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AUTHOR Day, Conley
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ABSTRACT

Because listening is a vital part of language learning, listening skills should be developed as a learning mode. Pre-listening skills should be taught just as pre-reading skills are taught. Children in command of the auditory perceptual abilities which contribute most to listening will transfer these abilities to increasingly difficult listening task, e.g., listening for comprehension. Six areas for pre-listening development have been isolated: perceiving the position of a stimulus in space and time, perceiving figure-ground relationship, perceiving stimulus constancy, perceiving spatial and temporal relationships, auditory-motor coordination, and perceiving the nature (structure) or the subject matter (sound). All six strategies are developed as listening tasks, first in the context of nonlinguistic sounds and then in the context of speech. A list of references is included. (Author/VM)

Pre-listening:

Teaching Toward Auditory Competence

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Conley Day

Training Director
Consultants in Total Education, Inc.
Dr. Robert D. Wilson, Director
1081 Gayley
Los Angeles, California 90024

Preliminaries

One canon of TESL over the years has been teaching listening as a basic communication skill. Yet few ESL programs have emphasized developing listening as a learning mode, even though research indicates elementary children spend up to sixty percent of their instructional time "learning" through listening (Wilt). Research also reveals high correlations between listening abilities and intelligence, language learning aptitude, and academic success (Keller, Carroll, Pimsleur, et al. (1966)). The implications are serious for ESL programs preparing students to compete and succeed in subject matter areas taught in the new language.

Nearly three years ago CITE set out to develop a set of materials capable of rendering listening an efficient learning mode. The design would be innovative, hopefully the model of a new perspective on the anatomy of the listening process.

Abercrombie's assumption that listening and reading are both decoding communication functions offered a promising approach to this new perspective. It was particularly intriguing in light of some recent work by Cross, Lane, and Sheppard, among others, who demonstrated empirically that subjects could transfer

learning from the auditory to the visual mode. This result suggested that the cognitive structures underlying listening and reading, or audition and vision, might be similar. And it afforded the hypothesis that similar perceptual and cognitive skills are required for both.

The objectives of this paper are first to elaborate on this hypothesis, and then to define the specific listening strategies which have emerged from it.

Decoding

All communication media mediate between the producer and the receiver, (Abercrombie). Communication requires encoding a message in some form, e.g., speaking or writing, and decoding that medium through an appropriate perceiving sense. In this context listening and reading are both decoding functions of communication; one applies to the spoken medium of language, and one to the written. All communication media are organized into some kind of pattern; writing is composed of symbols arranged in a spatial pattern, and speech of symbols in a temporal pattern. Decoding a medium involves deciphering not only individual symbols, but more importantly, patterns of symbols (ibid.). Listening and reading probably require similar decoding strategies, one for temporal and one for spatial patterns.

Pre-reading and pre-listening

The notion of decoding in reading has at least two interpretations. In one, decoding means recognizing grapheme-to-sound symbol correspondences in isolated letters, letters within words, and words within larger syntactic units; but deciphering meaning, i.e., understanding the intended message, is not implied. Decoding at this (elementary) level may be interpreted as a means toward the end of reading for meaning.[1] In the other interpretation decoding implies deciphering the intended message through grapheme-to-sound symbol correspondences. Decoding at this level may be thought of not as a means toward deciphering meaning, but rather as the end in itself.

In either case, most reading specialists agree that certain visual-perceptual skills are prerequisites to reading for meaning. (Russell; Crosby & Liston; Goodman; Frostig; Johnson & Myklebust; Dubnoff) A child cannot internalize the content of a passage until he is able to perceive similarities and differences between letter and word shapes, follow a sequence of symbols in a left-to-right sequence, and identify letters or words in different positions on a page. These visual perceptual abilities are essentially those needed to decode a pattern of

graphic symbols without meaning. (cf. note 1) To ensure that the child can decode at this level before being required to decode for meaning, reading practitioners teach these abilities as pre-reading skills, in specially devised pre-reading programs.

Neisser (1967) proposes a theory of analysis-by-synthesis for auditory cognition parallel to that for visual cognition. He supports, with a rich body of experimental evidence, notions of "subliminal attention," attention itself, motor response, and coding processes. Cross, Lane, and Sheppard demonstrated that stimulus identification and discrimination are readily transferrable from speech to nonspeech continua. Pimsleur and Bonkowski similarly demonstrated transfer of learning strategies across sensory modalities. This evidence supports the following hypothesis: Just as there are two levels of decoding in reading, so are there two levels of decoding in listening. The elementary stage requires development of specific perceptual abilities for deciphering symbolic patterns without meaning. The advanced level requires mastery of the first, and development of the higher level processes for abstracting thought and meaning from patterns. Just as pre-reading skills, as elementary level decoding abilities, are taught as

the basis for the learner's development in higher level reading decoding skills, so pre-listening skills should be taught as the basis for the learner's higher level listening decoding skills.

Among (pre-) reading specialists, those concerned with children who manifest visual perceptual and reading dysfunctions are most explicit about the skills necessary for elementary decoding of the written medium.[2] By studying perceptual deficits in the atypical child, they are able to describe the perceptual (cognitive) maturity necessary for the normal child to succeed in beginning reading.

The most comprehensive of such descriptions to date is The Frostig Program for the Development of Visual Perception, materials designed for use with neurologically handicapped children of any grade level, and all children in kindergarten and first grade. Their objective for normal children is to stimulate visual perceptual development before development of academic skills (e.g., reading, arithmetic, writing) is required. This objective is based on the assumption that children in command of the five visual perceptual abilities found to contribute most to reading success, will transfer these abilities to increasingly difficult reading tasks.[3]

CITE's objective is to stimulate auditory perceptual development as a prerequisite to listening for comprehension. CITE assumes that children in command of the auditory perceptual abilities which contribute most to listening will transfer these abilities to increasingly difficult listening tasks, e.g., listening for comprehension.

CITE pre-listening program

I will turn now to the program itself. It contains some 50 formal lessons (about 1,000 minutes of formal instruction) which concentrate on six listening strategies at the pre-comprehension level. Five are analogues of Frostig's five visual abilities; all are empirically supported in research in auditory perception. References for each will be listed, but due to time limitations, only one will be described here.

Perceiving the position of a stimulus in space and time

The first strategy is perceiving the position of a stimulus in space and time. This may be defined as the relationship of a sound source to the listener. Spatially, a person perceives sounds as coming from his side, or from behind, before, above, or below. Temporally, he hears sounds as occurring before, after, or while

doing something. Broadbent explained the familiar "cocktail party" phenomenon as a function of perceiving a sound source in space; the main basis for auditory selection is that different voices come from different places in the environment. By locating the position of a particular conversation in a noisy room, we can follow that conversation even if we can't see the speaker or identify him by voice quality. Accurate perception of a sound in time underlies the ability to correctly identify the sequence of events in a story, of sounds in words, and of words in utterances. The works of Thurlow, Mangels, and Runge; Treisman (1964); Alien; and MacKay, among others, indicate the importance of perception in space and time in listening ability.

Perceiving figure-ground relationships

The second strategy is perceiving figure-ground relationships. The importance of figure-ground is best understood when we consider that we perceive most clearly those things to which we turn our attention. "The human brain is so organized that it can select from the mass of incoming stimuli a limited number, which become the center of attention. These selected stimuli. . . form the figure in [our] perceptual field, while the majority of stimuli form a dimly perceived ground." (Frostig, 29) The figure-ground separation allows us to disregard sounds of

shuffling feet, slamming doors, and surrounding conversations, and maintain attention to the speaker in a lecture room. This same ability is used by a linguist in the field when attending to the sound system of a new language; he scans a corpus, listening only for particular sounds and their distribution (the figure), disregarding other data as temporarily irrelevant (the ground). For experimental evidence, cf. Cherry; Treisman (1964); and Poulton.

Perceiving stimulus constancy

The next strategy is perceiving stimulus constancy. This is the ability to recognize a stimulus as possessing certain invariant properties or distinctive features, such as sound quality, pitch, intensity, intonation patterns, or rhythm patterns. Constancy is the essence of form and pattern recognition, of expectancy, and of generalization: there is an element of constancy in all sets of stimuli which elicit a consistent response. For example, we recognize different speech samples as belonging to the same dialect on the basis of their constant, distinctive features, whether those samples are spoken by males, females, adults, or children.

As evidence, consid r Ladefoged's ingenious experiment with expectancy (and generalization). In six rials, his subjects heard the sentence; "Please say what this word is: _____", fol owed by bit, bet, bat, or but. Both the sentence and the test words were synthetic speech. Two versions of the sentence were recorded. In one version the range of e second formant was much lower than in the other. The formant range of the test ords, however, was held constant, somewhere between the ranges of the two introduc ory sentences. The effect of varying the formant structure of the introduct ry sentence in this way was similar to recording the sentence spoken by two dif ferent people (relationships between formants will be slightly different for ev(y speaker). This created the expectancy to hear each set of test words as diff(ent, although they were actually identical. Subjects did characteristically ju(e a synthesized test word as two different words, e.g., bit and bet, rather than a something that sounded in between bit and bet. That is, they reacted as if th(same test word had been spoken by two different individuals. In terms of perceptual co stancy, subjects adapted, or generalized to the constant features of the introduct y sentences and judged the test items accordingly. That is, the test words which f llowed the sentences were perceived in terms of the expected set of vowel constants. (e can refer to Skinner; Slawson; Huggins; and Menyuk and Anderson for other perspe tives on the notion of perceptual constancy.

Perceiving spatial and temporal relationships

Perception of spatial or temporal relationships between stimuli is similar to figure-ground, in that both involve the perception of relationships. The difference is that in figure-ground the perceptual field is divided into two parts, a prominent one and an unobtrusive one. But in perceiving spatial and temporal relationships any number of parts may be seen in relation to each other, and all of them are approximately equal in prominence. For example, accurate perception of temporal relationships allows one to discriminate and identify the words apt, pat, and tap. The feature which distinguishes these words from each other is the order in which the sounds of a, p, and t reach one's ears. Similar skill is required to respond accurately to the indirect command, "Mary, tell Tom to ask Bill if he rides the bus to school." Deficiency in the skill of perceiving temporal relationships between equally important parts of the sentence might result in Mary's telling Bill to ask Tom the question. Garrett, Bever, and Fodor; Broadbent and Gregory; Liberman, et al.; and Furth and Youniss are excellent sources for experimentation in perception of relationships between multiple stimuli.

Auditory-motor coordination

The final Frostig analogue is auditory-motor coordination, the ability to coordinate hearing with movements of (parts of) the body. The term "coordination" implies cooperation -- and to some degree separate development -- of two systems: perceptual (hearing) and motor (gross and fine muscle movement). That motor skill may develop independently is evidenced by the deaf child who learns to walk, write, and control oral musculature for eating, etc. But this child does not speak because there is no auditory perception developed with which to coordinate the articulatory musculature. Similarly, we know from experience that students learning a new language can often discriminate auditorily between minimal pairs, but cannot produce the distinction. Thus the degree to which auditory-motor coordination may develop must be dependent in part on the degree to which the auditory perceptual mechanism is developed, and this mechanism relies on the skills described as listening strategies above. For experiments requiring auditory-motor skill, refer to Menyuk; Menyuk and Anderson; Harris, Bastian, and Liberman; and Treisman (1960).

Perceiving the nature (structure) of the subject matter (sound)

The sixth strategy is learning to listen for the nature, or structure, of the subject matter: in a pre-listening program, that subject matter is sound itself.

This strategy follows from Bruner's notion that knowing the structure of the subject matter renders that subject more comprehensible, more easily remembered, and more readily transferred. The CITE pre-listening program contains the structure of sound, its components (pitch, intensity, quality, duration) and processes (intonation and rhythm), and presents them in both linguistic and nonlinguistic contexts. I might add, here, that all six strategies are developed as listening tasks, first in the context of nonlinguistic sounds, and then in the context of speech.

Conclusion

It is one thing to have the rationale for a curriculum area, like pre-listening. It is another to have the methodology and techniques that will effect the development of listening strategies in children. To this end, the methodology and techniques CITE uses in other subject areas are adopted in this strand, modified to fit the nature of the subject matter. But this is another paper in itself. Judging from responses of teachers and children thus far, the pre-listening materials seem to be achieving their desired effect.

CITE LISTENING STRATEGIES

STRATEGY = SKILL + HABITUAL USE

1 PERCEIVING STIMULUS POSITION IN SPACE AND TIME

(LEFT-RIGHT, BEFORE-AFTER ORIENTATION OF STIMULUS IN RELATION TO PERCEIVER)

2 PERCEIVING FIGURE-GROUND RELATIONSHIPS

(ATTENTION: SEPARATION OF RELEVANT AND IRRELEVANT STIMULI)

3 PERCEIVING STIMLUS CONSTANCY

(IDENTIFICATION AND GENERALIZATION BASED ON INVARIANT FEATURES OF STIMLUS)

4 PERCEIVING SPATIAL AND TEMPORAL RELATIONSHIPS

(RELATIONSHIPS BETWEEN MULTIPLE, EQUALLY PROMINENT STIMULI)

5 AUDITORY-MOTOR COORDINATION

(COORDINATION OF AUDITORY PERCEPTUAL AND MOTOR MECHANISMS)

6 PERCEIVING THE NATURE (STRUCTURE) OF THE SUBJECT MATTER (SOUND)

(COMPONENTS: PITCH, INTENSITY, DURATION, QUALITY; PROCESSES: INTONATION, RHYTHM)

EFFICIENT LISTENING ⇨ A LEARNING MODALITY

"COMPREHENSION" LISTENING

abstracting meaning (the intended message)

from perceived patterns

higher-level cognitive (inquiry) skills

"PRE-(COMPREHENSION)" LISTENING

deciphering symbolic patterns without

abstacting meaning (the intended message)

lower-level cognitive (perceptual) skills

Notes

1 This is not to say that a child decoding at this level will never derive meaning from the code. In fact, lexical meaning may be used intentionally as a motivation device. E.g., use of words like ship, sheep, cat, or rat are intended to interest the learner in deciphering the written code. "Without meaning" at this level simply means that the emphasis is on decoding graphemic patterns, rather than on reading for comprehension and recall of an intended message.

2 See particularly: Dubnoff (1961), Crosby & Liston (1968), Johnson & Myklebust (1967), Frostig (1964), Laval (1969).

3 The five critical abilities were determined on the basis of an intensive investigation of visual perceptual development in normal and neurologically handicapped children. "[These] findings have confirmed the work of other investigators." (Frostig, 10)

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