ABSTRACT
         Cognitive confusion is the common state of young
persons in regard to concepts of units of writing. In the past 10
years, research has accumulated to show that all children pass
through the important stage of initial cognitive confusion in
learning to read. Children often confuse "writing" with "drawing,"
"letter" with "number," and so on. Cognitive confusion is a natural
outcome of normal environmental conditions which cannot be avoided,
but if it persists too long it may prevent the child from
understanding the task of learning to read. Several studies about
helping children to develop language concepts have been conducted.
The general key to improving this kind of concept learning is the use
of the language-experience approach. Children need experiences of
spoken and written language which are relevant to them and which
allow them to discover the functions of reading and writing. (TS)

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> I'm going to sove some mivvi·s.   See these mivvirs.
>
> Their names are ooth and op.   They say "hgugh".
>
> Who knows a zasp with the tauf "hgugh" in it?

What is this nonsense?   It is the same kind of nonsense that young beginners hear when they are learning to read.   They do not know the technical jargon teachers use to describe speech and writing.   "Sove" is as good a nonsense word to them as "write".   So also is "mivvirs" for "letters", "ooth" for "sea", "op" for "aitch", "zasp" for "word", "tauf" for "sound", and "hgugh" is the final sound of the Scottish "loch."   The child must puzzle out the meanings of these technical terms.   He does so by a series of hunches until he arrives at more or less the same concepts as his teacher has of these linguistic units.

In the past ten years research has accumulated to show that all children pass through this important stage of initial cognitive confusion in learning to read.   Furthermore, it has been recognized that all skills have this feature.   Fitts and Posner (10) reviewed all research on the psychology of skill development and found that one universal characteristic is this "cognitive phase".   Whether one is learning to play tennis, or learning to fly an airplane, or to send the morse code, or to read, this cognitive phase must be mastered.   One must discover what the skill is used for -- its function, and what are the important elements of the task to attend to -- the technical concepts and jargon for talking and thinking about the skill.

What is writing for?

The youngest beginners do not understand the function of writing (and print).   The Russian psychologist, Vygotsky (22) seems to have

been the first to note the importance of this lack of a concept of the function of the written form of language. He states that the child "feels no need for it and has only a vague idea of its usefulness". Reid's (19) study of Scottish school beginners led to a similar conclusion. She found that they showed a general lack of any notion "of the purpose and the use of it." Replication of Reid's study in England confirmed her finding (3). Vygotsky points out how difficult it is to motivate someone to learn the written form of language when he cannot see any use for it.

The "reading instruction register"

Linguistics provides reading teachers with rigorous concepts for thinking about language. One such term is "register". It may be defined simply as a special variety of language which can be placed in a separate category by the special social circumstances and functions of its use. Thus the reading instruction register is the special language used to talk about reading and its relation to speech. Behind this register lie the concepts of language which are used in thinking about reading and the task of learning how to do it. There is already a considerable body of evidence that most school beginners do not possess either the linguistic concepts or the register. The evidence comes from several different countries, indicating the universality of this initial cognitive confusion.

In Scotland, Reid's five-year-old beginners had "a great poverty of linguistic equipment to deal with the new experiences, calling letters 'numbers' and words 'names'." In England, the present author (3) replicated Reid's intensive interviews with five-year-olds with similar results. This English study went on to test some of the findings by experimental methods. For example, children had to say whether each of

the following auditory stimuli was or was not "a word": a bell ringing,

a voice saying the short e phoneme, a voice saying "milk", a voice say-

ing "fish and chips", a voice saying "She's a funny girl". Not one of

the five-year-olds tested said "Yes, it's a word" only to the stimulus

"milk" -- as the reading teacher would. Not all the children made

random guesses. They had hunches. For example, some showed that they

thought that "a word" was any chunk of meaningful speech. This confus-

ion seems quite natural, when one recognizes that human speech is not

chopped up into words. It flows on continuously and pauses within words

are sometimes longer than pauses between words. Experiments with the

concept of "a sound" (phoneme) showed the same confusion. Again this is

hardly surprising when one considers that speech is not segmented into

phonemes. Indeed the phoneme actually does not exist as a specific speech

sound. It is really an abstract category for a family of similar speech

sounds.

By now there is extensive evidence that the beginner's perception of

speech segments does not coincide with the units of "word" and "sound"

(phoneme) in the reading instruction register used by teachers (1, 9, 12,

13, 14).

Cognitive confusion is the common state of young beginners in

regard to concepts of units of writing (or print) too. Reid's Scottish

study and the present author's investigations in England showed how

five-year-olds confuse "writing" with "drawing", "letter" with "number",

and so on. In the United States, Meltzer and Herse (16) found similar

results with American first grade and kindergarten children. For example,

children were required to take a pair of scissors and cut "a word" from

a card with a sentence printed on it. They often cut off more than one

word or only a part of a long word. In New Zealand, Clay (2) gave

children two cards and asked them to slide them across a line of print

to show "just one word", "just one letter", and "just the first letter
of a word". She found that only about a half of her six-year-olds
could do this correctly at the end of the first year at school. Further
evidence of confusion over the technical concepts of writing has been
provided by Turnbull (20) in Australia and by Kingston, Weaver and Figa
(15) in America.

Practical significance

The practical classroom teacher may question -- does this initial
cognitive confusion matter? Won't the child pick up these concepts
later anyway? The answer is that research says that progress in reading
is related to an understanding of the reading instruction register, and
the way reading is taught currently makes cognitive confusion a hazard-
ous condition.

Francis (11) in her research on 50 boys and girls in a primary
school in the north of England found that the highest correlation (.41)
was between reading achievement and technical linguistic terms in the
reading instruction register. Furthermore, when general vocabulary was
statistically controlled, the correlation remained quite considerable
(.34). Therefore, Francis concluded "that factors independent of a
general ability to deal with abstract concepts were involved in learning
technical vocabulary and that these were closely related to the reading
process."

Another indication of the relevance of the reading instruction
register for success in learning to read comes from a Canadian study.
Downing, Ollila and Oliver (5) conducted a survey of reading readiness
in kindergartens at Vancouver, B.C. They found high correlations
between children's scores on a test of "the technical language of liter-
acy" and other conventional tests of reading readiness. For example,

the correlation was .55 with a letter-names test which is generally
regarded as the best predictor of first grade reading achievement.

Cognitive confusion is a natural outcome of normal environmental
conditions which cannot be avoided.   Speech is not segmented into the
units which have to be perceived in learning to read.   The act of reading
cannot be observed because it goes on in the head.   Therefore the child
cannot observe the task of reading and imitate it (although he tries to
do so).   Nevertheless, cognitive confusion is hazardous because our
society has created a critical period for learning to read. A successful
beginning must be made at the first grade level otherwise the consequences
are serious for the child.   Cognitive confusion, if it persists too long,
may prevent the child from understanding the task of learning to read
sufficiently well to beat the deadline of the end of grade one.

The lack of adequate consideration of this problem and any general
plan to help children toward cognitive clarity in the reading instruction
register is shown in an observation from Francis' study: "The use of
words like letter, word and sentence in teaching was not so much a direct
aid to instruction but a challenge to find their meaning".

Implications from research

Cause for optimism about helping children develop language concepts
and the corresponding reading instruction register is indicated by
several other research studies. They show that children do strive to
learn these linguistic concepts, and that their success in learning them
is related to experience and training.

Reid's Scottish study and the present author's investigations in
England (4) were both extended over one year.   Both studies found changes
in the children's concepts which indicated their striving to find the

real meaning of the linguistic terms used by their teachers.   A more

recent cross-sectional study in Canada established a relationship between

age and the sophistication of the concept of "a spoken word" (7).   Clay

has shown a similar improvement with age in her New Zealand studies of the

concepts of "a letter" and "a written word". Turnbull (21) in a second

study in Australia has attempted to trace the natural stages in the

development of the technical vocabulary of the reading instruction register.

Two studies have shown that differences in home background experiences

are related to learning these technical linguistic concepts and termin-

ology.   Both studies were conducted by Downing, Ollila and Oliver (5, 6).

The first found that children from Indian cultures with no literacy

tradition were significantly retarded in their development of the reading

instruction register in comparison with non-Indian children in the same

geographical areas.   The second was the survey of kindergarteners in

Vancouver, B.C.   Its aim was to compare youngsters from three socio-

economic groups: high, medium, and low.   The most important findings

were: (i) that the high socio-economic children had significantly superior

scores on the tests of linguistic concepts to those obtained by the other

two groups; and (ii) that after six months' experience in kindergarten

the children in the medium and low socio-economic groups had made consid-

erable progress toward catching up with their high socio-economic peers.

The most significant development in techniques for training children

in linguistic concepts comes from the U.S.S.R.   The Soviet psychologist

Elkonin (8) has created a method and materials to help children to learn

the concept of a phoneme and to understand that a word is composed of a

series of phonemes in a particular order in time.   Ollila, Johnson and

Downing (17) have taken Elkonin's Russian program and adapted it for

learning phoneme discrimination in English.   Experiments with Canadian

kindergarteners indicate that the adapted Russian program compares favor-
ably with two well-known published American reading readiness programs.

Guidelines for teaching

The Canadian experiment with Elkonin's concept training technique
has been so encouraging that the authors have broadened the program,
applying the same principles to a variety of activities designed to
teach linguistic concepts. The program is still experimental and further
research on its effectiveness has yet to be completed. The principles
on which the program is based provide guidelines for teachers who want
to develop their own methods for improving children's cognitive clarity
in learning the reading instruction register.

Teaching by simply telling is not helpful and may even worsen the
problem. The child who can recite without comprehension verbal rules
such as "when two vowels go walking together the first one does the
talking," knows nothing about the linguistic matter this rule is supposed
to explain. What is worse is that he knows that he knows nothing. A
negative self-concept develops. Formal isolated drills also are not
likely to help. They would be liable to obscure the concept of the
functions of reading and writing.

The general key to improving this kind of concept learning is the use,
for at least part of the instructional time, of the language-experience
approach. The child needs experiences of spoken and written language
which are relevant to him. This relevance allows him to discover the
function of reading and writing. These language-experiences can be
interpreted and handled by the teacher so as to provide sufficient reliable
information for the child to discover for himself the concepts of the read-
ing instruction register. For example, as the child dictates his message,
he sees his speech converted into writing. The teacher talks about the

"writing" as she writes. She asks the child about "the next word" and so on. In addition, there are many ways of helping children to become aware of linguistic units in their own speaking and listening experiences.

The important psychological principle to be borne in mind throughout is Piaget's (18) dictum:

Verbal forms evolve more slowly than actual understanding. Concept learning is a process of discovery. It is the discovery of the categories of thought used by the other people in the environment. "Rediscovering the wheel." is a derogatory expression among adults, but learning the concept of wheel literally is a matter of rediscovery. In learning the reading instruction register the child must rediscover the linguistic concepts which led to the invention of alphabetic writing.

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