemented by 30 minutes' practice under a regular teacher's supervision. Papers were checked, but no grades were issued. At the end of the course, a mean of 24 words with 5 errors was achieved on a three-minute writing.\textsuperscript{102}


\textsuperscript{101}Jack Yuen and others, "The Electric Portable Typewriter as an Instructional Tool in Fourth Grade Language Arts," \textit{Elementary English}, 39:102, Fall, 1962.

\textsuperscript{102}Phyllis Strong, "Teaching Typewriting to Gifted Sixth Grade Pupils," \textit{Business Education Forum}, 17:16-17, November, 1962.
A different approach has been incorporated by one California school in which fifth-grade students learn to type as an elective course in forty-minute sessions once a week. It is interesting to note that 99 percent of the students choose typing as one of 7 electives out of 21 choices. During the three years following initial typing instruction, they may practice, reinforce, and expand their skill. High school texts and speed tests are lesson segments. Additional practice takes place outside class, since no regular practice sessions are included; but students may use the school machines any time they choose. Any practice outside class is not supervised. Mothers without college training but with secretarial instruction in high school and with on-the-job experience "teach" the classes by using a "help" principle. Students progress at individual speeds.103

Krevolin's well publicized experimental class included 52 fifth-grade students in two groups, with pairs selected according to academic achievement, intelligence, sex, age, and typewriter availability. After meeting for one semester of 16 weeks from February to June, for 20 minutes each day, five days a week, their average typing speed on a three-minute take was 34.4 words a minute with 3.5 errors; on a one-minute write, 41.0 with 1.8. The regular elementary school teacher used a textbook designed for use by intermediate-level pupils in the elementary grades, a detailed teacher's guide, 30 tapes, and wall charts. Children were

extremely interested, and parents were amazed with their children's progress.104

SUMMARY

A summary of related literature, then, indicates that earliest research in elementary school typewriting revolved about its feasibility. Could young children learn to type? Time and time again, investigators answered affirmatively; and pages of typing scores are their proof for reason. Physically, young students seem able to handle the machine adequately. In fact, they can type two and three times as fast as they can write. Intelligence and reading ability are related to students' success in typing. Studies indicate that grade school students have, or work hard to reach, a proper reading level; and other data suggest typing is helpful even to those of lower intelligence. Junior students' enthusiasm in wanting to learn to type probably reveals emotional maturity and readiness to learn to type. Students give early typewriting programs an approving nod and reportedly use their skill a good deal in their studies.

Many materials are currently being written concerning typewriting's validity as a language arts supplement, as well as an aid generally to students' learning in school. This concept requires more time for research regarding some facets of its worth, but implications are that typing does improve many students' ability to perform in various areas of language arts. Certainly once students learn a skill well, they can

use that skill if they only know how to apply it, whether that application be for immediate personal or for future vocational use. If they choose to use the typewriter as a communication tool related to other subjects, students might also improve in those areas. Also, studies reveal typewriting's positive effect on reading and spelling. The typewriter's use generally gives composition and creative writing a boost, because ideas can more easily and quickly be recorded on paper. The investigator found no study significantly indicating that academic achievement in language arts improves with use of the typewriter, however.

What is for the future? Probably educators are soon to collect scattered bits of methods and techniques used heretofore in teaching elementary children to type, thus forming basic, organized plans concerning generally the best ways to teach these typewriting classes according to purposes involved. For various reasons, young students at all levels of educable intelligence and of most physical conditions can benefit some way by learning to type.

As elementary typing programs exist today, most are offered to students at the fifth-grade level for sessions thirty minutes in length.\footnote{Nathan Krevolin, "14 Significant Studies in Elementary School Typewriting," (New York: Gregg Division, McGraw-Hill Book Company, multilith copy).} Purpose of this instruction seems generally to be that of giving students a new tool of communication. Course content basically includes manipulative skills and some elementary composition, usually taught to groups. The teacher is generally a trained business educator experimenting on a short-term basis or an elementary classroom teacher who knows how to type.
and is interested in the typewriter's carry-over to his subject specialty. Class equipment, textbooks, and procedures seem to closely approximate those relating to high school typewriting classes.
Chapter 3

THE TYPEWRITING PROGRAM

Related literature was adapted as a base for development of this study's program and preparation of instructional materials. To best serve students' needs, much study must not only take place before any instructional program is developed, but also through evaluation and revision during and after its operation. This program was a continual thing. All stages required close scrutiny and observation to enable improved instruction through continual evaluation. Once instruction was under way, real development began taking place in forms of study and subsequent improvement. The program did not occur; rather, it evolved.

Nor did one person originate, develop, and evaluate this typewriting program. Students, parents, faculty and staff, administrators at various levels, area resource people, and University personnel all participated actively in various program phases. All helped in the attempt to make this instruction beneficial. The program would have been of less quality had this aspect of multiplicity occurred to any less degree.

PRE-PROGRAM PLANNING

Pre-program planning for this study's typing course included all people directly involved with the sixth-grade students who would be given the opportunity to learn to type.

The teachers of the students first discussed and studied advantages that might accrue to the pupils if they were to learn to type. Of special
interest to the teachers was the help that could be given to students who had particular communication difficulties. A few pupils' learning seemed to be impeded by various phases and degrees of aphasia, poor eye-hand coordination, congenital brain injuries, or other obstacles in reading and conveying ideas to others. The teachers originally proposed typing instruction for these pupils with the hope that learning to type would alleviate such hindrances. When other class members discovered that their peers were going to learn to type, they persistently asked if they could learn also. Some parents, too, prompted action by indicating a desire that all students should learn to type before reaching high school.

Believing these requests and purposes were possibly justified, teachers and administrators started thinking in terms of broader objectives and a more extensive program. Since funds were not available to hire a typing teacher nor to set up facilities equivalent to most standard classrooms, the originators realized that instructional methods would have to differ from those in the regular typewriting class situation. Therefore, at this point, teachers and administrators sought professional guidance in developing their typewriting program. In so doing, the University of Montana and, in turn, the investigator of this study became involved.

Before developing the structured portion of the new typewriting program, the investigator talked with teachers, staff, students, and the administrator in order to gain insight into this particular situation. First, it was necessary to know the major goals to which this project was to be developed. Students with communication problems would be given special help and guidance to help them improve communicative skills. Other students would develop personal-use skills on the typewriter which
they could use as study aids. If possible, the typing program would be developed so future use of the typewriter by these students in vocational lines would not be impaired. Finally, positive side-effects in language arts could be expected to occur.

Teachers and the principal felt that the sixth grade would be the best level at which to introduce typing in their school. They believed these students possessed the interest necessary for such an undertaking and had the ability to learn such a skill. They had not determined whether or not physical size would be an important handicap. These students would have two years after the sixth grade to practice and reinforce their skill while still at Jefferson Elementary School—two years in which they could use the skill in preparation for other studies.

It was imperative that all facets of these students and their educational backgrounds be researched by those originating the project. Fifty-two students composed the sixth-grade class, and all but a few of them wanted to learn to type. The students could probably be considered an average Montana class, recognizing that in an average class, some students are at each end of the scale no matter what characteristic is marked on that scale. Intelligence, physical ability, family background, and economic rank could probably be named as average. The size of sixth-grade students' families averaged 4.74 children. Standard tests determined mean verbal intelligence quotient to be 96.4 and non-verbal intelligence quotient to be 102.9 for these children. They were also tested and placed at 5-8 in language arts achievement and at 5-5 in composite achievement on the average. Physical education teachers rated the students according to athletic ability, based on muscular coordination as follows: poor, 2 per cent; fair, 33 per cent; good, 53 per cent; and
excellent, 12 per cent. Experiences for these children had been quite varied and, as in all educational occasions, had developed a class of individuals. Jefferson Elementary School, in which this study was conducted, is a Title I school which includes a large percentage of ADC (Aid to Dependent Children) and welfare families in its district.

Schools too, then, have singular personalities calling for unique educational programs. Again, as a textbook is adapted to a given learning situation, so must any study be adapted to a school. Jefferson Elementary School is a brick, two-story structure, built approximately twenty years ago. According to the principal, it is a school attempting to allow student freedom within a traditionally structured building. Although Jefferson cannot be considered an entirely open-concept school, students have enjoyed a high degree of liberty during school hours. In general, the school's concept is that teachers should encourage new ideas and individual responsibility as well as permit freedom of physical movement. A basic idea is that pupils should learn to discipline themselves. The library, for example, is the second-floor hallway, where students can personally take books of their own choice from the shelves at any time in a natural, busy atmosphere. Visitors to the school are generally amazed at the number of students who conduct their own study in various subjects at study carrels in halls and class rooms, either individually or in small groups. Whether persons are in favor of such learning circumstances or not, it is important to the development of the typewriting program to recognize some of the various learning experiences to which the typing students had previously been accustomed. For instance, students were familiar with the use of taped materials, since math and other subject principles are available to individual students on cassette tapes that are
used quite regularly.

Specific facilities and schedules were also examined to determine operational practicalities of a typing program. A small study room at the end of the library hallway could be transformed into a typing area. It was well lighted and ventilated, large enough for twelve beginning students' use, and adequately wired for electrical equipment necessary for the typing program. It was near rooms wherein the students studied language arts subjects and was, of course, near the library area. Windows at one end of the room faced outside; and windows at either side of the door at the opposite end faced the hallway, which would be a convenience for teacher monitors to check on the program's operation without entering the room.

Teachers and the principal worked to schedule typing instruction so that it would interfere very little with other studies. According to the schedule developed by them, students could use a portion of their daily study time to learn to type. Some of them could participate in the typewriting class during part of their scramble period, a time of completely free study; some, during a study period opposite physical education class. (See Appendix, Exhibit A.) These school personnel judged sixth-grade students' attention span for such activity as typewriting to be approximately fifteen to twenty minutes. Therefore, the schedule was arranged so that students would use twenty minutes' time to go to the typewriting area, prepare for instruction, type, put away typewriters and materials, and return to normal classroom study. During every typewriting session, one of the two monitors (upper-grade teachers) would be available to supervise typewriting instruction, generally by being near the typing room to see that all equipment was functioning or by answering operational
questions while in the room during the instruction period.

At this point, the decision was made to proceed with the typewriting program if expense of such instruction would not be too demanding. The school secured twelve new, identical Olympia manual elite typewriters on a lease-purchase agreement at a cost of $10 per month for each machine. An elementary textbook, Typing Our Language, was purchased for each student. Teachers and administrators chose the textbook which was approved by the researcher. Actually, the textbook had very little bearing upon the taped presentations, since the only portions of the textbook used in most cases were keyboard drills. Any series of well developed typewriting drills could probably have been used for the formal keyboard presentation. The students, however, had to use the book to study individually after learning the keyboard; so it was important that the book explain quite carefully the steps after the initial keyboard instruction. Other books reviewed also seemed to satisfy this need. However, the L. W. Erickson book used by students in this study featured a self-stand; purchase of book stands for typewriting stations could be eliminated.

Due to the trial nature of this particular program and the necessity to limit expense, the school could not purchase special typewriting desks. Rather, the students used regular elementary classroom desks that were not in use elsewhere in the building. Rather than expending money to purchase typewriter pads, typewriter movement was prevented by gluing a desk-size piece of remnant carpet to the top surface of each desk. A shelf under each desk provided space for paper supplies, and adjustable legs made regulation of desk height possible. The desks were set up at the beginning of the course at various heights, and students of the four typewriting classes were somewhat matched to those desks when they were assigned
typewriting stations. Desk legs were seldom readjusted as the course proceeded. Standard elementary classroom chairs of various sizes accompanied the desks. Bright orange chairs and the blue-green carpet desk-top surfaces added cheer to the room.

A master desk at the front of the room provided storage space for tapes and other materials, as well as for placement of the tape recorder. A wastepaper basket and other standard classroom equipment were, of course, added to the room. The classroom was equipped so that recorded materials could be jacked from the master battery-operated cassette tape recorder at the front of the room into headsets at each of the twelve typewriting stations. Additional recorders were borrowed from other classrooms for individual practice.

Supplementary visual materials for the typing course included a large typewriter keyboard wallchart illustration furnished by the Olympia corporation and a handmade picture of a typewriter indicating essential machine parts by number, as indicated in Table 1, on the following page, rather than by name. A screen and overhead projector were placed in the room for use when lessons using transparencies were introduced.

The week just previous to beginning instruction was an exciting one for the students. By that time, all 52 students had decided they wanted to join the typing program, although they were not pressed to do so by their teachers. This class was established on an entirely voluntary basis. The principal talked to these pupils to further explain the program and its guidelines, so they would fully understand what was about to occur. He indicated how fortunate they were to receive such training and urged them to do their best. Many people would be watching them
Table 1  
Typewriter Operative Parts and Corresponding Numbers as Indicated in Recorded Materials and on Wallchart

<table>
<thead>
<tr>
<th>Machine Part</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper Guide</td>
<td>1</td>
</tr>
<tr>
<td>Clear Plastic Guide</td>
<td>2</td>
</tr>
<tr>
<td>Paper Bail</td>
<td>3</td>
</tr>
<tr>
<td>Paper Release</td>
<td>4</td>
</tr>
<tr>
<td>Carriage Return</td>
<td>5</td>
</tr>
<tr>
<td>Carriage Release</td>
<td>6</td>
</tr>
<tr>
<td>Margin Stop</td>
<td>7</td>
</tr>
<tr>
<td>Linespace Regulator</td>
<td>8</td>
</tr>
</tbody>
</table>
since this was an experimental program, but they were to try to disregard visitors. He further discussed the program by telling them what the general purposes were; that they would not be graded in any way; that they could leave the program at any time if they should become disinterested; that their interest and behavior in the typing situation would determine whether they were allowed to remain in the typing program; and, that they should be especially careful with the equipment, which was worth approximately $4,500.

A letter developed by the principal and the investigator briefly explained the upcoming typewriting program to parents. Area educators and parents were invited to visit the school to see the typewriting class in operation.

A short orientation meeting conducted by the investigator outlined the typing program to the school secretary, upper-grade elementary teachers, and their student teachers. Study purpose, program outline, and a very limited basis of typewriting instruction were discussed. Through group discussion at this meeting, teachers became better informed about the typewriting program; and the investigator gained additional insight into the development and operation of the program. All people present helped combine ideas and therefore better understood the forthcoming typewriting program. Here, again, the interaction of a qualified typing teacher and experienced elementary teachers who knew and understood the students was of great value. These elementary school people were most enthusiastic about the program and eager to assist in its operation. In fact, they were quite critical of anyone's mere suggestion that possible future poor effects might develop from such a program. The teachers' responsibility in the program would not be that of actively teaching students to type; instead, they
would have some knowledge of typewriting instruction only in order to be helpful in answering students' questions directed to them.

DEVELOPMENT OF THE TYPEWRITING PROGRAM

Preliminary steps were also necessary in developing the actual typing program. While other pre-program activities were taking place, the investigator used information derived therefrom, plus published materials and advice from many resource people, to develop the typing program. Basic course structure was determined by the investigator and school personnel. Course content included taped instruction of the alphabetic and basic punctuation keyboard followed by textbook lessons in keyboard review, number-symbol introduction, tabulation, centering, and other similar skills. Elementary teachers who knew how to type but who had never received instruction in teaching others to type would be available to see that all was going smoothly; but they would act only in a supervisory, rather than in an instructional, capacity.

Complete studies concerning the students and available facilities were necessary prerequisites to development of the actual program. A thorough study of the typewriting textbook and the mechanics of the Olympia manual typewriter necessarily preceded program writing. Typing instruction was designed to be as nearly like teacher-to-student contact in a normal classroom as possible, even though the teacher in this case would be talking to the students through earphones via recorded material and would not be in the room. This program development included all pre-studies performed by typing teachers in standard teaching situations. In this program, however, such studies were even more important since, with the use of taped presentations, on-the-spot revision could not be
made as would be the case if the teacher were present.

Lessons were developed so students could learn the alphabetic keyboard in a reasonable length of time, but no exact time span was predetermined before the lessons were written and recorded. The typing situation was developed to teach one particular group of children to type. The program had to progress as students progressed. Within reasonable limits, instruction had to continue at the rate at which the students could learn.

Each taped lesson was recorded just as though the instructor were in the room teaching each student, except that no physical contact would be made and no demonstrations would supplement the spoken word. Oral directions, then, had to be most clear. Teacher enthusiasm, concern, firmness, praise, and encouragement all were conveyed by oral expression. This therefore required meticulous preparation of instruction copy and, later, of the tapes.

Lessons introducing the alphabetic and basic punctuation keyboard were prepared in sequence. Each lesson was written with a built-in challenge and some hint of reward for a job well done. Each presented a review of past learning, and most taught some new idea or skill. Table 2, pages 66 and 67, lists concepts presented each day. Proper techniques of typing were stressed throughout the taped series. A minimum number of lessons were prepared at a time so that the investigator could watch the results of the lessons in the classroom before writing subsequent script and before recording future tapes. In this way, students' difficulties were often corrected through observation. Therefore, the taped presentations more closely approximated actual classroom situations.

Lessons consisted of skills and ideas introduced in what seemed to
<table>
<thead>
<tr>
<th>Recorded Material</th>
<th>New Concepts</th>
</tr>
</thead>
</table>
| Day 1             | station preparation  
|                   | insertion and removal of paper  
|                   | experimental typing |
| Day 2             | correct posture  
|                   | correct hand position  
|                   | home row  
|                   | f key introduction  
|                   | carriage return lever  
|                   | j key introduction |
| Day 3             | space bar  
|                   | d key introduction  
|                   | k key introduction  
|                   | carriage release lever |
| Day 4             | s key introduction  
|                   | l key introduction  
|                   | a key introduction  
|                   | ; key introduction |
| Day 5             | margin stops  
|                   | helping others learn; learning from others  
|                   | successive-lines drill |
| Day 6             | h key introduction  
|                   | linespace regulator  
|                   | three-letter words |
| Day 7             | g key introduction |
| Day 8             | confidence development |
| Day 9             | drill techniques  
|                   | dictation at the typewriter |
| Day 10            | four-letter words |
| Day 11            | phrases |
| Day 12            | t key introduction  
|                   | i key introduction  
|                   | m key introduction |
Table 2 (continued)

<table>
<thead>
<tr>
<th>Recorded Material</th>
<th>New Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 13</td>
<td>left shift key</td>
</tr>
<tr>
<td>Day 14</td>
<td>e key introduction</td>
</tr>
<tr>
<td></td>
<td>c key introduction</td>
</tr>
<tr>
<td>Day 15</td>
<td>x key introduction</td>
</tr>
<tr>
<td></td>
<td>individual-pace typing</td>
</tr>
<tr>
<td>Day 16</td>
<td>touch typing emphasis</td>
</tr>
<tr>
<td>Day 17</td>
<td>n key introduction</td>
</tr>
<tr>
<td></td>
<td>r key introduction</td>
</tr>
<tr>
<td></td>
<td>. key introduction</td>
</tr>
<tr>
<td>Day 18</td>
<td>correct spacing after punctuation</td>
</tr>
<tr>
<td>Day 19</td>
<td>right shift key</td>
</tr>
<tr>
<td></td>
<td>repetitive word drill</td>
</tr>
<tr>
<td>Day 20</td>
<td>v key introduction</td>
</tr>
<tr>
<td></td>
<td>u key introduction</td>
</tr>
<tr>
<td></td>
<td>q key introduction</td>
</tr>
<tr>
<td>Day 21</td>
<td>home row discovery by touch</td>
</tr>
<tr>
<td>Day 22</td>
<td>y key introduction</td>
</tr>
<tr>
<td>Day 23</td>
<td>c key introduction</td>
</tr>
<tr>
<td></td>
<td>p key introduction</td>
</tr>
<tr>
<td>Day 24</td>
<td>rhythm</td>
</tr>
<tr>
<td>Day 25</td>
<td>w key introduction</td>
</tr>
<tr>
<td></td>
<td>, key introduction</td>
</tr>
<tr>
<td></td>
<td>b key introduction</td>
</tr>
<tr>
<td>Day 26</td>
<td>concentrated review</td>
</tr>
<tr>
<td>Day 27</td>
<td>z key introduction</td>
</tr>
<tr>
<td>Day 28</td>
<td>/ key introduction</td>
</tr>
<tr>
<td></td>
<td>? key introduction</td>
</tr>
<tr>
<td>Day 29</td>
<td>: key introduction</td>
</tr>
<tr>
<td>Day 30</td>
<td>introduction to individual practice</td>
</tr>
</tbody>
</table>
be logical sequence, with each new aspect built from simple to complex. Yet, an attempt was made to produce lessons that would be interesting and not always routine.

Machine parts were introduced by numbers corresponding to numbers on the handmade typewriter picture posted at the front of the room. Later, when those parts were discussed or mentioned in following lessons, they were often named so that many students eventually learned most of the machine-part names without the lessons making a point of their doing so.

Some commercially prepared overhead visuals were included in the lessons. These were produced by Scott, Foresman and Company as supplements to the text. They were purposely introduced only as review materials in order that, if so desired in the future, the tapes alone could provide complete instruction without the expense and possible inconvenience of visual transparencies. All overhead pictures appeared in the textbook.

Each lesson was written in a friendly classroom style and was adjusted to a fifteen-minute instruction period. It was typed in hard-copy script and reviewed by the students' English teacher as a check to see that recorded material would be at the students' level of understanding; here again, development processes were enhanced by joint effort, combining teaching skills. The material for each lesson was then recorded by the investigator on a fifteen-minute cassette tape. Each drill was paced by a stop watch, and each lesson was timed to progress correctly through the fifteen-minute period. A playback of the recording provided a quality check; poor copies were revised. A label affixed to each side of each tape cartridge indicated the instruction day number of that recorded lesson, plus an overhead transparency number, where a visual
supplemented the lesson. Table 3, pages 70 and 71, illustrates the recorded material as it corresponds with textbook lessons and visual transparencies.

Thirty fifteen-minute recordings contained total instruction for the alphabetic and basic punctuation keyboard. One additional tape contained one-minute timed intervals for students' optional use in timed practice after completion of the taped sequence.

The recorded lessons, designed as a substitute for the typing teacher, when combined with the typewriting textbook, provided self-contained typewriting instruction so that students could possibly learn to type without additional assistance. Knowledgeable aid, however, would almost certainly improve student learning in any situation and greatly enhance instructional efficiency of the taped material.

OPERATION OF THE TYPEWRITING PROGRAM

Beginning the first week of February, the sixth-grade students attended typing class fifteen minutes each day, five days a week, according to schedule. Other activities of the school only occasionally interfered, as would be true in many schools' classrooms. Students listened to the tapes and performed accordingly at their typewriters for six weeks' time, completing the program near the middle of March.

Typewriting instruction progressed with very little personal assistance from either teacher monitors or the investigator. A "hands-off" policy was necessarily maintained by the investigator in order that this program might better illustrate the extent to which students are able to learn with no typing teacher present. The teacher monitors did help students to some degree and could have assisted them more; however,
Table 3
Correlation of Recorded Material with Textbook Lessons and Visual Transparencies

<table>
<thead>
<tr>
<th>Recorded Material</th>
<th>Textbook Lesson</th>
<th>Visual Transparency</th>
<th>Transparency Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>Preface</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Lesson 1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 2</td>
<td>Lesson 1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 3</td>
<td>Lesson 1</td>
<td>#2</td>
<td>Typing posture</td>
</tr>
<tr>
<td>Day 4</td>
<td>Lesson 1</td>
<td>#4</td>
<td>Proper curve of fingers in home position</td>
</tr>
<tr>
<td>Day 5</td>
<td>Lesson 2</td>
<td>#5</td>
<td>Finger alignment with home keys</td>
</tr>
<tr>
<td>Day 6</td>
<td>Lesson 2</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 7</td>
<td>Lesson 2</td>
<td>#6</td>
<td>Space bar</td>
</tr>
<tr>
<td></td>
<td>Lesson 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 8</td>
<td>Lesson 3</td>
<td>#8</td>
<td>Keystroke</td>
</tr>
<tr>
<td>Day 9</td>
<td>Lesson 3</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 10</td>
<td>Lesson 4</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 11</td>
<td>Lesson 4</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 12</td>
<td>Lesson 5</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 13</td>
<td>Lesson 5</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 14</td>
<td>Lesson 5</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Lesson 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 15</td>
<td>Lesson 6</td>
<td>#7</td>
<td>Carriage return</td>
</tr>
<tr>
<td>Day 16</td>
<td>Lesson 6</td>
<td>#7</td>
<td>Carriage return</td>
</tr>
<tr>
<td></td>
<td>Lesson 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 17</td>
<td>Lesson 7</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 18</td>
<td>Lesson 8</td>
<td>#13</td>
<td>Left shift key</td>
</tr>
<tr>
<td>Recorded Material</td>
<td>Textbook Lesson</td>
<td>Visual Transparency</td>
<td>Transparency Title</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Day 19</td>
<td>Lesson 8</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 20</td>
<td>Lesson 8</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Lesson 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 21</td>
<td>Lesson 9</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 22</td>
<td>Lesson 10</td>
<td>#16</td>
<td>Right shift key</td>
</tr>
<tr>
<td></td>
<td>Lesson 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 23</td>
<td>Lesson 10</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Lesson 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 24</td>
<td>Lesson 11</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 25</td>
<td>Lesson 12</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 26</td>
<td>Lesson 12</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 27</td>
<td>Lesson 13</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Lesson 14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 28</td>
<td>Lesson 13</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Lesson 14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 29</td>
<td>Lesson 14</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Day 30</td>
<td>Lesson 14</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Lesson 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intro to remainder of book</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Originators believed as little assistance as possible should be given in order to better judge the worth of the basic program. The students eventually operated the overhead projector and sometimes turned the recorder on and off at the beginning and end of lessons, often on their own initiative.

The two teacher monitors kept accurate records of lessons completed by each student, so that students completed all lessons and therefore missed none because of absence. These teachers were also a very positive factor in providing encouragement and praise to pupils. They counseled those students who seemed to have most difficulty, helping them establish extra practice time. In fact, they scheduled a fifth typing period in the afternoon for make-up lessons and for additional practice for those students who needed or wanted such work.

Students kept the room in neat, orderly condition; papers were generally absent from the floor, and typewriting stations were left in order at the end of each typing session. Students seemed to take pride in protecting the new equipment, especially since some of them had never had new items at home for which they could be responsible. Discipline was no problem, and students seldom even talked to each other once the recorder started transferring the investigator's voice from the recorded material through the earphones to students in each lesson. Student enthusiasm was maintained during the keyboard presentation. For example, textbooks arrived several days after the lessons began and Christmas excitement prevailed the day those books arrived.

Most instruction was done en masse, with 12 students receiving instruction through the earphones at one time; but, in the afternoon practice session and during other make-up lessons, students often used
individual cassette recorders to listen to the lesson at their particular level of achievement. In such cases, each student could, by operating his individual recorder, repeat sections of the lesson which were difficult for him or stop the recorder to improve a skill before continuing with the lesson.

After sixth-grade students learned to type, the eighth-graders could not see any reason for students two years younger than they learning to do something they could not, and they requested and received permission to participate in the typing course. No school time could be arranged for such an opportunity for them; so they practiced from the tapes, in correct sequence, before and after school and during the noon hour. Since they started the instruction after the sixth-grade class began learning to type and, therefore, were short on time for course completion, students in the eighth grade studied two taped lessons each session until they reached the lesson on which the sixth-grade students were typing, at which time they typed only one lesson a day as planned in the regular program until they completed the taped lessons. Also, one teacher learned to type by progressing through the typing program by taking tapes home for study on an irregular basis.

The typewriting program received its share of publicity. Commercial sales representatives, new media personnel, and future teachers viewed the program in the operation phase. Teachers and administrators from other schools, and some parents, came to watch. Many people voiced interest, either pro or con, in the new program; but, only a small portion of these people pursued their interest by visiting class.

After completing the taped lessons, students were generally allowed to type approximately fifteen minutes of their study time, usually at a
time corresponding to their earlier schedule for taped lessons, if they so desired. Students, at that point, were to progress through the book at individual speeds, with no additional taped instruction for guidance. Students marked their progress on a wall chart prepared by one of the monitors in order that students could keep a record of individual progress for their convenience. Many students practiced rather spasmodically. Some practiced most regularly, while others almost never typed. Spring weather often caused outside sports and activities to take students' interest from typing.

Students began preparing work for other classes on the typewriter, encouraged by teachers who often allowed them to leave class to go to the typing room in order to prepare essay portions of tests, spelling lists, and other work. They were very creative in using the typewriter as evidenced by their inventions of typewriting games, typewritten notes to classmates, and other personal typewritten items. Near the last of May, when the school year and typewriting program came to an end, some students had completed the entire textbook and were practicing from other copy of their choice, such as original personal items and straight-copy reproduction of texts and other printed materials. Others, of course, had not done as well.

The entire typewriting program included instruction for a total of sixteen weeks, including six weeks of fifteen-minute taped lessons (seven and one-half instruction hours total) and ten weeks of individual practice from the textbook and other sources (possible twelve and one-half hours). Those students who completed the taped study and then practiced fifteen minutes every day of the practice period logged a total typewriting time of twenty hours.
TESTING AND EVALUATION PROCEDURES

Just previous to initiation of the program, each student completed a questionnaire concerning his interests and background. (See Appendix, Exhibit C.) In the final (sixteenth) week of the typewriting program's operation, each pupil again answered a similar questionnaire, this time adding comments concerning his ideas about the typewriting program and his knowledge and skill gained from that instruction. (See Appendix, Exhibit D.)

At the completion of the taped series (end of sixth week), students answered questions on a written test regarding typewriting skills and other information presented on the tapes. (See Appendix, Exhibit E.) They also typed two one-minute, straight-copy timed writings from new material in order to establish the number of correct words typed per minute by each student. These tests were typed from copy rated as easy material by South-Western Publishing Company, with high frequency word percentage of 85, stroke intensity (average word length) of 5.2, and syllable intensity of 1.3. The better score of two tries was recorded for each student. Similar one-minute timed writings were typed by students at two-week intervals during the textbook practice phase and recorded. Each time, students typed from unfamiliar copy. (See Appendix, Exhibit F.)

In the final (sixteenth) week of the program, each student typed a short essay about his summer plans, which was rated by the English teacher in comparison with handwritten reports of similar nature written by the student in the past. Students were allowed fifteen minutes to organize their thoughts and type; they were instructed to submit the first
copy rather than retyping a perfected paper. The essay was rated as a rough-draft report.

Upon completion of sixteen weeks' instruction and practice by the students, the four upper-grade elementary teachers who taught the sixth-grade students regularly in other classes evaluated the program, as did the principal and school secretary. (See Appendix, Exhibit G.)
Chapter 4

RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

Based on typewriting studies and information from education experts indicating that elementary school children can learn to type and can benefit from such training, a special typewriting program was developed by the researcher to determine if such would be the case if students studied typewriting with very limited teacher supervision and for a limited period of time. The alphabetic and basic punctuation keyboard were introduced to students by way of recorded materials, supplemented by an elementary typewriting textbook and several visual aids. Elementary classroom teachers who knew how to type but who had received no instruction in teaching the skill to others monitored the typewriting sessions. Students voluntarily enrolled and typed from recorded instructions for fifteen minutes each day for thirty days. After that time, they were allowed to use study time, if they desired, to practice on their own from the textbook in order to learn additional concepts and skills on the typewriter.

STUDY RESULTS

Fifty-one of the 52 sixth-grade students completed the material included on the 30 instructional tapes. One student terminated his study at his physician's request before he had studied the entire series of lessons. At the end of the 30 fifteen-minute lessons (end of sixth week), students averaged 12.3 gross words per minute with 2.6 errors, or 9.7 correct words per minute. The results of that initial timed writing, as well as of other similar tests typed at two-week intervals, are included
in Table 4, on the following page. The sixth test was the final test,
typed the last (sixteenth) week of the typewriting program. Ten weeks of
optional practice intervened between the first and last tests. Eight of
every ten students indicated they practiced regularly during this time.
At the end of the ten-week period, students' gross scores reached 15 words
a minute, with an error average of 2.3 and a correct score of 12.6 words
a minute. Students' correct scores ranged from 3 to 24 words a minute.

Table 5, page 80, lists percentages of specific errors in relation
to total errors typed on these timed-write tests. Information similar
to that presented in Tables 4 and 5 but based on results of tests typed
by eighth-graders who also studied the taped instruction can be found
in Table 6, page 81. Eighth-grade students typed only the first and
sixth timed writings and were supervised in their practice even less
than were the younger students. They typed better on the first test than
the sixth-graders typed on any test, recording an average of 13.3 correct
words a minute. However, sixth-grade typists achieved higher than the
older students on the final test, when eighth-graders grossed only 14.3
words a minute, with 12.1 correct words a minute.

At the time the first timed writing was administered, students also
completed a written test related to information given them on the tapes.
From a total of 24 questions, sixth-grade students answered an average
of 17.3 questions correctly. Of those 24 questions, 18 required responses
that students should probably have been able to make correctly after
listening to the tapes; 6 others were extra questions testing their ability
to digest incidentals recorded on the tapes as supplemental to the basic
typewriting instruction. Sixth-grade pupils incorrectly answered 2.5 of
the 18 and missed an average of 4.2 of the 6 bonus-type questions. Boys
Table 4
Sixth-grade Students' Performance Means on One-minute, Straight-copy Timed Writings after Keyboard Presentation at Two-week Intervals from New Material

<table>
<thead>
<tr>
<th></th>
<th>TEST 1</th>
<th></th>
<th></th>
<th>TEST 2</th>
<th></th>
<th></th>
<th>TEST 3</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>gwpm</td>
<td>errors</td>
<td>nwpm(^a)</td>
<td>gwpm</td>
<td>errors</td>
<td>nwpm(^a)</td>
<td>gwpm</td>
<td>errors</td>
<td>nwpm(^a)</td>
</tr>
<tr>
<td>Total</td>
<td>12.3</td>
<td>2.6</td>
<td>9.7</td>
<td>11.9</td>
<td>2.4</td>
<td>9.6</td>
<td>13.3</td>
<td>2.1</td>
<td>11.2</td>
</tr>
<tr>
<td>Girls</td>
<td>13.3</td>
<td>2.7</td>
<td>10.6</td>
<td>12.4</td>
<td>2.5</td>
<td>9.8</td>
<td>14.9</td>
<td>2.5</td>
<td>12.3</td>
</tr>
<tr>
<td>Boys</td>
<td>10.3</td>
<td>1.6</td>
<td>8.7</td>
<td>11.2</td>
<td>2.0</td>
<td>9.2</td>
<td>10.0</td>
<td>1.4</td>
<td>8.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TEST 4</th>
<th></th>
<th></th>
<th>TEST 5</th>
<th></th>
<th></th>
<th>TEST 6</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>gwpm</td>
<td>errors</td>
<td>nwpm(^a)</td>
<td>gwpm</td>
<td>errors</td>
<td>nwpm(^a)</td>
<td>gwpm</td>
<td>errors</td>
<td>nwpm(^a)</td>
</tr>
<tr>
<td>Total</td>
<td>13.4</td>
<td>2.4</td>
<td>11.0</td>
<td>13.5</td>
<td>2.2</td>
<td>11.4</td>
<td>15.0</td>
<td>2.3</td>
<td>12.6</td>
</tr>
<tr>
<td>Girls</td>
<td>14.5</td>
<td>2.5</td>
<td>12.0</td>
<td>14.8</td>
<td>2.3</td>
<td>12.5</td>
<td>15.9</td>
<td>2.4</td>
<td>13.6</td>
</tr>
<tr>
<td>Boys</td>
<td>10.9</td>
<td>2.1</td>
<td>8.9</td>
<td>11.1</td>
<td>1.9</td>
<td>9.1</td>
<td>13.0</td>
<td>2.2</td>
<td>10.8</td>
</tr>
</tbody>
</table>

\(^a\)Correct words per minute
### Table 5
Error Frequency* on Sixth-grade Students' Timed-write Tests

<table>
<thead>
<tr>
<th>Error</th>
<th>Test 1</th>
<th>Test 2</th>
<th>Test 3</th>
<th>Test 4</th>
<th>Test 5</th>
<th>Test 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double impression</td>
<td>7%</td>
<td>6%</td>
<td>0%</td>
<td>5%</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>Hands on wrong keys</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Right finger, wrong hand</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Right finger, wrong row</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Faulty capital</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>No capital</td>
<td>11</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Spacing</td>
<td>21</td>
<td>17</td>
<td>26</td>
<td>12</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>No punctuation</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Adjacent key</td>
<td>26</td>
<td>27</td>
<td>29</td>
<td>40</td>
<td>39</td>
<td>33</td>
</tr>
<tr>
<td>Omit letter</td>
<td>10</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Add letter</td>
<td>1</td>
<td>8</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Transpose letters</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Double letter</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Omit word</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Add word</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Wrong word</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>10</td>
<td>18</td>
<td>6</td>
<td>14</td>
<td>16</td>
<td>20</td>
</tr>
</tbody>
</table>

*percentage figure relating number of times an error occurred to total errors
Table 6
Eighth-grade Students' Performance*
on Timed-write Tests

<table>
<thead>
<tr>
<th></th>
<th>First Test</th>
<th>Final Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross words a minute</td>
<td>15.2</td>
<td>14.3</td>
</tr>
<tr>
<td>Errors</td>
<td>1.9</td>
<td>2.1</td>
</tr>
<tr>
<td>Correct words a minute</td>
<td>13.3</td>
<td>12.1</td>
</tr>
<tr>
<td>Error frequency:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double impression</td>
<td>13%</td>
<td>6%</td>
</tr>
<tr>
<td>Hands on wrong keys</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Right finger, wrong hand</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Right finger, wrong row</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Faulty capital</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>No capital</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Spacing</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>No punctuation</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Adjacent key</td>
<td>19</td>
<td>31</td>
</tr>
<tr>
<td>Omit letter</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Add letter</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Transpose letters</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Double letter</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Omit word</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Add word</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Wrong word</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>15</td>
<td>10</td>
</tr>
</tbody>
</table>

*Gross, error, and net figures are mean scores. Error frequency is percentage of total errors. Although these students were only tested twice, the first test corresponds in time with sixth-graders' Test 1; and the final test, with Test 6.
performed slightly better than girls on these written tests, although girls scored higher on the typewriting performance timings. Eighth-grade students seemed to comprehend more information from the taped materials, as they averaged 19.4 correct responses of the 24 possible. This information and other detailed scores are presented in Table 7, on the following page.

From the writer's point of view, it would appear that grade eight is a better place to teach a typewriting program of this nature than is grade six. Although there is no statistical basis for this opinion, the fact that the eighth graders did achieve higher scores on both written comprehensive and typewritten tests at the end of the taped presentations leads one to believe the program is better suited to the eighth-grade level.

At the completion of the entire sixteen-week typewriting program, sixth-grade students composed original essays at the typewriter, submitting their first drafts to the English teacher who rated them as average, superior, or inferior in comparison with their essay rough-drafts handwritten regularly in English class. Results are contained in Table 8, on the following page, revealing that 24 per cent of the students performed better at the typewriter on a composition task than they normally did with a pen or pencil. The written work of 75 per cent of the boys in the typing class, however, was equal or superior to their typewritten papers.

Although no statistical tool was used, it appeared quite apparent from visual measurement that little similarity existed between the students' written test scores and typing performance, between student-recorded practice time and typewriting scores, between essay test results and typing
### Table 7

Student Errors on Written 24-question Test Concerning Information from Taped Material

<table>
<thead>
<tr>
<th></th>
<th>18 Basic Questions</th>
<th>6 Extra Questions</th>
<th>Total Incorrect Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sixth-grade total</td>
<td>-2.5</td>
<td>-4.2</td>
<td>-6.7</td>
</tr>
<tr>
<td>Girls</td>
<td>-2.6</td>
<td>-4.2</td>
<td>-6.8</td>
</tr>
<tr>
<td>Boys</td>
<td>-2.5</td>
<td>-4.1</td>
<td>-6.5</td>
</tr>
<tr>
<td>Eighth-grade total</td>
<td>-1.4</td>
<td>-3.3</td>
<td>-4.6</td>
</tr>
</tbody>
</table>

### Table 8

Comparison of Sixth-grade Students' Typed Essays with Similar Written Papers

<table>
<thead>
<tr>
<th></th>
<th>Typed Superior</th>
<th>Equal Quality</th>
<th>Written Superior</th>
<th>Absent Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>24%</td>
<td>49%</td>
<td>12%</td>
<td>15%</td>
</tr>
<tr>
<td>Girls</td>
<td>31</td>
<td>46</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>Boys</td>
<td>6</td>
<td>56</td>
<td>19</td>
<td>19</td>
</tr>
</tbody>
</table>
tests, nor between practice time and typewritten essay papers. This is probably due to the fact that this report is actually being written only after a short time of exposure to typewriting by the students, and results will probably be different after the students have typed for a year or more. A handful of instruction hours hardly composes an entire program. A still better analysis could be made when the students reach high school, at which time timed-write or composition comparisons could be made with other students who did not learn to type at the elementary-school level.

From a more subjective point of view, evaluation by school personnel was most positive. The four upper-grade teachers, the principal, and the school secretary all believed the typing program was successful in the sixteen-week operational period. The students' social studies teacher, for instance, stated:

Students see it as something extra for them, not something shoved on them. . . . We need to take advantage of every opportunity to make the curriculum enjoyable and practical. We need more offerings of this nature.106

"This program has given the students an opportunity to accept responsibility that they can handle," commented one teacher monitor, "and a positive reaction to the freedom that accepting responsibility has made possible for them."107 The secretary's statements indicate that she, too, was actively involved with the program through student interest:


I have seen them enthusiastic over the typing program and eager to participate. I have seen a group of students who were not included in the program plead their case to allow them to participate. I have been asked about different keys that are on my typewriter and not on their machines, and how they are properly used. They have included me in several conversations about "checking out" the various stores. These students have interest, enthusiasm, and a real desire to learn to type well.108

CONCLUSIONS

It is evident that elementary students can learn to type to some degree without extensive supervision. By the end of the 30 typed lessons, most students knew the keyboard reasonably well, used correct fingering, knew how to operate typewriter mechanisms necessary in straight-copy typewriting, and understood good technique concepts. Fifteen-minute presentations seemed to be just right in order to meet most students' interest span. All students seemed to be challenged by the amount of material presented during each fifteen-minute session, yet the slower students did not tire long before the lesson's end. Lesson pace seemed to be well adapted to the majority of students. The earphones personalized instruction still further. By blocking out all noise in the room, these devices tended to give each student the idea that the teacher on the tapes was talking just to him. The personal tone of the tapes, too, seemed to encourage learning and self-confidence; and freedom from being graded appears to have helped students want to learn for the sake of learning. Volunteer enrollment seemed to be essential to the effectiveness of the program.

Timed-write scores produced by these students on straight copy,

however, were not impressive. Especially disappointing is the minor improvement in correct words a minute made by these students during the ten-week practice which followed the taped presentations. Student scores averaged 9.7 correct words a minute on the first test and reached only 12.6 at the end of the course. Average errors per minute's typing remained nearly constant. When students' individual beginning and ending rates were compared, the girls averaged an increase of 2.81 correct words a minute in the ten-week period; the boys' mean was 2.27, making a total average of only 2.64 words a minute increase for the sixth-grade typists.

Something other than number of weeks included in the program should be used as the time factor in this analysis, since only fifteen minutes' time was allowed in school for typing on a regular basis each day. Total typing instruction, during school time, totaled only twenty hours, including the practice period.

Other factors, too, possibly contributed to the low scores. The non-standard furniture used by students in this study, for example, could have had some effect on typewriting skill. Other studies indicate that skill is more easily developed when students learn at stations equipped with proper furniture correctly sized for each student. Although facilities for this study were adequate, learning might have advanced more rapidly had conditions been closer to perfect. The small desk-top area of each station, for instance, might have decreased typewriting efficiency.

Lack of practice, however, was probably the prime factor contributing to low typewriting scores. The high amount and frequency of practice as recorded by students is probably exaggerated a great deal, as spring activities served as competition against the typing program, taking student interest from typing practice. Many students also tired of learning
on their own initiative with no external motivation other than encouragement by the teachers to continue typewriting study with the textbook. Students tended to believe they had "learned to type," since they knew the keyboard. Some additional guidance might have been provided for them through the program to assist them in this practice stage.

Allowances can be manufactured, then, for the lack of substantial gain in typewriting scores. Even so, the question arises concerning the effectiveness of a skill that was still relatively newborn after approximately one semester's work, when three months' vacation would immediately follow. Then, too, this can be a dual-sided query. If speed and accuracy of typewriting are used as the measure of skill and, therefore, effectiveness, probably this typewriting program was not successful, based on student performance scores. Many students learning to type in this program, though, were learning in order to develop a usable skill. By this achievement standard, it would seem that a skill used by the student, making personal tasks or learning easier for him, should be adjudicated as an effective skill.

This typewriting program seems to be quite satisfactory in such light, as students began using typewriters for school work and personal papers as early as halfway through the typewriting program. By the end of the study's final week, 87 per cent of the sixth-grade students signified they believed they could type well enough to type their own papers, reports, letters, and other work. Only four per cent had not used their typing skill for presentation of school work or study, and a portion of students were using the typewriter quite regularly. Many of these students requested permission to type papers without teachers' urging or suggesting that they do so. In fact, this early application of skill could very
possibly have colored the timed-write picture, since students were never oriented toward rote copy of material for speed and almost immediately began composing their work at the typewriter. It is also interesting to note that over half (56 per cent) said they had taught someone else, generally a family member or sometimes a friend, the basics of typewriting.

The purpose of the typewriting program is of utmost importance at this point of evaluation. Forty-five of the 51 students completing the instruction were questioned as to whether or not they would recommend to a fifth-grade friend that he take typing next year. (Six students were absent.) Only one student said he would advise against the friend's enrolling for such study, reasoning that typewriting students might develop poor typing techniques as they practice at home during the summer. The remaining students backed their affirmative answers with reasons including the fact that they thought development of typewriting skill was helpful (66 per cent) for the skill itself, for school work, or for employment someday.

The idea of using typewriting skill on the job apparently increased in importance from students' viewpoint as they learned to type. At the beginning of the program, four girls listed secretarial work as their career objective for the future. Of course, sixth-graders change their career plans most readily; however, by the conclusion of the typewriting program none of the four had traded their secretarial plans for any others. Twenty students did change their minds, however, including 14 girls, 6 of whom changed to a secretarial goal.

It is difficult to judge at such an early date whether the early introduction to typewriting might hinder the accomplishment in the future
of students who wish to use typing skill for vocational purposes. From a positive angle, this type of instruction might even better prepare students for the world of secretarial work than do the traditional methods of typewriting instruction. Pupils learn to type from oral directions and dictation from the beginning, which might aid in training on voice-writing equipment later in their secretarial studies.

Although some students did develop "bad habits," errors in typewriting technique were not as apparent in number or in degree as were expected by many business educators. Almost all students displayed good basic posture at the typewriter. Exceptions were that many students typed with elbows protruding out at their sides and with wrists resting on the typewriter. Although on the tapes a high degree of emphasis was devoted to elimination of such poor techniques, some students continually retained these habits.

Some students, more than would be expected in normal instructional situations, did not learn to type by touch, though instruction materials were pointedly directed toward touch typing. In fact, while typing the last timed writing, 62 per cent of sixth-grade students and 68 per cent of eighth-graders did not use touch typing, which is very high compared with Erickson's 25 per cent who did not type by touch after 31 2/3 hours of instruction.\(^{109}\) This is probably not serious for the personal-use student, but it could possibly impede vocational aspirations of some.

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Generally speaking, when typing timed writings, students always either maintained good touch-typing control or watched the keyboard. Very seldom did any student switch back and forth between good and poor touch-typing techniques. Also, when typing timed material, many students who typed completely by touch in regular practice tended to watch their hands at the keyboard. Lack of self-confidence probably had something to do with this, along with the introduction of timed work to these students before they really obtained a timed-write skill. Pupils' early use of typewriters for personal projects and composition probably also tended to decrease touch-typing percentage.

Although many attempts were made to do so, the recorded materials could not prevent these poor techniques. For this reason, and as an additional motivation factor, it might be wise to use as much teacher supervision with the program as possible. The monitors in this instance could have helped students more. Since this study wished to regulate the extent of their direct efforts with the children in order to measure the worth of the "bare-bones" program, the monitors' capabilities were not used to the fullest extent. Some students developed incorrect concepts or techniques early, or had difficulty understanding some basic idea. Teachers should receive enough training so they could help overcome such student difficulties. A teacher who had been trained to help students learn to type could possibly have alleviated such difficulties early in training before the problems became serious and, therefore, probably would have increased students' skill.

Of course, a good teacher is always more efficient than mechanical instruction, no matter how individualized or personal that instruction is meant to be. It appears that this program can operate successfully but
that it could be much more efficient with the addition of increased teacher aid. The program was designed to teach students without the direct assistance of a qualified typewriting teacher. This study seems to support the idea that such a task was accomplished, as nearly as can be determined this early in the typing experience of the students. This study also indicates that the task could be accomplished much more successfully and efficiently if teacher monitors were schooled to a greater measure in the teaching of typewriting and if those monitors were then allowed to supervise students to a larger degree. Monitors should continue acting as supplements to the tapes, rather than using the tapes as aids to teacher-based instruction as is done in conventional typewriting classrooms.

Elementary teachers could be and probably should be used as trained monitors because they are familiar with these students' abilities, behaviors, and learning patterns and because they can provide reinforcement, necessary in learning the use of a skill, by relating classroom assignments to typewriting and typewriting to classroom assignments. These teachers should receive adequate training in the teaching of typewriting, perhaps through the "participative management" idea developed by Artuso. If a qualified and experienced typewriting teacher could help either elementary teachers or special trainees learn methods and goals of teaching typewriting, teacher monitors could further enhance the program's value.

The audio-tutorial program for typewriting would not only do a better job of teaching with the aid of additional teacher supervision but could also be improved by the addition of more visual materials for the learners. If filmstrips, slides, or other visual presentations could be developed to coincide with the tapes, children would no doubt develop a better typewriting understanding and might type with better posture. Then, if each learner's typewriting station could be equipped with the entire combined program, aided by a trained teacher monitor acting as supervisor, the program's worth might increase still more.

An attempt should also be made to use this typing program for completely individualized learning. The instruction was designed for such use and, with the proper equipment, could be used for individualized study without any special adaptation other than the improvements recommended earlier in this report. If each student had a battery-operated recorder and ready access to lesson tapes, he could progress at his own rate. He could use the same learning techniques as did those students in the make-up and review session of this study. He could stop, reverse, or play again any tape or lesson portion on which he needed additional practice or which he did not understand at the first presentation, practicing at his own rate in the meantime. This idea could even be worked into a loan-library concept for summer learning or for correspondence study. Rural schools with limited numbers of pupils, too, could find this valuable. A student could learn to type by progressing at his rate while sitting alone at a study carrel or while studying in a typing classroom where many other students with individual audio setups were also learning at individual speeds. Again, if improved visual materials or, better yet, additional teacher assistance could be made available, this
be made to increase the program's worth in the practice stage. Student interest seemed to be good throughout the taped presentation. Once the tapes ended, the combination of aforementioned factors contributed to a slack of enthusiasm toward the typewriting program. It is doubtful that extended tapes would be the answer, since that type of presentation was effective for 30 lessons but, judging from student actions and interest, would probably lose its appeal not long after that point. Perhaps allowance for more monitor participation in this phase plus the addition of more visual aids could be a partial answer to this problem.

Obviously, students learned more than mere skill through this typewriting program. The fact that they were busy, enjoying learning, is worth much in a total education picture. They were given the opportunity to care for good, new equipment; no typewriters were damaged. Students were placed in a position where they could accept learning responsibility on a completely individual-initiated basis. Students that were generally difficult to control in the regular classroom situation behaved quite well. Students who were generally slow and disinterested in the regular classroom situation voluntarily came to typewriting instruction and typed most of each fifteen-minute period. Pupils were given the opportunity to teach others and to learn from others.

Educators should not by-pass the opportunity to teach eager elementary-age students, such as those who participated in this study, the skill of typewriting. Unfortunately, elementary schools as well as some secondary schools, do not always feel they can afford the time and expense necessary to teach all students how to type. If students can learn to type through an instructional program, such as the one developed by this study, which requires limited supervision and minimum expense,
larger numbers of students could be given the opportunity of learning to
type while in elementary school. It appears that the program included in
this study provided typewriting instruction which equipped students with
some worthwhile typewriting skills.

A program containing refinements based on this study's results
could increase the effectiveness of such typewriting instruction and
enhance success still further. Typewriters could be placed in other class­
rooms and study areas to further encourage the use of typewriters as
communication tools.

Several attitudes and circumstances were apparent in this particular
study which might be difficult to reproduce in other situations and which
are difficult to rate as to their individual contributions to the
assistance or hindrance of the program. It is important to recognize
these especial characteristics before assuming this program will produce
like results in any situation. This program was introduced to students
midway through the school year. Disadvantages of such timing have already
been discussed in this report. An advantage might be contributed by this
in that the new program entered the school curriculum at a time when
students were looking for some new interest, some change of pace. The
experimental nature of the program also affected the results, probably
throwing emphasis in both directions. Non-standard equipment could
probably be rated as a drawback to the program. The very development
of the makeshift facilities might have aided success in that everyone con­
cerned with the program, students included, played a part in developing
that plan and had the opportunity to watch development progress.

Student, school, teacher, administration, and parent interest toward
the typewriting program had a profound effect on all aspects of the
program. Generally, all people wanted very much for the typewriting course to come to Jefferson School; and they wanted it to be a success. To the degree that it was successful, they are the people who helped make it a success. The students, already accustomed to freedoms and responsibility in learning, greeted the typing course as a welcome challenge. The non-graded and voluntary-participation aspects of the program affected its character. Everyone involved with the typewriting program worked with it in various phases, building attitudes and confidence that contributed immeasurably to the program. Genuine interest on everyone's part counted heavily toward the results of this study.

The results, limited in time as they are, indicate that the typewriting program herein outlined, developed, and analyzed could be a workable plan for Jefferson Elementary School in Missoula, Montana, after instruction during the ten-week practice period is further improved. Final results after several years might agree or disagree with this initial observation. The program, at present, is limited in its effectiveness and could better serve students' needs after revisions are made. It could not be expected to operate as effectively when placed in other learning situations, without careful adaptation.

RECOMMENDATIONS

The following recommendations are based on the results of this study:

1. According to information at this initial stage of students' typewriting experience, it appears that the typewriting program outlined in this study can teach the keyboard to elementary students but should be used only after revisions are made, especially to improve the practice period after initial keyboard presentation, and should be used with
considerable caution. The program must be carefully adapted to new circumstances if used in new situations.

2. Studies should be made regarding students' progress and performance in months and years to come in order to fully and correctly evaluate this typewriting program and in order to supplement and update this study.

3. This program can be used by individuals, either in a single or group situation, to progress at their individual speeds if proper equipment is available. This would increase the benefits provided by the program for each student.

4. No similar typewriting program should be developed without detailed planning and incorporation of ideas beforehand from all peoples and areas concerned. Programs of this nature need especially to be adapted to particular students and to particular teaching situations, since flexibility is not great once any program is completely developed and in operation.

5. A better understanding of elementary education should be a requisite for business educators who develop elementary typewriting programs; and of business education, for those elementary educators who initiate such programs.

6. Elementary classroom teachers can probably adequately supervise elementary students learning to type but should participate beforehand in adequate training in the teaching of typewriting for greater effectiveness.

7. Typewriting could become a more beneficial skill for elementary students if typewriters could be placed throughout the school so that students have ready access to typewriters at any time.
8. Some taped typewriting instruction similar to that presented in this study should probably be incorporated in all students' learning of beginning typewriting skill, since it provides good practice in making typewriting responses initiated by oral stimuli.

9. Administrators of educational institutions engaged in teacher preparation are encouraged to experiment further in the area of typewriting instruction with limited supervision. Very little study has been made in this field.

10. Educational institutions should also further explore uses for this program, and others like it, in areas of learning outside the traditional elementary classroom.
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UNPUBLISHED WORKS


APPENDIX

Exhibit A: Class Schedule
Exhibit B: Letter to Parents
Exhibit C: Initial Student Questionnaire
Exhibit D: Completion Student Questionnaire
Exhibit E: Written Test
Exhibit F: Timed-write Material
Exhibit G: School Personnel Questionnaire
## Typewriting Schedule

<table>
<thead>
<tr>
<th>Day</th>
<th>Group 1 Girls</th>
<th>Group 2 Boys</th>
<th>Group 3 Girls</th>
<th>Group 4 Mixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>2:15</td>
<td>11:00</td>
<td>2:35</td>
<td>11:20</td>
</tr>
<tr>
<td>Tuesday</td>
<td>11:00</td>
<td>2:15</td>
<td>11:20</td>
<td>1:55</td>
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<tr>
<td>Wednesday</td>
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<td>Thursday</td>
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<tr>
<td>Friday</td>
<td>2:15</td>
<td>11:00</td>
<td>2:35</td>
<td>11:20</td>
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<tr>
<td>Every Day</td>
<td>3:00</td>
<td>3:00</td>
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<td>3:00</td>
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<tr>
<td>Review &amp; Make-up</td>
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Dear Parent:

Jefferson School is introducing an experimental program of instruction in practical typewriting. This course has been developed by experienced business educators. It will be supervised by classroom teachers and is based on an individualized self-learning concept which is not a new idea in today's education.

We are not attempting to produce expert typists through this one program; nor are we attempting to substitute this one class for future business classes. We hope, rather, to teach students the basic typewriter keyboard and to supply them with all the typewriters, texts, and additional materials they need to further their practice in this area. Major objectives of such a course are to enable the student to use typing skill in his studies and to aid in the language arts.

Any sixth-grade student in Jefferson School who would like to learn to type may enroll in this program; whether your child participates and the extent of his participation are entirely up to you and him. No grades will be issued. We will be glad to answer any questions you might have regarding this new course, and we encourage you to visit our school to view the program in operation.

Sincerely,

Louis J. Gagermeier, Principal
Jefferson School
Questionnaire

Name ______________________________________________________________________

Age, as of February 2, 1971: __________ yr. and ________ mo.

Height: __________ ft. and ________ in.

Boy ___________ Girl ___________

What do you think you will want to do as an occupation when you finish school and begin working?

What is your father's occupation?

How many brothers and sisters do you have? Can they type? List your answers below, please:

<table>
<thead>
<tr>
<th>Brother or Sister</th>
<th>Age</th>
<th>Can Type</th>
<th>Cannot Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

Can your father type? Yes ___________ No ___________

Can your mother type? Yes ___________ No ___________

Have you ever typed on a typewriter before? Yes ___________ No ______

If so, where? ____________________________________________

When? ____________________________________________

Does your family have a typewriter at home now? Yes _____ No _____

If so, do you ever type on it? Yes ______ No ______

And, if so, how often? ____________________________________________
Questionnaire

Name ____________________________________

What do you want to do as an occupation when you begin working?

________________________________________

Did your family have a typewriter at home when you started typing class?

______________________ Do they have one now? _______________________

Have you practiced outside of school since you started typing class?

_____________

If you have, where have you practiced? _______________________________

How often have you practiced outside of school? ________________

Have you shown anyone else (who is not taking the class) how to type?

___________

Who is that person? _____________________________________________

Do you believe you can type well enough to type your own papers, reports, letters, and other work?

___________

Have you typed any of your school work? _________________

If you have, what have you typed?

_____________________________________________________________

_____________________________________________________________

_____________________________________________________________

Would you encourage a fifth-grade friend to take typing next year?

______________

Why or why not?

_____________________________________________________________

_____________________________________________________________
Parts of the typewriter:

<table>
<thead>
<tr>
<th>Name</th>
<th>What It Does</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>2.</td>
<td></td>
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<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
</tbody>
</table>

What does "staccato" mean?

What is home row?

How many times should you strike the space bar after typing a period which ends a sentence? __________

After typing a comma? ________ After typing a semicolon? ________

After typing a colon? ________ After typing a question mark? ________

How do you capitalize a letter when you are typing? ___________________

How do you space between words? ________________________________

What does "return the carriage" mean? ___________________________

Good typing posture is important. If you were to tell someone else three things to do in order to be using good posture at the typewriter, what would you say?

1. _____________________________________________________________

2.  __________________________________________

3.  ______________________________________________

What should you look at when you type? ____________________________

Why? ______________________________________________________

What does "quay" mean? _________________________________________
Timed-Write Material

1. Have a set time and place for studying. Place the books and papers within easy reach. It will help you to understand and remember what you read if you will outline it or underline each key statement.

2. The job interview was my big problem. I was prepared to work but unprepared for the interview. Once I learned how to get ready for the interview, I got a job and learned a lot during the summer.

3. When the going gets tough, as it will at times, be tough enough to get going. First, plan intelligently; next, work efficiently; and all the time believe mightily that you can do whatever you need to do to solve the problems.

4. The island all people need cannot be found on known maps. Exploring it must be just in thought, not in fact. It must be a place where people can be still. It may be found in the home, the school, the office, or wherever quiet hours can be known.

5. Many students have real learning difficulties and do not know why. The trouble may be that they do not use the best study habits. When they realize this, they should ask for help at once, and they may be led to acquire the exact study habits that can lead to good work.

6. Quiet people are not the only ones who do not say much. Most of what is called conversation is just a lot of idle chatter. While no one expects us to talk of world problems or discuss the books of the most popular authors all the time, these should have our attention now and then, to say the least.
Name ____________________________ 

Subject ___________________________ Grade Level _______________________

Please answer the following questions to help me with my thesis study. I will use this information very generally and do not plan to quote specifics. However, if the study works out as such, I just might decide to quote some statement; therefore, if you would prefer that I do not quote any particular statements, please mark those remarks with asterisks. Thank you very much for your help!

Do you think the typing program has been successful thus far?

Why?

Have the typing students used their typing skill for your class? If so, please describe, indicate when this occurred, and report if this was typed at your suggestion or through the students' idea.

What suggestions do you have to improve the program?

Additional comments?