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CANADIAN TEACHER  
OF THE DEAF

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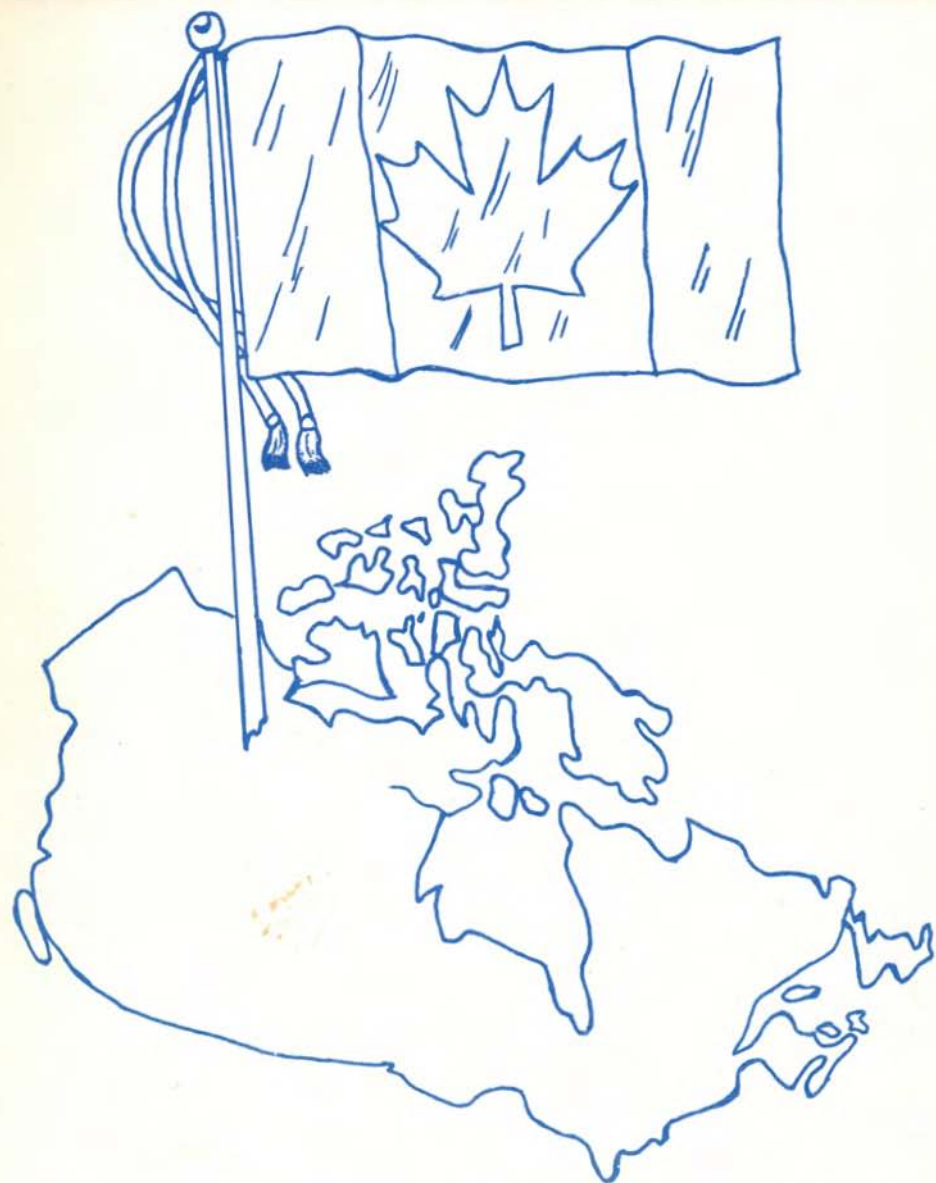
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# CONCEPT DEVELOPMENT STUDIES & THE CLASSROOM READING PERFORMANCE OF DEAF CHILDREN

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## *The Problem:*

*Teachers of the deaf are well aware of the fact that individuals who suffer a considerable loss of hearing pre-natally or in the early postnatal stages experience significant difficulty with reading. Our pupils of all ages prove this fact to us every day. Universal agreement has been reached on the fact that the great majority of deaf people are functionally illiterate despite our best efforts to assist them. Authorities in the Office of Demographic Studies, Gallaudet College have recently published the results of a survey of some 12,000 students attending schools and classes for the hearing impaired. Their figures of word meaning and paragraph meaning levels of less than grade two at age seven and approximately grade four at age seventeen provide us with a realistic, if discouraging, picture of reading achievement for the deaf of North America. This picture is little different from that painted earlier by Wrightstone, Aronow & Moskowitz (1962) who found that 88% of the 1000 sixteen year old Canadian and American deaf children in their study read at levels lower than grade five. It is readily apparent from such information that our success has not been too startling.*

## *Nonverbal Studies of Concept Development:*

It is obvious that we should investigate why the average deaf child does not read at levels approaching those of his hearing peer even though his tested intelligence level is within normal limits (Vernon, 1969; Myklebust,

1960; Hiskey, 1956). Unfortunately, there are no readily available studies, if indeed, there are any, probing deeply into "why" deaf children experience such difficulty with reading.

We are all cognizant of the work of Hans Furth. He has added a great deal to our knowledge of the conceptual development of deaf children and his present studies may yield information which will assist the deaf population in language acquisition. To date, however, the bulk of his published work has not been concerned primarily with language nor how language interacts with concept development. Rather his thesis has been that "The thinking processes of the deaf appear substantially similar to the hearing and must be explained without recourse to language." (Furth, 1966). He grants that the great majority of deaf people today are linguistically deficient, "As a direct result of linguistic incompetence...fail or are poor on all tasks which are specifically verbal or on a few nonverbal tasks in which linguistic habits afford a direct advantage." (Furth, 1965). From his theoretical considerations regarding the development of thinking processes in the deaf and his experiments which avoid language as much as possible, Furth manages to make a rather unfounded cognitive leap to hypothesize that nonverbal methods of communication and instruction in the earliest years would result in a resolution of the problem.

Many other researchers who have investigated the conceptual abilities of deaf children would not agree with Furth on the lack of significant im-

pact of verbal ability on conceptual thinking. Some, like Oleron argue that ing. Some, like Oleron, argue that performance on nonverbal tasks may benefit from verbal ability. Those who wish additional information on Furth's analysis of Oleron's studies and other nonverbal studies should consult an article by Furth, "Research with the Deaf: Implications for Language and Cognition", in the January, 1966, *Volta Review*. Studies such as the ones discussed in that article are most necessary if we are to obtain a knowledge of how conceptual thinking develops in children with no language as we understand it. The problem is that years of experimentation and re-experimentation, hypothesizing and re-hypothesizing will be demanded before a corpus of knowledge sufficient to aid us, in the classroom especially but also in the residence and in the home, is available.

#### *Definitions of Percept and Concept:*

Before we delve more deeply into the few studies which have dealt with some aspects of language functioning and concept development in deaf individuals it would be well to define percept and concept. I have referred to a thought provoking book by Englemann (1969) to find that definition most in accord with my thinking on concept development as it pertains to reading and the deaf. Percept may be defined as "a characteristic shared by all instances in a set", while concept is defined as "a set of characteristics that is shared by all instances in a particular set and only by those instances". By changing the composition of a set of instances we can change the concept. In this way it is possible to gain a different concept when we read of a set of ani-

mals characterized by hairy, four-footed, sharp-toothed and tailed than we do when we read of a set of animals who are hairy, four-footed, sharp-toothed, tailed and tree-dwelling. I have chosen these particular definitions since they emphasize that changing one characteristic (or word) can alter the concept under discussion significantly. Thus the loss of one word or part of one word through lack of familiarity with that word or part, through substituting another word, through changing of the word order or adding words or parts of words can affect the concept transmitted or taught through reading. Thus, "I saw the elephants go" conveys a different message than "I saw the elephant go, I see the elephant go" or "I saw elephants". Research has proven that deaf students do omit, add, substitute for words and alter word order more than do normally hearing children. (Rush, 1963; Myklebust, 1960; Goda, 1959; Heider and Heider 1941) In the light of such research the suggested definitions grow in meaning.

#### *Verbal Studies of Concept Development*

To date few studies have directly investigated the effect of verbal abilities among the deaf population on their development of concepts. Various researchers have commented on the effects of possible verbal mediation or the influence of language on tests of cognitive development (Furth, 1966; Ives, 1970) and on nonverbal measures of intelligence (Ives, 1970) but these comments do little to assist us in guiding the child to a higher level of reading ability. Rather than finding studies stressing linguistic ability we find individuals such as Ro-

senstein (1961) encouraging researchers to minimize or eliminate linguistic factors in their studies.

There are, however, a number of studies which do attempt to investigate the deaf individual's ability to order his world through the use of words. These tend to concentrate on whether or not individuals are able to order percepts under appropriate concepts and whether verbal reasons can be offered for the ordering presented. Hughes (1961) found that deaf youngsters 10 to 14 are inferior to the hearing with respect to words of higher and lower orders of generality or levels of abstraction and that the deaf, as a group, performed better at the percept than on the concept level. He had deaf and hearing individuals read familiar words of known difficulty level and sort them under known concept words. Though the deaf knew 163 of the 241 percept words and all the concept words, they were able to sort only 46 of the 163 (28%) under the correct concepts compared to 139 for 230 known percept words (60%) for the hearing. Hughes suggests that teachers teach what a concept isn't, as well as what it's, and that more low-order concepts in the abstract field be introduced relatively early in the educational programme if we are to narrow the gap between deaf and hearing individuals in concept attainment. Englemann makes this same suggestion to teachers of normally hearing children to bolster their concept attainment in his publication *Conceptual Learning* (1969).

#### *Conceptual Learning:*

McGrady (1964) puts forth a view quite at variance with Furth regarding the role of language in concept-

ualization. He suggests "The degree to which concept formation is dependent on language cannot be stated conclusively. Conceptual thinking may be possible through the categorization of images, but it's unlikely that normal levels of abstraction are attained in this manner...although certain types of conceptualization may not be influenced by deafness it is assumed that a general relationship does exist between difficulties with conceptualization and the degree of language deficiency imposed by deafness. "McGrady combined the views of Oleron, that appropriate training in language can result in heightened concept development, and the evidence from programmed instruction studies (Falconer, 1960; 1961; Fehr, 1962; Stuckless and Birch, 1962), indicating that programmed instruction was a useful method with deaf individuals, to construct a language-oriented programme to teach the concepts denoted by certain classificatory nouns. He found that after training via programmed instruction his deaf group and his hearing group performed similarly though on the pre-test the deaf group had nearly twice the number of errors of the hearing. His conclusion is that "training in abstract language forms can improve deaf childrens' ability in conceptual thinking", but warns against over-generalization of his results.

Kates, Kates and Michael (1962) combined nonverbal and verbal categorization studies using a deaf group matched to a hearing group on age and IQ, and another on school achievement and IQ and a deaf adult group with a hearing adult group matched on sex, age, IQ and occupational status. Primary among the few differences found between the deaf

and hearing groups was a disassociation between categorization and verbalization for the adolescent deaf group indicating "that adequate categorization processes can be operant while the verbalization processes that correspond to this categorization can be relatively inadequate". In general the deaf children performed much more like the younger hearing group matched on school achievement and IQ than like the older group matched on age and IQ. No significant differences were found between adult groups. The researchers suggest that their results support the thesis that differences between deaf and hearing subjects are developmental in nature and are removed by the effects of increased age, experience and education.

In summary it is safe to say that research involving conceptualization in the deaf individual has tended to avoid or minimize the role of language. Some, like Furth, hold that language is not an intrinsic element basic to the thinking process but others, like Oleron and McGrady, feel that there is an interrelationship of some type between thinking and language and that conceptual development cannot proceed in a completely normal manner without language. A few researchers have attempted to investigate the manner in which, or the degree to which, deaf and hearing individuals categorize percepts and concepts. General agreement has not been reached on whether deaf and hearing individuals develop thinking processes in a similar manner nor has the role of language in the development of thinking processes been clarified.

#### *The Classroom Situation:*

We have now been on a cursory

trip through "experimentation land", that land where deaf children are taken from their classrooms, homes or residences and given tasks which are designed to (and probably do) assess some aspects of their conceptualization abilities by individuals who, for the most part, have never worked with a deaf child in a classroom setting. Though my comments may strike you as critical of formal clinical experimentation such work is of the utmost importance and it is probable that, in the future, such experimentation will result in a corpus of knowledge giving rise to techniques, ideas and discoveries which will revolutionize classroom teaching. The present difficulty is that classroom teachers want to begin a little revolution immediately. They want to do better now. While accepting that they must be familiar with the basic problems of investigating the conceptual growth abilities of our deaf children they experience difficulty grasping the immediate application of nonverbal studies which deliberately limit language or of verbal studies which are based on ordering "cat" under "animals" or ball under "toys". They know the deaf children in our schools experience difficulties making connections between concepts and that they function at levels much more like younger than older hearing children. They know that if one's desire is to avoid the problems of language when studying aspects of being deaf, it is better to avoid asking deaf subjects to manipulate words, phrases and sentences. However, it is their desire and task to meet the language problem head-on in reading and other subjects, all of which involve reading, and the question for all classroom teachers is "What can we do about

the problems of building concepts, moving the mind and turning them on to learning that we are not doing now."

To me the best answer is to work directly on the language programme of the children we teach at any, & all, years of their school experience. Language should be defined as the whole realm of communication processes utilized with the deaf child in school, in residence and in the home. It can be considered synonymous with reading since the deaf child is always "reading" in one way or another and all of his "reading" involves language and the interrelationships of concepts mediated by language. I have the feeling that we have not realized the importance of considering the various methods we use to impart concepts and that we have not really been sensitive to the manner in which our methods interact. We are ignoring things we already know; we are too complacent with our role as teachers, houseparents and parents; we are too accepting to the apparent impossibility of conquering the problems in concept attainment faced by our deaf children; we have not made use of innovative thought in relating all the ways in which we lead the deaf child to read or use language in any form to increase or attempt to increase his overall level of conceptualization.

### *Language and Reading:*

As noted above, these 2 are relatively synonymous when we speak about the deaf population as a whole. I subscribe with some reservations to the theory that the average deaf person is able to read that which he is able to write, sign in connected language or say. That is, his impressive and expressive language are approximately

equal in quality and quantity. He is, in this respect, different than his hearing peer whose level of receiving meaning through reading is higher than his level of day to day expressive communication. It is possible that impressive and expressive language levels become less dependent on each other at some but stage but I feel this basic difference to hold between deaf and hearing population at the school-age levels.

From the earliest years in school we teach the deaf child to put his words together. It is not beyond the realm of possibility that the first word every profoundly deaf child in North America learns to speechread, say, read in print and to print is "ball". Depend- in our training we very quickly add the article or wait a year or so to move to "a ball". From whenever we do add the article we connect it to the noun in all possible situations. We do the same with colours, numbers, prepositions, pronouns,, etc. Simultaneously, if that word can be attached to a process stretching over a period of years, we fit plural forms, tenses, passive voice, indirect and direct narration and the balance of the pieces of our grammatical mosaic into the language programme and hopefully into the language repertoire of the deaf child. The fruit of our labours may be a production such as :

*"The family will go to the picnic. A little girl gave bread to dog. Mother see eat a basket on the table. Father play bat and ball with boy. A little dog stand up see to eat with girl..."*  
(Stuckless, 1964)

where the rules we have taught from the earliest years are sometimes and sometimes not applied.

Let us look at the example above.

What concepts do you receive and associate accurately when you listen to or read this passage? Can you be sure that you understand what this ten year old was trying to communicate? Has the picnic taken place or is it yet to take place? Did mother see a basket on the table? Did she eat it when she saw it? Did she eat something in it? Did she see someone eating from it? Did she just see the table and put the basket on it?

I suggest that the deaf child who expresses himself in such terms experiences difficulties similar to those we experience in reading this passage when he reads what we or others write. If so, then he will not associate concepts accurately even if he knows all the words (and we know how much time we must spend in every reading lesson teaching vocabulary). In my opinion every teacher of reading should be the teacher of language for a deaf child and that an analysis of the deaf child's expressive utterances be carried out to obtain information which will assist in the planning of the reading programme. A simple analysis of the passage from Stuckless indicates a problem with tensing. From the first sentence it appears that the picnic is yet to take place but then the child switches to the past tense with "gave" and then the present with "see eat, play" and "stand up see". A cursory look at the entire passage also reveals that no difficulty has been encountered when the article is required at the beginning of a sentence but that articles following the preposition do present difficulties. A quick analysis of this type in conjunction with analyses of other productions may lead the teacher to the conclusion that the child can work adequately with the future

tense but does not seem to realize that all statements regarding future actions must take the future tense and that indicating future in the opening sentence only is not sufficient. In addition the child is confused regarding the proper use of articles following prepositions. Through such simple analyses the perceptive teacher will gain some insight into the patterns of weaknesses any individual child has developed and be able to formulate a reading programme to strengthen these weaknesses and to build on strengths already existing. Perhaps in this particular case multi-tense material should be used with caution and appropriate instruction regarding the changing of tenses and the use of articles following prepositions should be planned.

#### *Grammatically Correct Responses:*

In reading we want the child to increase in comprehension, to correctly associate the concepts stimulated by reading, to evaluate these associations of concepts and to assimilate them. We do not want to confront him with the production of language patterns he handles incorrectly on an expressive basis without being aware of his weaknesses though we may want to expose him to them for their value as practical examples of what we have been teaching in language lessons based on his strengths and weaknesses. We err if we assess his responses to questions on reading as if every reading lesson were an exercise in grammatical exactitude. If a particular child responds "He think they be kind" to our query "What did Tom think when he first saw the natives?", should we correct his language immediately or should we store our knowledge of his grammatical errors for



use in a language period? Should we always ask only those questions to which we believe a child is able to respond with grammatical correctness or should we ask questions like that above which demand a relatively sophisticated level of conceptualization but for which the written answer will be a puzzle? If our purpose is to obtain responses as grammatically correct as possible we should use question forms which demand only literal comprehension of ideas, events and information which are explicitly stated in the passages read. If our purpose is to stimulate the acquisition, association and assimilation of concepts, we should use questions which demand inferential comprehension where a student must synthesize the content of a passage, his personal experience, his intuition and his imagination, evaluation where a student must make judgements based on comparisons with external criteria and appreciation where all the cognitive dimensions of reading are melded in dealing with the aesthetic and psychological impact of the passage on the reader. If we select this latter purpose, we must be willing to accept grammatical errors by the dozen but we may reap students who get more meaning and enjoyment from their reading.

#### *Types of Questions:*

It seems logical to move from the discussion of what kind of questions to one on whether we need questions in reading sessions. My answer is an unequivocal "yes". I believe students need guidance in their reading so that they might obtain the maximum benefit from their labours. Proper guidance can be motivating, clarifying, challenging and broadening. I do not accept the position, though, that

students should be faced with questions every time they read nor do I accept that answers must always be written. Nothing could turn me off more than five questions in the final fifteen minutes of every or nearly every reading period. Could a few well chosen words at the beginning of a session replace our traditional questions? Is it possible that the suggestion "Pretend you are Tom while you read today. Think about how he feels" could stimulate the imagination, stimulate insightful reading, broaden vocabulary and create a desire to read more? Is it possible that a quiet chat with one or two while the others read could be as valuable as having those students record five answers which you will correct at home or as a class exercise later? Is it possible that a few students could be trusted to chat about the story themselves without the assistance of the teacher?

#### *The Teacher's Role:*

Let us talk for a moment about you and I, teachers of the deaf by an act of God or at least of our respective governments. Did you know that some people think that one of the faults of the way we have been teaching reading is that it is too prone to overwhelming teacher involvement and minimal child involvement (Streng, 1965; Doctor, 1950)? Such people suggest that it might not be necessary to stop lessons to ensure that every child understands every word, that the teacher interferes with the individuality of the learning process by insisting that all read while the teacher reads aloud as a guide or points to each sentence on the blackboard or overhead, that the continual asking of questions interferes with the child's concentration on the task at hand. I am one of these people and I hope all

teachers of the deaf are others. Birch and Stuckless (1967), Amcoff (1968) and Power (1966) have proven that the deaf child is able to operate programmed instruction systems independently and that the child can actually learn on his own at times. There are a few reading programmes available through contact with other schools or individuals can create their own. Why should a teacher be popping up and down all the time and creating conditions in which no child could assimilate concepts smoothly when he can combine his own teaching skills, the child's need of his guidance and the knowledge of others to provide a truly stimulating, motivating programme? Use of such things as modified SRA Labs, Rebus kits, games and programmed materials will reduce the teacher's presence in the programme. It is more demanding to organize all the elements of such a programme compared to the demands of a basal reader programme but the teacher and his children will find reading much more enjoyable and profitable.

#### *Reading Material, Stimulation and Concept Development:*

I have mentioned basal readers in a perhaps derogatory manner. I do not mean to suggest that they are not a valuable part of a programme for individual children. My foregoing comments may lead one to the feeling that I do not agree with ten little deaf kids sitting in a row all with their fingers on the same word of the same page of the same book. Of course I don't. That does not mean that I think basal readers should be thrown out. Some children may find them interesting and may wish to read them. There are a great many concepts packed in-

to basals and these, as well as vocabulary, are fairly well controlled on a basis of sequential development principles applicable to hearing children. Hargis (1970) warns us, however, that we must be extremely careful in our choice of reading material, especially at the beginning stage, since the principles guiding the creation of basals result in materials which "do not contain the language controls and the scope and sequence of skills necessary for the typical deaf child to develop independence in reading and language." Carefully chosen readers should serve a useful purpose in an individualized reading programme in concert with multi-level reading materials, programmed reading materials, teacher created materials, appropriate magazines and newspapers. If the child has a wide range of material from which to choose and if he is allowed to choose material of interest to him without the artificial constraints of grammatically correct responses to all questions, literal comprehension questions only, teacher interference and lock-step reading practices, he will have a more stimulating relationship with reading and will develop conceptual skills and abilities at his own rate, according to his own interests and he will learn to read for enjoyment to a greater extent than he would in a traditional reading programme for deaf children.

#### *Summary:*

What are my definite suggestions for classroom teachers now? I have tried to summarize my thoughts and I ask the reader to take each one, to examine it in the light of his personal experience, his classroom, his children, and his situation and see if it

will meet any of his needs or the needs of his children. There can be no question that these suggestions are exhaustive and that every teacher will add his own to the list.

1. The teacher of reading and language should be the same person.

2. Continuing analyses of a child's expressive language should be maintained so that information gained regarding strengths and weaknesses can be used to assist in formulating a strong reading programme.

3. Caution must be maintained to avoid using reading materials too far beyond the child's language abilities as indicated by his expressive language but materials demanding performance at and just beyond his top level should form part, not all, of the reading programme.

4. Questions which may call forth grammatically incorrect responses should be asked if such questions will lead towards a greater degree of concept development. Grammatical correctness of reply should be a relatively minor factor in posing reading questions.

5. Questions should reach above the level of literal comprehension in order to motivate the child to use his powers of inference, evaluation and appreciation to stimulate concept development.

6. Questioning strategy should be planned to lead the child to read for more than the answers to a few ques-

tions at the end of the period and should place responsibility for insightful consideration of any passage on the child.

7. Teachers should consider themselves guides in the reading processes and the children should have opportunity to work independently.

8. The reading programme should present varied materials such as S.R.A. Labs, Rebus kits, programmed materials, basal readers, newspapers, games and magazines.

9. Lockstep reading practices using any type of materials are to be questioned seriously.

10. Group reading lessons should be rare.

Will these suggestions result in better reading levels for our children? I think so but my thoughts are yet to be proven. The problems of stimulating concepts of building concept association and interrelationships and of motivating our children to read more will be with us for many years to come. I am positive that we must do all we can now; that we must adapt more material for hearing children to our needs; that we must give more responsibility to our students and that we must suggest, support and initiate research in the classroom if we are to assist our students in meeting the manifold problems they experience with the verbal transmission of concepts through words.

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