In the traditional alphabet, 26 letters represent 40 different and distinct sounds of the spoken English language in transcription. This prevents a one-to-one phoneme-grapheme correspondence since some of the written symbols represent more than one sound. These inconsistencies in the writing system, recognized as the source of difficulty in learning to read and write, have led to numerous and varying teaching methods and materials in efforts to cope with the unchanging alphabet. On the other hand, efforts have been directed toward changing the alphabet for beginning instruction by using systems with a high degree of phoneme-grapheme correspondence in the initial stages of reading and writing instruction. This review of historical research describes the early investigation of orthography as a medium of instruction and its role in the development of writing competency. (Contains a 70-item bibliography of research published between 1925 and 1969.) (NKA)
SUMMARY #4: REVIEW OF HISTORICAL RESEARCH
The Nature of Traditional Orthography and the Initial Teaching Alphabet
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The Nature of Traditional Orthography and the Initial Teaching Alphabet

In the preceding Summary #3, The Relationship Between Oral and Written Language, several studies generated interest in the medium of instruction which it was determined was the source of difficulty in transposing speech to writing.

This Summary #4, in sequence, describes the early investigation of orthography as a medium of instruction and its role in the development of writing competency.

In the traditional alphabet 26 letters represent 40 different and distinct sounds of the spoken language in transcription. This prevents a one-to-one phoneme-grapheme correspondence since some of the written symbols represent more than one sound. These inconsistencies in the writing system, recognized as the source of difficulty in learning to read and write, have led to numerous and varying teaching methods and materials in efforts to cope with the unchanging alphabet. On the other hand, efforts have been directed toward changing the alphabet for beginning instruction by using systems with a high degree of phoneme-grapheme correspondence in the initial stages of reading and writing instruction.

Alphabet System

Richard Hodges, in 1644, as a schoolmaster of Southwark, England, designed a diacritical marking system which was followed by the experimental trials in the United States during the nineteenth century of Leigh's transition alphabet and phonotype of Ellis, Benn, and Pitman (Chall 1967; Downing 1964).

As early as 1844, phonotype was developed by Isaac Pitman and A. J. Ellis, and is directly related to the I.T.A. system developed by Sir James Pitman, grandson of Isaac Pitman. Phonotype is an augmented alphabet of 40 to 43 characters in which each letter represents one sound. It consists of 23 letters from the traditional alphabet, while ê, ë, and ë are not used. Most of the 20 new characters, mainly vowel sounds, are
elaborations of Romanic letters by means of additional strokes or ligatures (Bothe, 1967).

In 1866, pronouncing orthography designed by Edwin Leigh was introduced as a traditional medium. Seventy distinct graphemes were used to represent the sounds permitting the form of conventional spelling to be maintained. For example, nine different symbols were used to represent the nine sounds of the traditional "a". Pronouncing Orthography was used as a reading medium because of the difficulties it presented in writing.

Winch in 1925, used phonoscript, a system of silencing marks in an experiment using synthetic phonics with the modified medium and the traditional alphabet. The successful results of the experiment were similar to the results reported for I.T.A. in that after two years, when tested in conventional print, the phonoscript group was still significantly ahead even though it had had little previous experience with regular print. The findings, however, related to reading not writing.

Malone’s single sound unifon is a consistent auxiliary orthography for teaching English and other European languages. It uses forty characters, all upper-case letters, designed to take up similar space in a rectangle for ease in coding by “optical reading machines” (Malone, 1963).

Dewey’s (1960) Simplified Spelling Society’s system of respelling with no additional characters and Fry’s (1963) diacritical marking system are designed to ease the burden of difficulty with the traditional alphabet.

The Initial Teaching Alphabet (I.T.A.) designed and introduced by Sir James Pitman, is an augmented alphabet of 44 symbols, each representing one sound to achieve a high sound-symbol correspondence. Twenty-four (24) of the 44 symbols are
traditional Roman letters in lower case (omitting q and x); 14 of the augmentations represent two traditional letters joined together but given one sound value; the other symbols represent the remaining phonemes of English. A larger version of the I.T.A. letter becomes its capital, eliminating additional patterns. "I.T.A. is not spelling reform, nor is it a phonetic alphabet. I.T.A. is a special learning tool."

Pitman (1969) (3). Since I.T.A. is a medium and not a method it can be used with any teaching method: phonic, look-say, color, or programmed instruction.

Hardman (1969) used a simplified phonemic alphabet developed with 24 consonant symbols as follows: (1) digraphs were underlined including wh; (2) two lines were used under the voiced th; (3) the macron was used for the five "long vowels," and (4) the unmarked a, e, i, indicated the "short" sound. For the six remaining vowel sounds, four symbols were borrowed from the International Phonetic Alphabet and two were improvised. The phonemic transcription was used in handwritten materials only. The teacher wrote in the standard dialect of the area; during individual writing the ideolect of each child was accepted. It was observed that independent stories appeared earlier than in previous years. A noticeable improvement was observed in oral reading in the use of the schwa. Hardman concludes that "This simplified phonemic alphabet was judged to have been of valued to all the children involved" (549).

The Sound-Spelling Relationship

The alphabetic principle has been described as the relationship between sound (phonemes) and the letters (graphemes) which represent them (Durkin, 1962). In the traditional alphabet, certain of the consonant phonemes are fairly consistent in the sounds they represent. There is little controversy over the linguists' agreement on 21 to 24 consonant phonemes which include f, j, m, n, r, p, y, and z. The consonants c, d, g, s,
and x are more varied in the sounds they represent. These variations have resulted in differing emphases on introducing the alphabet and sound-spelling patterns. Bloomfield (1961) and Lefevre (1964) suggest the priority of naming the letters in the beginning stage of instruction. Fries (1963) and Lamb (1967) emphasize visual recognition rather than letter-naming.

Betts (1964) contends that the relationship between spelling patterns of written words and the phonemic patterns of spoken words is of major significance in helping to develop word perception skills.

Smith (1963) suggests that the child's recognition of letter-sound relationships may be made considerably easier if he/she first learns the relatively consistent relationships.

Smith and Dechant (1961) describe the basic word recognition skill as the ability to associate the sound (spoken word) with the visual stimulus (the written word).

Ruddell (1969) recommends that initial words be introduced on the basis of "grouped grapheme-phoneme consistencies" (63) since the inconsistencies of the English orthography have been found to place a limitation on learning sound-symbol correspondences as developed in instructional materials. The investigations supporting the value of greater consistency in the introduction of sound-letter correspondences include: Hayes (1966), Ruddell (1968), Hohn (1965), Tanyzer and Alpert (1965), Mazurkiewicz (1966), and Downing (1965).

Spache (1964) is outlining the phonics content of three widely used basal reading series notes that the span of instruction ranges from readiness and the preprimer level through third-reader level.
In another approach to the teaching of the alphabet, (Gardner, 1962) the shapes and sounds are placed before the children “to be delighted in as significant form, as creative sound.” In describing how a letter like s will be written with “loving care, painted large with fantasy before it is drawn small in the conventional style,” (8) it appears that “loving care” is to solve the problem of the inconsistencies of the sound values of the alphabet symbol.

Russell (1961) in describing the invention of the alphabet, calls it “one of the great intellectual achievements of all time,” (52) which with few changes, has been used for nearly 4,000 years. Russell claims that the alphabet’s economy of effort is represented in the fact that 600,000 words of the English language can be written with 26 letters.

Brown (1957) in his classic volume Words and Things, explains that phonetic writing, whether syllabic or alphabetic, translates recurrent speech elements into written characters and combines the characters into names as the sounds are combined in speech. Learning such an alphabet should enable one, therefore, to read, write, and spell all the names that are familiar to him in spoken form. “It is an irony of history that this economy which made the invention of the alphabet so important to mankind has been partially lost to such languages as English and French. English orthography is today a very inconsistent phonetic system. This fact has suggested to many American educators that literacy in English ought to be taught without explicit reference to the phonetic values of the letters. However, the evidence indicates that teachers do better to call attention to the phonetic system that exists even though it is exasperatingly irregular” (81).

Venezky (1967) organized two sets of orthographic patterns based upon an analysis of the spellings and pronunciations of the 20,000 most common English words.
One pattern pertains to the internal structure of the orthography: the graphemes or classes of letters and the graphotactics or the allowable sequences of these letters. The second set contains those patterns which relate spelling to sound. In describing patterns of primary vowels Venezky states "the vowel spellings a, e, i/y, o, u, carry the major burden of vowel representation in the current orthography. They occur in all positions and have a vast complexity of morphophonemic correspondences and alternations which reflect an even more complex history when viewed from the direct spelling to sound standpoint the patterns for these units reveal no regularity. The letter O corresponds to 17 different sounds, a to 10, e to 9, and the combined group to 48" (95).

The process of "breaking the code" of the traditional alphabet has been described in varying sequences. McKee (1966) contends that the pupils should be taught to use only two of seven aids in unlocking all strange, printed words: (1) the context and (2) the sounds that letters and groups of letters stand for in the word (phonics).

Russell (1961) suggests that there are at least seven different ways in which primary children recognize new or partly new words: (1) the general pattern; (2) special features; (3) recognition of known parts; (4) the use of context clues; (5) the use of picture clues: (6) some phonetic analysis; (7) structural analysis; (8) a combination of methods, i.e., using the sounds of m and j and seeing the common phonogram for ail, in going from the known word, "mail," to the new word, "jail" (204).

DeBoer and Dallmann (1965) list five major skills for the development of independence in word recognition: (1) recognizing whole words by sight; (2) using context clues; (3) analyzing words phonetically; (4) using structural analysis of words; and (5) using the dictionary.
To reverse the process of decoding, attention is given to the relationships in encoding. Roberts (1966) claims that improvement in children's writing can be achieved by teaching "in a thorough and sequential way, the main features of the writing system, in particular, the sound and spelling relationship and the nature of syntax" (51). Potter (1960) cites "communication theory" (47) involving both the use of a code or set of symbols and the employment of a channel or medium through which these code signals are transmitted. The process by which certain signals are selected and put into the channel is identified as encoding and that by which they are identified and interpreted into action is known as decoding. Since all systems of writing are based on the prior existence of speech, the linguist's attention is given to speech (Ives, 1963; Sapir, 1949). Synthesizing the characteristics of encoding and decoding, Carroll (1966) supports parallel teaching of reading and writing.

The alphabetic principle in application, is observed by Gleason (1969), describing the child who arrives at school in possession of most of the important features of English: "Having just mastered spoken English, he is expected to learn to read written English via the somewhat rickety English alphabet. He has forty different sounds in his speech, and the alphabet has twenty-six letters which cannot be counted upon to stand for the same sound every time they appear. He needs all the help he can get" (27).

The limitations imposed by the traditional alphabet have been cited in the inconsistency between the child's oral vocabulary, aural vocabulary, and writing ability. Smith, as early as 1941, estimated that children in the first grade may understand as many as 24,000 words. It is noted, however, that this does not mean that they can use nearly that many in their speaking and have had little or no experience in writing words (Petty
and Green, 1967). Yet, it has been determined that first-grade writing programs help children relate to the school experience of learning to read since writing provides the means for active involvement of the pupil in his new school environment.

In one study of the independent writing of elementary school children, Riemer (1969) reports that “a story (the child) has developed in his imagination may be lost while he struggles to spell a difficult word or to remember how to write a, q, or an x. Some children who have good ideas for writing become so fatigued with the combination of mental concentration and physical exertion that they end a story weakly rather than put forth the effort required to pull it through to its climax and a smooth conclusion. At such times, the teacher takes over the role of scribe, as the child tells the final portion of his story aloud” (125). It may be added here that the letters q and x cited as sources of difficulty are the two letters of traditional orthography which have been eliminated in I.T.A. since the phonemes are represented by the use of kw and ks.

Barnes (1964) describes written composition at the second grade level: “While children are highly articulate at this stage of development, their written expression is smothered beneath a blanket of highly intricate tasks which frequently render effective written communication impossible .... Children at this level lose their train of thoughts while grappling with one or more of the many frustrating mechanics of written expression” (51).

**Descriptions of I.T.A.**

The I.T.A. medium has been described by among others, Shane (1967), Staats (1968), McKee (1966), Chall (1967), Heilman (1967), Dawson (1968), Strickland (1965), Spache (1968), Smith and Dechant (1961), Betts (1967), and Lamb (1967), who
have emphasized the characteristic consistency of the letter-sound association of the forty-four symbols.

The initial teaching alphabet has been used for both beginning reading and remedial teaching in England since 1961 and in the United States since 1963. Lamb (1967) estimated that over 40,000 children were learning to read by means of I.T.A. in the United States, while Pitman (1969) reported that ten percent of all United States school systems have at least one I.T.A., class.


Method of Instruction

Although the language-experience approach has been successful in combining writing and reading in language arts, instruction, the potential benefits of combining the language-experience method with I.T.A. have been recognized particularly (Strickland 1969, Evertts 1969). This approach is supported by Riemer (1968) to whom "writing" instruction means the communication of the child's ideas and feelings in his own words, "those he uses when he talks" (155).

In the transition for I.T.A. to T.O. Pitman (1969) suggests that the language-experience approach permits the child to anticipate words which his sense of context leads him to expect in his reading through a "meaningful attack" (39) on the unalphabetic words which offer some alphabetic clues to confirm a guess already made.
by application of the linguistic process and conversely, to apply the linguistic principles
to his writing to that degree to which he has learned the T.O. spelling patterns (Pitman,
1969).

The transitional period for the I.T.A. children has been noted in a language arts
curriculum for grade two (Simsbury, 1966), which includes guidelines for creative
writing: (1) “Ample opportunities will be provided for creative writing experiences;
(2) complete transition from the use of I.T.A. symbols to the use of the conventional
alphabet will be encouraged but not forced. Children will be permitted to fall back
on I.T.A. symbols and to use them interchangeably with the 26-letter alphabet; (3) the
I.T.A. symbols, as well as the 26-letter alphabet, will be on display in all second-grade
classrooms accommodating I.T.A.-trained youngsters” (27).

Research Studies

Downing (1967), the major investigator in I.T.A. studies in England, reported the
results of a longitudinal British study begun in 1961 which have shown that children
using I.T.A. recognize more words in print, comprehend more continuous prose in print,
read faster and more accurately, and progress through reading instruction more rapidly
than children using the conventional type of reading approach. He also noted that
independence in their work resulted in a marked improvement in creative writing and
permitted their thoughts to flow more naturally.

Bosma and Farrow (1965) investigated the effect of I.T.A. and T.O. in a study of
first-grade children of the Campus School of Western Michigan University. This study
was unique in that they eliminated writing completely from the experimental
instructional program until children began to use words spelled in T.O. It was
recognized that the deletion of writing from the experimental I.T.A. program while
allowing writing instruction to remain in the controlled procedures, posed a severe and unconventional test of the effectiveness of the I.T.A. medium. In addition to supplementary oral language experiences, a continuous art program specifically designed to prepare the children for writing was undertaken. It was reported that the first-grade children in the experimental (i.t.a) group, without the inclusion of writing in the curriculum, were significantly superior on measures of reading achievement of the Metropolitan Achievement Tests printed in Traditional Orthography.

From a study to determine whether or not I.T.A. is more effective than T.O. in teaching beginning reading to bi-lingual Mexican Americans it was concluded that children who are not ready to read are not helped materially by I.T.A. during the first grade program, and these children should be allowed two years in the I.T.A. program if the new alphabet is to be of benefit. It was also concluded that teachers should expect no more than 15-20 percent of each class in deprived areas to make the transfer from I.T.A. during the first school year (Reading News Report, March, 1968).

In a fifth year report on the use of I.T.A. in Plainview, New York, it is stated that attention is given to all forms of written communication “because I.T.A. children have more writing proficiency in the first year with respect to the number of words used, the number of different words and number of thought ideas, and to build upon the gains made by these children, on-going workshop sessions have been established by the staff. Every effort is being made to avoid plateauing of language art gains” (5) (Flaster, 1969).

Stewart (1969) reported that the results of an analysis of the third and fourth-grade compositions using Hunt’s T-Unit measure of assessing maturity of sentence patterns indicated the superiority of the I.T.A. group, when compared with a random sample of
those fifth graders whose teachers in the primary grades did not receive stimulation of in
service meetings and curriculum change. Stewart concluded from these results that it is
the change in teacher methodology and attitude as well as the stimulation of a variety of
literary materials for the students which has produced the more mature sentence pattern
in third and fourth grade compositions. The writing sample in this study was obtained
by placing a picture on the overhead projector and requesting students to write for
twenty minutes. This was done in December and May, so that intra-grade growth could
be observed. Both the third and fourth grade random samples demonstrate more
maturity in sentence patterns than the random sample of the fifth grade population.
When the compositions of the random samples of the fourth grade I.T.A. and T.O.
populations were examined using Carlson's (1965) scale, the compositions of the I.T.A.
population were more original. Stewart concludes that "The key to curriculum
planning for the I.T.A. graduate is a focus on language development, a curriculum
through which the student grows in ability to talk and read and write and observe in
all areas of human concern. The teacher's methodology must encourage self-section,
self-direction, self-pacing and self-discipline" (22).

Auguste and Nalven (1969) compared the effects of I.T.A. and T.O. instruction in
the first grade on children's creative writing skill in second grade. The I.T.A. trained
children obtained higher written creativity ratings than the T.O. trained children, on
three writing samples. Topics were provided on three consecutive school days: "What
a Good Friend Should Be," "The Flying Monkey," and "the Unhappy Clown." Each
child's creativity score equaled the sum of the nine ratings given his three stories by
three teacher-judges.
Chasnoff's (1965) study revealed that on a comparison of scores assigned to 616 writing samples gained from the total population, the differences of means for the experimental group was significantly higher than for the controlled group. At the end of the second grade, Chasnoff (1967) reported no significant differences in a comparison of writing samples or scores on a standardized test of language ability. It has been stated that the Chasnoff study is too limited to "clarify the value of I.T.A. over T.O. but it is one of the few to suggest that T.O children can write as successfully as I.T.A. children at the end of the second grade." Sheldon and Lashinger (1969) suggesting that "it would be instructive to know at what point T.O. pupils approach the fluency in writing of I.T.A. pupils if the latter pupils did not have the advantage in writing usually reported by I.T.A. experimenters" (875). This was investigated in part in the study by Bosma and Farrow (1965).

Downing, Fyfe and Lyon (1967) reported the effects of i.t.a on young children's written composition, as found in two studies conducted by the reading research unit in schools in England. Reference is made to a study by Vikainen (1965) in which it was found that the teacher's ability to read what the child has written is an important motivation factor. In the Staffordshire study samples of a normal week's written work in their seventh term (approximately seven years to seven years, nine months) were gathered for 54 children in the I.T.A. classes and 54 in the T.O. classes. Downing et al. notes that subjective qualitative judgments about the writing were not used in this study, although it was such impressions which originally led to the initiation of the study. Three analytical measures were used: word count, size of vocabulary, and frequently of repetition. Size of vocabulary was defined as the number of different words used. It was suggested that up to about age seven the production of a greater
quantity of writing "is taken to be indicative of greater facility, something which may not apply to writing at a later stage" (138). The findings indicated that the I.T.A. children were "genuinely superior" (140) in their written composition work.

In the Dundee study, conducted by Fyfe (1965) a standardized procedure, a picture entitled, "A Rainy Day" was presented to the children in small groups. The children were asked to describe the picture for someone who did not see it. Two methods of studying the resulting compositions were used: one was concerned with quality using one measure, a "general impression" (141) method; the other was an analytic approach using nine measures designed to investigate a number of aspects of the material. The measures of the amount written, the length of sentence, and the size of vocabulary as good indications of composition ability were attributed to the judgment of Burt (1947). It was found that the children in the I.T.A. group tended to write longer compositions and provisions was made for a ratio-type evaluation similar to the Type-Token Ratio of Johnson (1944). The compositions written by the I.T.A. group were judged superior on the basis of general impression and analytic measures. It was also observed that the improvement in written vocabulary in both studies appeared to affect children at all levels and not to be confined to those of superior ability.

In a later analysis of first-grade children's writing with regard to three different methods of teaching initial reading (Ackerman 1968), the I.T.A. edition of a basal reader, a basal reader using traditional orthography, and programmed reading were used as the three approaches to be studied. Original stories written in response to motivational pictures were gathered once each week for six weeks from the children in each of the first-grade classes. A total of 370 compositions from 74 children were analyzed for vocabulary, number of sentences, number of words per sentence, and total words per
composition. It was found that (1) the children in the I.T.A. and programmed reading classes had a higher ratio of different words used to running words than did the children in the basal class; (2) in none of the classes did the children confine their writing to words to which they had been introduced in their reading books; (3) the children used 55 words that were not included in the Boston University list, the Dolch list, or the Rinsland list; (4) the children did not use any slang terms in their writings. A statistical analysis indicated that the children in the I.T.A. and programmed group wrote significantly longer stories than did the children in the basal group; and the children in the I.T.A. and programmed reading groups wrote longer sentences than did children in the basal group. It was also found that although the children in all three classes wrote approximately the same mean number of sentences per composition, the children in the I.T.A. class had significantly fewer mazes than did the children in the basal and programmed reading classes. The investigator concluded that there appeared to be a strong relationship between method of teaching reading and first-grade children’s writing. The following were found to be discriminating factors when measuring children’s writing skill: ratio different words to running words, number of mazes. In addition, the total number of sentences written per story did not seem to be related to writing capabilities of first-grade children as revealed in this study.

The publication of the report on the Intitial Teaching Alphabet by the British School’s Council (1969) entitled “I.T.A.: An Independent Evaluation” describes the study which was carried out for the Schools Council (a British government unit established in 1964 to evaluate new developments in curriculum) over a period of several years by F.W. Warburton, Professor of Experimental Education, Department of Education, University of Manchester, and Vera Southgate, Lecturer in Curriculum.
Development, School of Education, University of Manchester. The report is based on three kinds of evidence: replies from local education authorities, views of teachers and other first-hand observers, and reports of investigators in various countries who have published experimental and statistical studies of the new alphabet. It is concluded from the research that most children in most schools would learn to read sooner if they were taught by the Initial Teaching Alphabet and the I.T.A. children have no difficulty in transferring to the traditional alphabet. The following observations led to the preceding general conclusion: 

"easier and earlier reading skill acquired without frustrations for the child; an increase in the time children choose to spend on reading, in the number of books they read, and on their understanding of the contents of the books; an increase in the quantity and quality of children's free writing; an improvement in children attitudes and behavior; and beneficial effects on other school subjects and the general life of the school."

The analysis of parents', teachers', and administrators' responses to questionnaires provided information with respect to their attitudes and observations during the four-year study "Beginning Reading" (Tanyzer, Alpert, and Sandel 1968). During the first two years of the study, parents indicated that the children were writing independently at home. The second-grade teachers reported that the writing ability of children in terms of independently being able to say what they want to, seem to be somewhat better when children are instructed in I.T.A. than when they are instructed in the irregular T.O. medium.

The third-grade teachers reported generally that the attitude of the I.T.A. children toward writing was considerably more positive than those of their T.O. counterparts. The teachers in this case, were not responding to the quality of a child's writing but to
the desire to write. The third-grade teachers’ comments with respect to vocabulary development and use generally favor the I.T.A. group. It is interesting to note that the third-grade teacher questionnaire, in its totality, does not seem to reveal the same high degree of positive reaction to I.T.A.-trained children that was observed among first-grade children when the questionnaires were answered two years previous. It is important to note that the third-grade teachers responding to this questionnaire were not teaching in I.T.A. in the classroom and virtually all the children whom they were instructing had made transition from I.T.A. previously.

The responses of the research officers, and principals, and the investigators concluded indicate that the writing ability of children instructed in I.T.A. seems to be uniformly noted suggesting that for many the benefits of I.T.A. were more observable in the writing area than in the reading area (361).

Carpenter (1968), an associate of McLuhan, has referred to writing as "fixing the flux of words and thought" (9). The process of "fixing" as a synthesis of the literature, suggests that the nature of thought to speech to writing through language which in turn is linked to the nature of thought, produces an individual’s pattern of linguistic communication. Although the relationship and interrelationship of thought, speech and writing are recognized, it appears to be the degree and order of relationship which is yet to be explored and defined. The present study is an effort in this direction.
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