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Strategies for Second-Language Acquisition in the Elementary School Classroom

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STRATEGIES FOR SECOND-LANGUAGE ACQUISITION IN THE ELEMENTARY SCHOOL CLASSROOM

Submitted in Partial Fulfillment of
the Requirements for the Degree
of Master of Arts
The Lindenwood Colleges

By

Grace C. Washington

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I. PURPOSE OF THE STUDY

Statement of the Problem

According to estimates by the National Institute of Education and the National Center for Educational Statistics as published in the Federal Register (August 5, 1980), over three and one-half million children of school age in the United States have limited proficiency in the English language. The largest group of these children is Hispanic. The second largest group is Asian; these children may speak Cambodian, Chinese, Laotian, Vietnamese, or other Asian tongues. In the March 1980 issue of The Linguistic Reporter, Grognet estimated that there were over 300,000 Indochinese refugees living in the United States. At the time of this study, immigration quotas for Indochinese refugees are an average of 14,000 refugees each month. If even one-sixth of these refugees are children between the ages of six and eleven years,* then each month, over 2,000 Indochinese children can be expected to enter elementary school systems in towns and cities throughout the United States.

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*A profile of Vietnamese refugees in the United States at the end of 1978 showed 14.68%, or about one-sixth, were children between the ages of six and eleven years. See Vietnamese Americans: Patterns of Resettlement and Socioeconomic Adaptation in the United States by Darrell Montero.

Largely in response to the needs of the Hispanic group, the Bilingual Education Act was passed in 1967. As Title VII of the Elementary and Secondary Education Act, this act provided that federal funds be authorized to support bilingual education programs in elementary and secondary schools. In 1974, the United States Supreme Court, in Lau vs. Nichols, mandated special steps for integrating limited-English-speaking students into American schools. Policies to implement this decision have been to prescribe instruction in a student's strongest language until he became proficient in English and supplementary instruction in English as a second language. The availability of bilingual education programs and of ESL (English as a second language) programs would seem to mitigate against the limited-English-speaking child being required to "sink or swim" in an American school where he does not know the language of instruction. According to Urzúa (personal communication), however, thousands of children enter American schools with little, if any, benefit from bilingual education or ESL instruction.

This must surely be the case where, for example, Indochinese refugees are dispersed in many areas of the country so that only a few students may enter any one school, or school district. In such a situation, it is unlikely that the goals of bilingual education are being met: there are insufficient numbers of people who are bilingual in English and Laotian, for example, not to speak of trained bilingual education teachers or aides, to be able to implement programs in every place where there are Laotian children. Nor do sufficient bilingual materials exist. And finally, qualified ESL teachers are not to be found in every place where there are Laotian children. Prescribing bilingual education as the means of integrating the limited-English-speaking child into the American school system, then, fails to provide schools and teachers who have few limited-English-speaking children with advice that can be implemented practicably.

The goal of this study was to make some practical suggestions for elementary school programs and teachers to facilitate integration of limited-English-speaking children into classrooms where there are few limited-English-speaking children in the school and where there is no bilingual or ESL staff. As a means to this end, the study attempted to identify and evaluate cognitive and social strategies that three limited-English-speaking children used in the process of acquiring English, specifically their strategies to obtain language input and to encourage interaction, and the strategies that the children's regular classroom teachers used to provide input and to encourage interaction in the formal classroom setting in the elementary school.

The three children studied were of particular interest because they had been observed to be shy children who did not tend to interact verbally a great deal. Such children lack some of the attributes of a successful second-language learner (Wong-Fillmore 1976). Social interaction is of great importance in second-language acquisition. Since the classroom setting comprises a large proportion of the child's school environment, the teacher forms an important part of the child's interactional group. For this reason, shy children are good subjects to study since the teacher will have more input and the data will show more of what the teacher can do.

The method of the study was to investigate through observations and tape recordings in the regular classroom what actually happened to three Indochinese children of elementary-school age after they entered a small elementary school in a somewhat isolated setting. Observations were made during the first twelve weeks of the regular school year. Before the children entered the public school system, they had been exposed to English in an English-language program of a private refugee-resettlement agency.

Hypotheses

The first hypothesis of the study was that the shy child would initially fail to demonstrate some of the successful learner strategies identified by Wong-Fillmore (1976), such as "Get some expressions you understand, and start talking." It was hypothesized that the shy child would engage in less verbal interaction and demonstrate fewer of the social skills identified by Wong-Fillmore, but that the child might employ strategies in the cognitive area to make up for her weaknesses in social areas.

The second hypothesis of the study was that the child's teacher would be able to facilitate interaction and successful learner strategy in much the same way as a "caretaker" facilitates a child's first-language development, that is, that the teacher would be able to provide meaningful input to the child and would be able to help manage discourse, much as a mother does in conversation with her child.

The third hypothesis of the study was that the task of learning the second language would be easier for the ten- or eleven-year-old child because of the child's superior cognitive and social skills than for younger children, but that the task would be somewhat more difficult for the teacher of this child because of the nature of the subject matter being taught.

Limitations of the Study

The study was limited to children from only one culture and thus does not provide information about cultural variables. In addition, the study was limited to children from a single family and thus does not provide information about socio-economic variables.

The study was limited to consideration of children of elementary-school age. Thus, any conclusions drawn from the results of the study are applicable only to children in this setting; they cannot be generalized to adolescents in secondary schools. It is important to keep this distinction in mind.

The study was limited to children who had attended school in Vietnam and thus does not address the problem of a nine-year-old limited-English-speaking child with no previous schooling.

Finally, the study does not provide analyses of students' verbal performance. Little verbal production was expected, and it was not the goal of the study to measure verbal performance or to analyze production errors.

Definitions

ESL and Bilingual Education. ESL (English as a second language) programs have traditionally been distinguished from bilingual education programs. The goal of ESL instruction has been to teach the English language, as language, to limited-English-speaking students. Commonly, English is the medium of instruction in ESL classes. In a monolingual school, English is also the medium of instruction for all content areas.

Bilingual education programs can be of many types: total immersion in which the sole medium of instruction for a given length of time is the second language; partial immersion in which the medium of instruction for some content areas is the first language and for other content areas is the second language; and a mixed type in which both the first and second languages are used in a single class. Programs can be designed to maintain both languages or to provide a transition to a monolingual program. Most bilingual education programs in the United States are transitional, partial immersion programs. Most include, in addition, an ESL component.

Language Acquisition and Language Learning. In this study, the term language acquisition is used to describe the process by which language is learned unconsciously. The most apparent example is a child's acquisition of his first language. The term language learning is used to describe the formal and conscious process by which a language is learned. The most apparent example is the formal learning that characterizes foreign language study.

Organization of the Study

To be able to identify and evaluate cognitive and social strategies the learner uses in acquiring a second language, one must have a general understanding of the theory of language acquisition. Thus, this report begins with an overview of language-acquisition theory in Chapter II. Because of the importance of what is known about first-language acquisition, consideration is given to the "what" and "how" of the child's acquisition of his first language. The relationship of knowledge about first-language acquisition and second-language acquisition is considered next. The distinguishing characteristics of second-language acquisition in children are described, with particular attention given to the role of input, that is, the language the child hears. This is important for understanding the cognitive and social strategies of teachers of limited-English-speaking children. Finally, attention is given to the methods commonly used in teaching children second languages.

Chapter III presents the description of the study: the selection of subjects, the setting, the method of data collection, the treatment of the data, and the role of the investigator. The findings of the study about student and teacher cognitive and social strategies are presented and discussed.

Chapter IV contains the conclusions of the study and practical recommendations for elementary-school programs and teachers.

II. THEORETICAL BACKGROUND

First-Language Acquisition

What the Child Learns

Language acquisition is in many ways a life-long process. Yet the most notable advances occur in childhood, particularly in early childhood between the ages of about two and five. What happens to the child after this age, however? One might expect that his language development would continue, especially given the influence of formal schooling and the development of capabilities of abstract reasoning and of better memory retention. In fact, the older child's language does continue to develop, although perhaps in not so remarkable a manner as in his early years.

The development of the child's language is generally divided into early, middle, and later stages. The early period occurs from the ages of about four months to three years. At about four months, the child will begin to produce sounds that approximate speech, that is, to babble. At the age of about ten to fifteen months, the child will have a significant repertoire of words which he will join into two-word utterances. There seems to be no three-word stage in child language. Moskowitz describes the next steps:

> For a few years after the end of the two-word stage children do produce rather short sentences, but the almost inviolable length constraints that characterized the first two stages have disappeared. (1978:98)

During this period, the child uses short simple sentences made up principally of content words (nouns, verbs, adjectives, and adverbs). Function words are added gradually.

The middle period in the child's language development occurs from the ages of about three to five or six years. "By the age of 3 or so, the child has usually reached the final stage in the development of negatives and questions. Utterances can be relatively complex but still contain syntactic errors" (McLaughlin 1978:41). The child has begun to use the auxiliary system and complex sentence forms. The child uses consistent patterns, as of word order, for example. Overgeneralizations such as 'He goed' and 'He breaked' are common.

Semantic development continues during the middle stage. Children in this stage are also capable of shifting codes, that is, they modify their speech with different people and in different circumstances. By the end of this period, "The child is said to have achieved basic linguistic competence and can talk about things that are removed in time and space, using the rules of a particular language" (Menyuk 1977:52).

Less clear-cut description can be provided of the child's language development in the later stage, which takes place from the ages of about six to ten years. O'Donnell, Griffin, and Norris (1967) point out in their study of the syntax of kindergarten and elementary school children that no item of syntax was found to be absent in the speech of younger children; rather, items which were used infrequently at age six were used more frequently by children at age ten. Thus, no evidence was found to indicate that particular structures were acquired only after the age of six or seven. Their study suggests that progress may be identified with achievement of flexibility with patterns of structure already acquired. In another study of syntactic development, C. Chomsky (1969) found that children between the years five and ten had trouble interpreting some complex syntactic structures where there were no contextual or semantic clues: 'John promised Bill to go'.

Semantic development also continues. Menyuk points out that as the child matures, overextension of the use of words decreases: "The use of more and more abstract features to group words increases with maturation" (Menyuk 1977: 104). In later years, the child may learn to think about and become consciously aware of the meaning of lexical items and to employ this awareness in linguistic tasks. Menyuk provides this summary of later language development:

> Lexical acquisition can take place continuously, and . . . this can affect the structure of the semantic relations understood and their syntactic expression. The structural complexity of the utterances produced and understood increases in some aspects throughout the elementary grades and, presumably beyond . . . .

> Phonological knowledge in the form of stress rules within differing constructions . . . and vowel shift within words also continues throughout the elementary grades and adolescence. (1977:123)

How the Child Learns

To describe what the child learns is far easier than to describe how the child learns what he knows and manifests. A theory of language learning, if it is to be adequate, " . . . must provide us with a list of the necessary and sufficient conditions for there to be a change in a person's knowledge that is reflected in behavior, and furthermore, specify the constraints on the form that change in knowledge will take" (deVilliers and deVilliers 1978:272). Although we know a great deal about child language acquisition, no theory of learning yet proposed fully meets these requirements for adequacy.

Among major contemporary theories is that associated with Skinner's behaviorist psychology and Bloomfield's structural linguistics. This is an empiricist view of language learning which sees language as a function of imitation, reinforcement, and habit formation. Non-observable, innate characteristics of mind are down-played or denied in this theory. Drawing on the existence of many and diverse languages, the argument is that language is learned from experience. The child learns what is correct in language in the same way as he learns other behavioral patterns, and errors are corrected through selective reinforcement from the verbal community.

Weaknesses began to appear in the behaviorist theory as studies showed that imitation, correction, and reinforcement, in the behaviorist sense, did not appear to be necessary for language acquisition. DeVilliers and deVilliers (1978) report several studies about the selectivity of imitation. Not everything heard is imitated. DuPreez found that the child tends to imitate the ends of sentences or the stressed word of a sentence. Many child utterances are not imitations at all--'I goed', for example. Brown studied the speech records of three children--Adam, Eve, and Sarah--and their parents and found that parental remarks of approval or disapproval of child utterances were unrelated to syntactic correctness. Rather, parents attended to truth values, as these examples show:

> Eve: Mama isn't boy, he a girl.
> Mother: That's right.
>
> Adam: And Walt Disney comes on Tuesday.
> Mother: No, he does not.
> (Brown, quoted in Cazden 1972:115)

The mother affirmed the truth value of Eve's grammatically incorrect utterance, while the mother of Adam corrected the truth value of Adam's grammatically correct utterance.

More important, however, is the fact that the behaviorist theory cannot account for the infinite number of sentences that can be generated in a language. A finite base of experienced language and imitation, correction, and reinforcement are simply inadequate to explain the fact that the child can utter sentences he has never heard before. Something else must be at work at account for this creative aspect of language acquisition and use.

In the forefront of the attack on behaviorist theory was Chomsky, who postulated innate mechanisms by which the child learns language; experience merely serves to activate these innate mechanisms:

> A child who is capable of language learning must have . . . a technique for representing input signals, . . . a way of representing structural information about these signals, . . . some initial delimitation of a class of possible hypotheses about language structure, . . . a method for determining what each such hypothesis implies with respect to each sentence, . . . a method for selecting one of the (presumably, infinitely many) hypotheses that are allowed . . . and are compatible with the given primary linguistic data. (Chomsky 1965:30)

Speakers of a language are said to be creative in the Chomskyan sense since they can express an infinite number of thoughts using sentences they have never heard before because they have internalized a system of rules that govern ordinary language use; they do not generate sentences as a result of having heard, imitated, and memorized them. In language acquisition, learners are said to be creative in that they have a certain independence from external factors such as modeled utterances, frequency of occurrence, or reward systems. This aspect of language acquisition is believed to be rooted in innate and universal structural properties of the mind.

Chomsky's own theory has come under attack as research has exposed some of its weaknesses. In its emphasis on the child's innate 'Language Acquisition Device' and the child's formation of a theory of the grammar of the language he is learning, Chomsky's theory fails to take account of meaning. It deals with the structural characteristics of language in abstraction. Granted that language acquisition may be an innate capacity of man, to isolate this from the world in which man lives, from meaning, is untenable. Moskowitz writes:

> Whatever the built-in properties the brain brings to the task of language learning may be, it is now known that a child who hears no language learns no language, and that a child learns only the language spoken in her environment. (1977:94)

Researchers began to see that we need to know more than what it is that people know in order to comprehend and produce sentences, that is, we need to know more than their grammar. We also need to know what it is that people do in such comprehension and production, what processes occur. Researchers consequently began to look at processes in real time and to consider the child's innate abilities to be more a part of his general cognitive abilities than of peculiarly linguistic abilities that Chomsky attributed to the child.

Process or performance models attempt to look at how language is processed and how it is manifested behaviorally. Within these models, the minimum capabilities the child must have to acquire language include the following:

1. Perceptual abilities to organize perceptually a string of sounds
2. Immediate memory storage capacity
3. Long-term memory storage capacity
4. Ability to process phonological, lexical, and syntactic information
5. Ability to organize output
6. Appropriate motor behavior skills

Ervin-Tripp believes we also " . . . have heuristic devices which allow us to listen with minimal attention, to process with great rapidity and minimal analysis" (1973:97).

Clark and Clark allude to perceptual, cognitive, and social factors in language learning:

> Language does not exist in a vacuum. It serves and is molded by other systems in the human mind. Because it is used for conveying ideas, its structure and function must reflect these ideas. Because it must be spoken and understood easily and efficiently, its structure and function are forced to stay within the limits imposed by people's processing capacities. Because it is used for communication within a complex social and cultural system, its structure and function are molded by these forces as well (1977:277).

More recently, attention is being given to broader views of language in its social context. This has led to study of the role of discourse in language acquisition. Discourse analysis studies are of two general types: discourse rules--turn-taking, opening and closing conversations, interruption, asides, etc.--and pragmatic functions of speech acts. Consideration of the role of discourse has led, in turn, to study of input--that is, speech directed to the child, particularly the speech of mothers which is directed to their children. Finally, attention is now being given to the interactional aspects of mother-child discourse.

The Role of Input

Chomsky claimed that children could not possibly learn language from the deficient and degenerate speech to which they are exposed without their possessing innate knowledge of "universal grammar":

> The child must acquire a generative grammar of his language on the basis of a fairly restricted amount of evidence . . . of a highly degraded sort . . . that consists, to a large extent, of utterances that break rules, since a good deal of normal speech consists of false starts, disconnected phrases, and other deviations . . . . As a language learner, he acquires a grammar that characterizes much of the evidence on which it was based as deviant and anomalous. (Chomsky 1972:158-159)

Chomsky goes on to say that

> To account for this achievement, we must postulate a sufficiently rich internal structure--a sufficiently restricted theory of universal grammar that constitutes his contribution to language acquisition. (Chomsky 1972:159)

Since these assertions, many studies have been conducted of mothers' speech to their children which suggest Chomsky's characterization is not applicable to the speech of mothers directed to their children. Brown writes that the evidence of motherese , as mothers' speech to their children is now called, in studies in

> Arabic, Berber, Cocopa, Comanche, English, French, Gilyak, Greek, Hidatsa, Japanese,

> Kannada, Kipsigis, Latvian, Juo, Maltese, Marathi, Romanian, Spanish . . . refutes overwhelmingly the rather off-hand assertions of Chomsky and his followers that the preschool child could not learn language from the complex but syntactically degenerate sample his parents provide without the aid of an elaborate innate component. But it has turned out that parental speech is well formed and finely turned to the child's psycholinguistic capacity. (1977:20)

Ferguson refers to motherese, or baby talk, as an example of a simplified register, where simplified registers are ways of addressing "people felt to be unable to understand normal adult speech" (Brown 1977:3). Simplifying and clarifying processes characterize motherese, as Snow describes:

> The broad outlines of mothers' speech to children--that it is simple and redundant, that it contains many questions, many imperatives, few past tenses, few co- or subordinations, and few disfluencies, and that it is pitched higher and has an exaggerated intonation pattern--are quite well established. (1977:36)

Early studies of mothers' speech were cross-sectional and took their cues from child language studies of syntax. They simply described the characteristics of mothers' speech when they were talking to children. These early studies were of prosodic features (rate of speech, disfluencies, pitch, etc.), grammatical complexity, and redundancy (repetition, paraphrase, etc.). Over 100 characteristics have been identified. Some major characteristics appear in table 1.

TABLE 1

SOME MAJOR CHARACTERISTICS OF MOTHERESE

I. Discourse Features

- Semantically Related Discourse Features
  - Imitation
    - Child: Big truck. (Pointing to a truck)
    - Mother: Big truck.
  - Complete Expansion
    - Child: Big truck.
    - Mother: That's a big truck.
  - Incomplete Expansion
    - Child: Big truck.
    - Mother: A big truck.
  - Elaborated Expansion:
    - Child: Big truck.
    - Mother: Yes, that's a big red truck.
  - Transformed Expansion:
    - Child: Big truck.
    - Mother: Is that a big truck?
  - Semantic Extension (Noun Phrase)
    - Child: Big truck.
    - Mother: The big truck is red.
  - Semantic Extension (Pronoun)
    - Child: Big truck.
    - Mother: It's red.
- Maternal Self-Repetitions
  - Paraphrase
    - Mother: The truck is going fast. The truck is moving fast.
  - Exact
    - Mother: The truck is going fast. The truck is going fast.
  - Partial
    - Mother: The truck is going fast. Going fast.
- Stock Expressions
  - Mother: Good girl.

TABLE 1--Continued

- Reference Features
  - Immediate to Child's Activity
    - Mother: The truck is going fast. (To child playing with a toy truck)
  - Immediate to Mother's Activity
    - Mother: Look at my truck. (To child, but referring to a toy truck the mother is playing with)
- Prosodic Features
  - Slower rate of speech than with adults
  - Distinct segmentation
  - Few disfluencies

II. Syntactical Features

- Well-Formedness
  - Many complete sentences
- Sentence Types
  - Questions
    - Mother: Where is the truck?
    - Mother: Is the truck big?
  - Imperatives
    - Mother: Look at the truck.
  - Declaratives
    - Mother: The truck is red.
  - Deictic Statements
    - Mother: That's a truck.
- Complexity
  - Short utterance length
  - Simple structure
  - Many content words

Early studies also showed differences in complexity of mothers' speech in different situations. Bakker-Renes and Hoefnagel-Höhle, cited in Snow and Ferguson, " . . . found that mothers' speech was more complex in free situations than in caretaking situations, and most complex in book-reading, as measured by length of utterance and length of paraphrase" (1977:37). Snow speculates that

> it might be that the need to communicate efficiently produces simpler speech in the caretaking situations, and that the extra situational support of pictures in the book-reading situation limits the possible topics sufficiently that the comments can be more elaborated than in less well-defined situations. (Snow 1977:37)

While descriptions of input were valuable in demonstrating the well-formedness and simplifying and clarifying features of mothers' speech to children, they did not demonstrate a direct relationship between input and language acquisition. By describing mothers' speech--the input--in isolation, these studies failed to pay attention to what the child was saying or doing. Snow observes that

> . . . the notion that mothers' speech, like children's speech, occurs in conversations . . . and that the need to communicate with one's conversational partner affects the structure of one's utterances, had not yet affected the way research into mothers' speech was carried out. (Snow 1977:32)

Researchers began to look at the interactional aspects of mother-child discourse. Cross (1977) studied mother-child interaction using the following mothers' speech parameters: discourse features, referential features, conversational style, and syntactic features. The study was of middle-class, English-speaking mother-and-child pairs. The children showed advanced language acquisition as measured by scores of several tests. The mothers selected also had

> four- to six-year-old children at school or kindergarten whose teachers assessed them as being well in advance of their age norms in language use and comprehension. If the input does indeed play an important role in acquisition, it was assumed that mothers with two rapidly developing children would be providing optimally appropriate linguistic inputs and thus were an ideal sample to observe the kinds of interactions which promote acquisition. (Cross 1977:154-155)

A detailed description of mothers' speech parameters studied by Cross appears in appendix A.

Cross concludes that, while many questions remain unanswered, the " . . . question of whether the input to rapidly developing children is potentially organized to facilitate their acquisition process . . . " (1977:182) must be answered yes. The most striking results are at the discourse level:

> Most discourse features . . . , i.e., expansions, self-repetitions and stock phrases, are highly negatively correlated with all measures of the child's language skill but particularly with the child's receptive ability. Semantically new and isolated utterances on the other hand increased significantly with both age and receptive ability. (Cross 1977:163)

Most of the originals of repetitions tended to be imperatives and questions. Fifty-five percent of mothers' utterances incorporated exactly or referred to the child's previous topic. The remainder consisted largely of exact imitations of child utterances, one-word utterances, and stock phrases.

Among referential features which had significant correlations were mothers' references to her child's activity, which decrease with the child's language maturity, " . . . while those to other persons in the immediate situation increase with child comprehensibility. . . . Utterances referring to non-immediate events are very positively related to the language measures, particularly the receptive test" (Cross 1977:163).

Few syntactic features were significantly correlated. While there were correlations, such as mean utterance length and percent of utterances longer than six morphemes, Cross concludes from comparison with the discourse data that the syntactic correlations more likely reflect semantic complexity than syntactic fine tuning.

Cross concludes:

> The best evidence that the input may play an important facilitative role in these children's acquisition processes is provided by the finding that, in general, the mothers' discourse adjustments were most closely associated with measures of the children's psycholinguistic, linguistic and communicative abilities (i.e. receptive control, maximum output, mean utterance length and comprehensibility). (1977:166)

> Of the 18 significant parameters, the child's receptive control is the best predictor of mothers' discourse adjustments on 11 occasions, his extended production, comprehensibility and vocabulary twice each, and the child's age once. (1977:166)

The mothers studied appeared to be keenly sensitive to their children's receptive abilities and extended production capacity. Correlations with the child's mean length of utterance failed to reach the same levels:

> Thus it seems that the mothers are sensitive to abilities or capacities which may underlie the majority of the child's utterances. The measures that most strongly predict their adjustments suggest that we should attribute to them ability to monitor the child's psycholinguistic abilities rather than the characteristic level of his spontaneous speech. (Cross 1977: 167)

In a longitudinal study of mothers' speech, Ringler (1978) found that mothers' speech rate increased with the age of the child:

> There was a 300% increase in the amount of speech from age one to age two. This increased amount of speech may indicate that the mothers were sensitive to the child's increased processing ability and increased comprehension. (Ringler 1978:153)

Ringler also found that longer utterances were addressed to the older child. The mothers' mean length of utterance to the two-year-old child was above three words, compared to less than two words to the one-year-old child.

Cross's study revealed conversational turn-taking in discourse between mother and child at a ratio of about one-to-one. Snow (cited in Lieven 1978) found that mothers were very effective in keeping the conversation going and that the children were

> . . . reasonably adequate turn-takers by this age although in other respects their language was not particularly advanced. Looking at conversations between these mothers and their children from 3 to 18 months, . . . [Snow] showed how the mothers treated their children as partners from a very early age and how initially they would accept almost anything (e.g. a burp) as constituting the baby's turn. As the children grew older, the mothers became more stringent in their criterion of what was an acceptable utterance on the part of the child, although they were still willing to accept almost any conversational opening on the part of the child and to fill in for the child whenever necessary. (Lieven 1978:174)

Whether the mother's speech is carefully attuned to the child's cognitive development may affect language acquisition. Snow cites Nelson's 1978 monograph which

> . . . concluded that language acquisition is retarded if the linguistic input is of poor quality in the sense of not matching the child's cognitive organization. This finding indicates the importance of taking individual differences between children, and thus between appropriate styles for interacting with those children, into account when evaluating maternal speech . . . . (1977:39)

This kind of evidence suggests that mothers adjust their speech very carefully to children's psycholinguistic development. This kind of adjustment is known as fine-tuning. In mother-child interaction, the child, too, is seen as playing an active role, providing clues as to his comprehension, thereby helping to control input, and paying selective attention, turning off input he can't understand or that is too complex. Brown believes that study of " . . . detailed mother-child interaction shows that successful communication on one level is always the launching platform for attempts at communication on a more adult level" (1977:15). Further, " . . . communication is the most important single determinant of tuning, more important than grosser, less psychological, variables such as mean length of utterance (MLU) or age" (Brown 1977:13).

Second-Language Acquisition Research

Less work has been done in second-language-acquisition research than in first-language-acquisition research, and second-language-acquisition research has been greatly influenced by research on first-language acquisition as well as by linguistics. Most theories about the acquisition process alternate between claims that the second-language acquisition process replicates the first-language-acquisition process and the counter-claim that it does not. Over the past three decades, four general phases of second-language-acquisition research can be identified: contrastive analysis, error analysis, performance analysis, and discourse analysis.

Contrastive Analysis

This area of research was greatly influenced by structural linguistics, the basic goal of which " . . . was to characterize the . . . structure of sentences in terms of their grammatical categories and surface arrangements" (Hakuta and Cancino 1977:295). Fries advocated this approach in second-language teaching: "The most effective materials are those that are based upon a scientific description of the language to be learned, carefully compared with a parallel description of the native language of the learner" (1972:9). It seemed that the second-language learner's difficulties stemmed from differences in the structures of his native language and the target language, difficulties which were manifest in errors made by the learner. Since structural linguistics assumed that language is a set of habits, it was easy to borrow from behavioral psychology such principles as imitation, reinforcement, and habit formation: hence the use of patterns drills in the audio-lingual method of second-language teaching. As in the behaviorist approach to first-language acquisition, contrastive analysis assumed the means to acquisition to be behavior modification based on predictable contrasts between languages.

Contrastive analysis fell into serious disrepute when analytical studies began to show that it could not explain many learner errors. Hakuta and Cancino observe:

> In fact, many of these errors, such as rule simplification (as in 'Mommy eat tapioca') and over-generalization (as in 'He writed me a letter') exhibited a striking resemblance to those made by children acquiring a first language. Moreover, learners did not in fact make all the errors predicted by contrastive analysis. (Hakuta and Cancino 1977:296)

Error Analysis

First-language-acquisition research, heavily influenced by Chomsky's theory of transformational grammar, began to have an impact on second-language-acquisition research in the 1960's. On the basis of similarities noted between types of errors reported in first-language-acquisition studies and the errors reported in second-language acquisition, researchers speculated that the processes of first- and second-language acquisition are essentially the same (Corder 1967, Dulay and Burt 1972, Richards 1973). Like children learning their first language, second-language learners were characterized as moving through a series of intermediate grammars (Selinker 1974, Nemser 1974). At any given time, the learner was credited with having an "interlanguage" in Selinker's terms, which is real in the sense that it has a set of systematic rules that can be described in a grammar.

Three general categories of errors have been identified in error analysis studies: interference, overgeneralization, and simplification. Interference errors, that is, errors that suggest difficulty is being caused by interference from the native language (the errors predicted by contrastive analysis), do not appear with very high frequency. Dulay and Burt (1974a) found that 87 percent of errors were derived from the target language, not the native language. They interpreted this finding as evidence that learners do not use their first language habits as they are learning the syntax of their new language. Second-language learners do make a large number of overgeneralization and simplification errors which are very similar to errors made by first-language learners.

Most error analysis studies have been cross-sectional and do not tell us anything about whether specific types of errors may occur at certain points in language development or how errors disappear. Longitudinal studies would shed light on these factors. Error analysis is based on production, usually elicited production, and therefore cannot account for avoidance; learners may simply avoid certain structures of which they are uncertain. The most significant weakness of error analysis is that, as in first-language-acquisition studies influenced by Chomsky, it accounts for little more than acquisition of syntax which is not sufficient to explain language acquisition.

Performance Analysis

Two first-language-acquisition studies particularly influenced the direction second-language-acquisition research was to take next: Klima and Bellugi's 1966 study of the acquisition of negation and

Brown's 1973 study on the acquisition order of grammatical morphemes. Both studies based their analyses of performance on longitudinal, spontaneous speech samples from three children learning English as their first language. These studies revealed stages of acquisition and pointed to the possibility of universal orders of acquisition. Second-language-acquisition research followed suit with claims being made for a universal order of acquisition in second-language learning, an order determined by the target language.

One of the problems encountered in the notion of a universal order was the existence of interference from the native language. Hakuta and Cancino suggest that the order of acquisition found for English grammatical morphemes may result from an interplay of at least two factors:

> One factor, consisting of variables such as frequency and salience, seems to direct the order of acquisition toward a universal order. But a second factor, transfer from the native language, modulates the order so as to produce differences between learners of different language backgrounds. (1977:309)

Performance analysis studies share with previous studies the weakness that they account for little more than the acquisition of syntax. Since rule-formation was the focus, and imitation was down-played, little attention was given to prefabricated utterances and routine formulas. Yet Huang and Hatch (1978) found a considerable amount of prefabricated utterances, especially in the early stages of acquisition. Hakuta and Cancino suggest that the use of prefabricated utterances and routine formulas

> . . . may have value in sustaining second-language learners' motivation by enabling them early on to express a variety of meanings. Since the 'breakdown' of these forms is gradual and similar to the acquisition of grammatical rules, the use of prefabricated patterns may motivate the learner to search for internal structure. (1977:309)

Wong-Fillmore, in a study of five children acquiring English as a second language, found that in the early stages " . . . the majority of utterances produced by all five children during the first two periods [of the study] were formulaic, with the proportion ranging from 100% . . . to 52%" (1976:641).

Discourse Analysis

More recently, the focus of second-language acquisition research has turned to discourse analysis--conversational analysis that may show strategies in learning. Second-language-acquisition studies of this type have been conducted by Hatch (1978) and Peck (1978). Hatch speculates that "one learns how to do conversation, one learns how to interact verbally, and out of this interaction syntactic structures are developed" (Hatch 1978:404).

As in first-language-acquisition research, the important role of input to the second-language learner is implicit in discourse studies. Ferguson has identified the simplified register of foreigner talk which is used when native speakers address non-native speakers. Foreigner talk shares many of the characteristics of motherese. Long, as reported at the 1980 annual convention of TESOL (Teachers of English to Speakers of Other Languages), has conducted preliminary studies of foreigner talk discourse. However, the kinds of studies such as have been conducted of mothers' speech in first-language-acquisition have not yet been conducted in second-language-acquisition research.

In general, discourse analysis studies in second-language acquisition are too few and their results too inconclusive to give us anything more than a glimpse at the potential role of discourse in second-language acquisition.

Other Models

Two other models of second-language acquisition are Schumann's Acculturation Model and Krashen's Monitor Model. The Acculturation Model is based on social variables. Schumann presents a taxonomy of factors influencing second-language acquisition and argues that " . . . two groups of variables--social factors and affective factors--cluster into a single variable which is the major causal variable in . . . " (Schumann 1978:29) second-language acquisition. Schumann calls this single variable acculturation. Schumann further argues that second-language acquisition " . . . is just one aspect of acculturation and the degree to which a learner acculturates to the . . . target language group will control the degree to which he acquires the second language" (1978:34).

The Monitor Model contains the following hypotheses for second-language acquisition. Language acquisition and language learning are distinct processes. Conscious learning has a limited function--the Monitor. We acquire a language through comprehensible input where the focus is on the message and not on the form of what is said. Input is important, but since we do not know the order of acquisition, the input cannot be programmed. What can be done is to try to optimize meaningful input by using some of the techniques of motherese: simplify, use short simple sentences, use repetition, pause between junctures, and concentrate on communication. Sequencing thus becomes the fine tuning of maternal accommodation rather than the sequencing of a grammatical syllabus. Further, if the affective mood is not right, the input will be filtered out. Krashen summarizes:

> [The Monitor Model] . . . posits that the adult second-language performer can internalize rules of a target language via one or both of two separate systems: an implicit way, termed subconscious language acquisition, and an explicit way, conscious language learning. Language acquisition is very similar to the process children use in acquiring first and second languages. It requires meaningful interaction in the target language--natural communication--in which speakers are not concerned with the form of their utterances but with the messages they are conveying and understanding. (1978:1)

Second-Language Acquisition in Children

Summary of Studies

Within the field of second-language-acquisition research, much less research has been conducted of the acquisition process in children than in adults. The very earliest studies were descriptive and anecdotal case studies. Most of the empirical studies that have been done are of the error analysis or performance analysis type, many concluding that the child acquiring a second language follows essentially the same developmental stages that a child goes through in acquiring the same language as his first language.

Among more recent case studies are those of Yoshida, Wode, Huang and Hatch, Hakuta, Ravem, and Wagner (in Hatch 1978); among experimental studies are those of Swain, Naiman, and Dumas; Ramírez and Politzer; and Dulay and Burt (in Hatch 1978). Discourse analysis studies have been conducted principally by Peck (in Hatch 1978).

Some empirical evidence suggests that second-language acquisition does involve a developmental sequence like the sequence that characterizes the second language. Ervin-Tripp writes:

> One way of looking at second-language learning is to assume that the first encounters with a second language will be handled by the apparatus of structure and process already available. But there is an additional factor to consider. An adult who has changed his linguistic system only in minor ways--by adding new vocabulary, for example--for

> many years may not have available ready strategies for change. . . . A child who is constantly in the process of reorganizing his processing system and adding to his storage at all levels will have quite different approaches to new input. . . . The most adaptable, sensitive language learner we can find is a young child. Surely we can expect that his second language learning will reflect many of the same processes of development as he used to discover his first language. (1973:95)

Ervin-Tripp has found that

> . . . early sentences in a second language are similar in their function, their form, their semantic redundancy, their reliance on short-term memory storage to those of the first language. Simple word-order strategies are preferred, even though the child has learned more complex strategies . . . in the first language. Overgeneralization of lexical and of morphological forms occurs in second-language acquisition as in first-language acquisition. (Cited in McLaughlin 1978:207)

Dulay and Burt (1974a) found that Chinese-, Japanese-, Norwegian-, and Spanish-speaking children learning English progressed through a developmental sequence that is similar to that characteristic of children acquiring English as a first language rather than applying the structures of their first language to English. Dulay and Burt (1974b) also found that Chinese- and Spanish-speaking children followed a similar sequence of acquisition of morphemes as the children were acquiring English.

Ervin-Tripp (1974) noted similarities, which seem to be semantically based, between children learning their first language and children learning a second language. In a sample of English-speaking children between the ages of four and nine, she found evidence that the children remembered best what they could interpret, that is, they were capable very early in the second-language acquisition process of learning whole phrases where they knew the meaning.

Another area that has been investigated is variables in age. Evidence suggests that unless a child acquires two languages simultaneously from the onset of language acquisition, the ten- or eleven-year-old child will be better at acquiring a second language than a younger child, although both children will follow the same process in acquiring the second language. Bühler, in a study of Swiss children acquiring French as a second language, found that third and fourth grade children performed significantly better than younger ones on various tests. Ervin-Tripp (1974), studying four- to nine-year-old children, found that the older children did better in a natural setting than the younger children. She attributed this to the older child's superior cognitive ability and more efficient memory heuristics.

There are also variations among individuals in second-language acquisition. These occur because of many factors. Individual variation in intellectual capacity and motivation are two obvious sources of language-learner differences. Wong-Fillmore has studied such variations in children acquiring English as a second language and has concluded that superior cognitive and social strategies may be identified with the more apt language learner:

> The evidence is that characteristics such as personality, interests, motivations, and language habits can seriously affect the ability of the learner to take full advantage of the opportunity to learn the new language. (Wong-Fillmore 1976:723)

Much emphasis has been placed on the similarities between first- and second-language acquisition processes. While differences such as those studied by Wong-Fillmore are acknowledged, the tendency has been to view variations in the context of universal strategies. Saville-Troike cautions, however:

> Those who work with linguistically diverse children should view with suspicion all claims that the developmental sequence of concepts (such as that posited by Piaget) is universally the same. There is good reason to believe that this sequence is influenced to some extent by the child's cultural experiences. . . . The sequence of conceptual development may be influenced by the child's native language, since language facilitates (and to some extent may determine) the categorization of experience. (1976:13)

The Role of Input

Peck has studied child-child discourse in second-language acquisition, as has Wong-Fillmore in her longitudinal study of children acquiring English as a second language. Like Peck, Wong-Fillmore emphasizes the importance of child-child discourse, as contrasted with adult-child discourse. Wong-Fillmore's study, however, looks less at such issues as language play than at cognitive and social strategies of the learner.

Looking at the child's cognitive strategies of learning, Wong-Fillmore suggests that instead of the child first acquiring generative rules on the basis of language he hears and, second, producing his own speech on the basis of these rules, perhaps the child

> . . . learns some ways of speaking; next, he figures out the principles according to which the utterances he knows and uses are structured; and only after that does he begin to create new utterances in conformity with these rules. If this view is correct, then the analyst of child language data can no longer simply take the utterances produced by a learner as evidence for the state of his grammar. Rather, the analyst has to distinguish formulaic utterances and utterance fragments from novel creations. (1976:718)

Wong-Fillmore also found that the social aspects of second-language-acquisition are significant. Social interaction seems to be essential for acquisition, as opposed to learning in Krashen's sense:

> It was found that the success or failure of the learner's efforts depended in large part on his ability to establish and maintain social contact with native speakers who could provide him with the help he needed to learn the language. How much an individual learned of the new language and how quickly he mastered it did not depend on cognitive skills alone, but also on social skills and motivations which enabled him to move into the social situations in which the new language was used. (1976:722)

Discourse pragmatics also were of interest in Wong-Fillmore's study:

> It was found that the pragmatic system of the language--that is, the rules which spell out the appropriateness conditions for the use of specific utterances in the language--is the one which gives the learner his first grip on the new language. (1976:723)

Studies of adult input in child second-language acquisition are just beginning to be undertaken. Urzúa (1980) has conducted one such study. Taking her model from first-language-acquisition research of mothers' speech to children and particularly from Cross's study of mothers' speech adjustments, Urzúa studied the language input to a child in a second-language learning situation: the input of a kindergarten teacher to an Oriental five-year-old girl in the regular classroom. Urzúa's study showed the teacher to be exceptional in terms of Cross's findings of facilitative adjustments. The teacher responded to more than 90 percent of all the child's utterances. Of the remaining, most were not responded to because of the intervention of one of the other children or the foreign child left the scene. In general, the teacher's responses were semantically attached to the child's utterances and followed the child's lead in nominating topics.

Urzúa found that this exceptional teacher expanded her children's language much of the time; repeated original utterances about one-fourth of the time; followed the child's lead in nominating topics; allowed the child to make errors; and concentrated on communication. In short, Urzúa's exceptional teacher demonstrated many of the characteristics Cross had shown to be facilitative of a child's first-language development. In six months, the child's upper-bound mean length of utterance went from 3.04 to 8.3. Urzúa concludes that the child " . . . was a very proficient language learner who, in a short time, mastered a great deal of the English language" (Urzúa 1980:5)

The child exhibited many of the characteristics of Wong-Fillmore's superior learner: assertive, active, risk-taking. We do not know whether this teacher's language adjustments would be facilitative for a child with a learning style different from the child in Urzúa's study. D. Brown noted, however, that a much less assertive child whom she observed spoke six times as many words to adults " . . . as he did to or with children, and the majority of his speech occurred during a one-to-one relationship with an adult or whilst working in a small group supervised by an adult" (1979: 65-66).

Second-Language Acquisition in Children and ESL Methodology

Most ESL methods and materials for children that are in general use today are distillations of methods and materials designed for use with adult learners. These are based on methodology which grew out of structural linguistics: the audio-lingual method. The characteristics of this method, which employs only the target language, include:

> Listening comes before speaking; reading comes next; and writing comes last
> The spoken word is primary
> Acquisition comes through practice and overlearning: the acquisition of new habits is required
> Practice is done by imitation and repetitive drill
> Grammar is learned inductively

Saville-Troike (1976) and Ramírez and Stromquist (1979) have found these methods are still the principal means of ESL instruction in use today. A widely used instructional program for children, English Around the World, published by Scott, Foresman and Company, is based in large part on audio-lingual methods.

From a theoretical point of view, audio-lingual methodology is based on an imperfect theory of language acquisition. Second-language acquisition is not achieved through stimulus-response mechanisms any more than first-language acquisition is. The learner is not simply a blank tablet on which impressions can be made. As Ervin-Tripp observes, the learner

> . . . actively strains, filters, reorganizes what he is exposed to. His imitations are not exact duplications, or even random reductions of input. . . . The learner actively reorganizes, makes generalizations, simplifies. Any learning model which predicts language learning on the basis of input without regard to the selective processing by the learner will not work, except for

> trivial problems. And yet most of our rationales for procedures in second language instruction have been based on assumptions that organization of input, plus practice, will have predictable results. (1973:93)

While one should not exclude entirely the role of habit in second-language acquisition--hence the value of organization and practice--audio-lingual methods strictly applied can lead to unhappy results, as Ervin-Tripp notes:

> An example of the devastating effects of an automatic operant view of language acquisition is provided in a Russian teaching program. . . . The taped self-instructional material consisted of writing discriminatory responses to phonemes, words, sentences, and then imitating them. . . . Hints of meaning were finally given in the later stage of the third of four stages in the materials. Students worked six hours a day for seventeen weeks. At the end of the Period their Army Language Proficiency Test score in Russian was below the score achievable by random marking. They were subsequently enrolled in the regular Russian program at Monterey, but never caught up with the beginners in that course. The automatic operant based material apparently actually interfered with their acquisition of a meaningful language. (1973:125)

If audio-lingual methods are questionable for adults, they are clearly inappropriate for children for whom focus on substance, not form, would seem to be essential. Audio-lingual methods are not suitable for the child's cognitive development and remove language from the social context that may actually be an essential ingredient in the child's learning process. Audio-lingual methods assume that we can facilitate learning by sequencing; this too appears to be questionable for children. Control of input may be important, but control in the form of a grammatically sequenced syllabus, at least for children, is not. Felix (1980) has shown in a recent study that developmental sequence and developmental errors do not appear to be suppressed by formal, grammatically sequenced instruction.

The audio-lingual method's focus on verbal production fails to recognize the value of silence, which may also be a necessary part of the learning experience.* And forcing verbal production may have the negative effect of forcing the child to fall back on his first language, thus encouraging interference errors.

Relegating reading and writing skills to later stages, as the audio-lingual method does, unnecessarily handicaps the child in school where English is the medium of instruction. Listening and reading skills are perhaps the most crucial for the child in school. Saville-Troike writes: "Reading is probably the single most important skill for survival in our education system, but one which has been woefully neglected in much traditional ESL instruction" (1976:86). Lado reports evidence in support of immediate, simultaneous presentation of the written forms from the beginning of second-language instruction and of the teaching of early reading. Lado cites several studies with high school students, superior elementary school students, and college students which " . . . found the combined presentation superior in retention and not inferior in pronunciation" (1977:11). It may be argued that this approach may well be superior for children where reading can in fact contribute to oral language development. Moreoever, as Lado points out, "early reading should also improve school performance since reading is essential to success in academic work. And early introduction of the written form . . . should accelerate development of skill in reading" (1977:11).

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*See especially the studies of Asher, Gary, and Postovsky.

Audio-lingual methods also fail to account for differences in learning styles. Within a single culture, learning styles may vary from competitive to cooperative approaches, from trial-and-error to passive-observation approaches, and from help-seeking to self-reliant approaches. Saville-Troike (1976) points out that in American culture we encourage questions and verbal interaction; we reward students for doing things, not for being passive; time is of the essence. These are not necessarily the learning style that the foreign child brings to the American classroom.

In the broader context of education, audio-lingual methods would seem to be inappropriate. Cazden (1972), in her work on child language and education, writes that the results of study of "environmental assistance" in first-language learning have implications for language education. One of the implications is that the teacher should focus on the inner substance rather than outward form: audio-lingual methods do not do this. A second implication is that instruction on a non-sequenced, whole-task basis, which does not break a task down into component sub-parts and which requires the student to perform as best he can from the beginning, is superior. Cazden believes that the whole-task approach describes the child's first-learning experience: "Whatever environmental assistance the child gets, it is clear he never gets sequential tuition based on an analysis of component skills" (1972:138). For language in school, then, the teacher should attend to the language she uses and to the language of the child much in the way that this happens in the home environment.

III. THE STUDY

General Procedures

Subjects

The subjects of the study were three ethnic Chinese children who are refugees from Vietnam. The children are three sisters who were eight, nine, and ten years old at the beginning of the study period. The investigator selected the subjects from among a group of Indochinese refugee children whose families entered the United States in the spring of 1980 and who attended ESL classes during the summer. Classes were held at the International Institute of St. Louis, an affiliate of the American Council for Nationalities Service, a voluntary resettlement agency.

The investigator selected these children for observation for a variety of reasons. The children would be relatively isolated in a small elementary school which has no ESL or bilingual education program. The girls share a common socio-economic background. They all appeared to have normal intelligence and first-language development. An important criterion in selection was the children's apparent shyness and reluctance to interact verbally. Finally, being of the same family and being in the same school, their exposure to

English could be expected to be much the same, apart from the variables of the individual classrooms and of the playground.

The three sisters are the oldest of six children; the three youngest children are boys. The children's first language is Vietnamese; the oldest girl also speaks some Mandarin. The parents are literate, but they speak little English. The father attends ESL classes at an Adult Basic Education program.

I shall call the oldest sister Hien. She entered fourth grade during the study period. She is shy, serious, and conscientious. She is a methodical worker and works well without supervision. One of her first sentences in spoken English was, "I like school." During the summer ESL program, she took books home whenever they were offered to her. While she was not unfriendly, she did not initiate interaction with other Vietnamese children during the summer. She dominated her two younger sisters who were also in the class. Her front teeth are quite decayed, which causes her to be self-conscious about speaking and smiling.

I shall call the middle sister Loc. She entered third grade during the study period. Loc is also shy and somewhat diffident. She was a good student during the summer, but she showed little initiative in her school work. Although she was not uncooperative--all three girls were very cooperative and helpful, in fact--she appeared to be less interested in class during the summer than did either her older or younger sister. She did not initiate interaction with other Vietnamese children during the summer. She followed her older sister's lead in whatever activities were undertaken.

I shall call the youngest sister Ha. She entered second grade during the study period. During the summer, she appeared to be shy. She was a conscientious student. Like her sister Hien, she was always eager to take books home. She also did not initiate interaction with other Vietnamese children during the summer program. She has a winning smile and cheerful personality, although she was subdued in the presence of her older sister.

Setting

During the summer, the children attended ESL classes at the International Institute for ten weeks. Classes met for two and a half hours each day. All of the children in the class of approximately 12 to 15 students were from Vietnam; they ranged in age from 6 to 12 years old. The class was taught by the investigator and a volunteer trained in ESL teaching methods.

A variety of techniques were used in teaching the course. The course began with exclusive use of audio-motor techniques, which required only non-verbal response from the students. Later, some use was made of Scott, Foresman and Company's English Around the World as a base, although audio-lingual methods were not used. Extensive use was made of the activity book, picture cards, and songs accompanying English Around the World. Other materials used were Jazz Chants for Children and numerous listening skills exercises such as those of Frank Schaffer Publications, Inc. English was also taught through other subject areas such as art and mathematics, using activity sheets, board work, and Cuisenaire rods.

The emphasis of the course was on receptive learning. Oral production was encouraged, but students were not required to speak if they did not wish to. The goal of the course was to attune the students' ears to the English language, to give them at least a beginning, passive vocabulary in English, and to introduce them to and put them at ease in an American-style classroom.

In September, the children entered public schools. Because their parents had moved to a home in a suburban area just on the edge of the city of St. Louis, Hien, Loc, and Ha entered an elementary school where they were separated from most other Indochinese children in the metropolitan area. Only seven limited-English-speaking children attend this K-4 elementary school which has a total student population of about 300 and a teaching staff of 15. Hien, Loc, and Ha are the only limited-English-speaking children in their respective classes. The school has no ESL or bilingual education program; there are no tutors or aides for limited-English-speaking pupils. The school is racially integrated and draws its students from lower middle class families.

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Data Collection

Observations and tape recordings were made in each child's regular classes. During observation sessions, all elicited and spontaneous speech of the child was recorded, as well as the speech of the child's teacher. The investigator was present for each recording session and made simultaneous observational notes of setting, non-verbal communication, and other pertinent information which might not have been conveyed by the tape recording.

A Marantz Superscope 330 stereo cassette tape recorder was used to record the speech samples. Two Vanco MEC-379 electret condenser type microphones were used. One was placed to record the speech of the child and teacher. The other was used by the observer to record observations on the other channel of the tape.

Recordings were made from the beginning of the school year on September 3, 1980, until November 20, 1980, for approximately one hour per week per child.

Treatment of the Data

Classroom observations were made in a holistic manner that views the classroom scene as a complex one which can only be understood in its entirety and not through its component parts. For this reason, the data base was not limited. Thus, while no statistical generalizations can be made, the data can be used to demonstrate strategies the child used to acquire English in the classroom as well as strategies the teacher used to reinforce the child's learning process.

Because the task of transcribing tape recordings is so time-consuming, only selected recordings were transcribed so as to yield representative samples. The recordings that were not transcribed were fully reviewed, and a written summary of pertinent observations was prepared.

For each child, the data were studied in terms of Wong-Fillmore's cognitive and social strategies of learning a second language. The cognitive strategies are:

1. Assume that what people are saying is directly relevant to the situation at hand, or to what they or you are experiencing. Metastrategy: guess.
2. Get some expressions you understand, and start talking.
3. Look for recurring parts in the formulas you know.
4. Make the most of what you've got (semantic extensions, over-generalizations).
5. Work on big things; save the details for later.

The social strategies are:

1. Join a group and act as if you understand what's going on, even if you don't.
2. Give the impression--with a few well-chosen words--that you can speak the language.
3. Count on your friends for help.

The teachers' interactions with each child in particular and with all of their students in general were evaluated to identify the teachers' strategies that might facilitate the child's language development. The data were studied in terms of the following cognitive strategies for teachers:

1. Carefully control speech.
2. Contextualize speech addressed to the subjects.
3. Modify speech addressed to the subjects through simplification, semantic expansion and extension, imitation, and self-repetition.
4. Reinforce the subjects' attempts; don't worry about details.

Social strategies for teachers are:

1. Encourage the subject to be part of a group.
2. Give the impression that you can understand the subject.
3. Give the impression that you can be counted on for help.

As noted, because of the small sample and method of observation, the data were not analyzed for statistical significance. The presence or absence of learner and teacher strategies is described in terms of general patterns of teacher-pupil interaction.

Role of the Investigator

As noted, the investigator taught the subjects' ESL class during the summer. Thus, a personal link between the investigator and the subjects was established. That personal relationship continued throughout the course of the study. Interaction between the investigator and the children took place outside school on numerous occasions when the investigator took the children home and was invited to visit the children in their home.

Reporting the Data

Learner Strategies

Based on the data studied, the following observations can be made in terms of Wong-Fillmore's cognitive and social strategies of learning a second language. The following paragraphs are numbered for cross-reference to Wong-Fillmore's strategies.

(1) By its very nature, the classroom provides much contextualization, and the routine of the classroom gives it a predictable character. Only rarely then did any of the subjects have to guess at the general nature of what was being talked about in class. Guessing was required about specifics. Answering questions is specific, and at first the three girls demonstrated varying degrees of reluctance to volunteer answers to questions. During the first full week of school, however, Hien began to volunteer to answer questions when she appeared to be sure of the answer. This occurred first during mathematics, where the answer would simply be a number. By the end of the study period, Hien began to volunteer to answer questions in such content areas as science and health when the answer required was one or two words long. Her answers suggest that occasionally she was guessing, but the fact that the great majority of her answers were correct suggests that she volunteered primarily when she was certain of her ability to answer the question correctly.

By the second full week of school, Ha had become an avid volunteer to answer questions. It was clear that she frequently guessed at what was going on. The following example shows her willingness to guess and be wrong. The abbreviations used to report these interactions are: T, teacher; S, student; ON, observational note.

> T: What does it say on that page, Rick? What do you think we are supposed to do?
> ON: (Ha raised her hand as Rick hesitated to answer.)
> T: Ha, what do we do?
> Ha: Five.
> T: There are five. We count, don't we?

The answer Ha should have given was, "We count." Hà consistently demonstrated willingness to make such guesses. (The teacher's supportive role in these interactions will be discussed in the section on the teachers' strategies.)

Loc was the most reluctant of the girls to volunteer, infrequently offering to answer questions even at the end of the study period. She sometimes joined in on choral answers to questions and, so long as she was able, she responded to questions directed to her. On November 3, she was observed to volunteer on three occasions during a spelling game played like children's "hangman" game. She was called on twice, and she responded with a correct letter each time.

From the investigator's observations of the subjects' written work, each of the subjects guessed equally. No item was left unattempted, even when it produced a nonsensical answer. Loc attempted particularly difficult written assignments in social studies although her answers were frequently incorrect. The same pattern of attempting all answers was observed in written test situations.

(2) In the classroom, none of the subjects was observed to employ the strategy of initiating talk with the expressions they understood. Part of this may be because of the nature of classroom dynamics. Most of the classroom talk observed was directed by the teacher, with not a great deal of opportunity for spontaneous conversation. Student-initiated discussions might occur in the context of social studies or health, but the subjects' limited English virtually precluded their active participation in such discussions.

Upon entering and leaving the classroom, however, the girls did use the routine expressions of greeting that they knew in addressing their teachers: "Good morning, Mrs. __________," "See you tomorrow," etc. In addition, outside the classroom, Hien employed this strategy in the presence of the investigator. Here, the repertoire of speech she initiated was extended to such expressions as these: "How are you today," "Very cold today," "Teacher, come to my house," "Science very hard," "I don't understand," "What is 'wood,'" and "I want to go your house." On one occasion riding in the car with the investigator, Hien looked about and said, "American very big. I like American."

(3) No evidence exists in the classroom data to show that the subjects looked for recurring parts in the formulas they knew. What the subjects did, primarily, was to listen. One can, of course,

hypothesize that as they listened, they were in fact looking for recurring parts. This would seem to be supported by the fact that during reading or social studies period, when the English language input was frequently too complex and too rapid to be comprehensible, Hien and Loc tuned out the input.

(4) Again, because of little verbal production in the classroom, the subjects were not observed using semantic extensions and making over-generalizations. Outside the classroom, Hien was observed to make some use of this strategy. For example, as seen already, she made extensive use of the adverb "very."

(5) In a general way, the data suggest that the subjects did work on big things, saving the details for later. Hien and Ha almost always were keenly attentive to what was going on in class, apparently concentrating on understanding the broad outlines of whatever was happening or being talked about. Loc demonstrated this behavior to a lesser degree. On no occasion were any of the girls observed to become stymied by details. If they couldn't do something, they tended to tune out the input.

Even Ha, who was so active and participatory, was observed to withdraw when the going got too tough. On one occasion, the teacher invited the students to join her for reading a story as soon as they finished their assignments. As students finished their work, they joined the story group. Finally, Ha's "buddy" joined the group. Ha, although she had long finished her work, remained at her desk, getting things out and putting them back in, writing furiously, and stealing glances at the clock and at the story group.

Hien also demonstrated a variation of this strategy. She was quick to discern that what she needed to figure out for a science or health test were the answers to questions that the teacher had clearly identified in class as test questions. After class, Hien asked the investigator for help; she requested assistance only for those specific questions designated as test questions and ignored the rest.

For Wong-Fillmore's social strategies, the following observations can be made. The paragraphs are numbered to correspond with the social strategies enumerated on page 51.

(1) Initially, the only group the subjects joined was the class at large. All three subjects acted as if they understood what was going on, even when they couldn't have. They were all quick to learn the classroom routine and to follow the routine just like any other student. They took their cues from watching their teachers and the students around them, quickly taking their math books out of their desks, for example, if that is what they observed other students doing.

By the end of the study period, only Ha had progressed significantly beyond this point to have joined any sub-group of the class. By the second week of school, Ha had clearly established a peer relationship with the "buddy" who had been assigned to help her.

She and her "buddy" sat next to each other in class. When observed during the second week of school, Ha and her "buddy" were convulsed in laughter as they tried to build book barricades around their mathematics papers to protect their work, as they believed themselves to be the only students in the class to have done the work correctly, and they weren't about to have their work copied.

Hien was observed, almost without exception, to be attentive in class and to act completely as if she understood everything that was going on. Her approach was rather academic, as contrasted with Ha's more socially oriented tactics. Hien and her assigned "buddy" interacted only when their teacher requested them to do so. Midway through the study period, however, one of Hien's classmates approached the investigator outside the classroom to inquire whether the investigator understood Hien's language. I replied that I did not and that Hien and I could talk in English. One may surmise that this student was interested in Hien, and in fact by the end of the study period, she had initiated social interaction with Hien. Hien readily accepted the overtures, and Hien's teacher informed the investigator that Hien's new friend had told her that she and Hien were communicating outside of school by telephone.

In the classroom, Loc occasionally demonstrated lack of interest in being part of the group. She was observed on several occasions to look at the clock, to doodle, and to rest her head on her desk. Once, she overtly rejected an overture from a student who attempted to show her a trophy he had won. She operated very independently, with an air of self-sufficiency.

(2) Hien and Ha, in particular, gave an impression that they spoke English in their volunteering to answer questions which required one-word or short answers. Beyond this, Ha frequently raised her hand, sometimes in incorrect response to a question such as, "Who is not finished?" Ha would raise her hand, although she was finished, because she saw others around her raising their hands. She was attempting to give the impression, in this case without words, that she understood the language. Loc, less participatory than her sisters, continued to manifest a certain diffidence and general impression of not particularly caring whether anyone thought she could speak or understand the language. When choral answers were called for, however, she tended to join in.

(3) In the classroom, only Ha could be said to have demonstrated the strategy of counting on her friends for help. As noted, she quickly made friends with her assigned "buddy" and made full use of her friend's help--including her help in doing Ha's school work when Ha was not able to do her own! Ha's teacher told the investigator that she sometimes was uncertain as to how much Ha had understood since Ha got so much help from her "buddy." Neither Loc nor Hien were observed to make use of a peer's help during the study periods in class. Hien passively accepted help offered by her "buddy." Hien did seek help from her teacher,

however. And she actively sought help from the investigator. Whenever the investigator was in the girls' home after school, Hien brought her books and papers to the investigator and asked for help. She asked for and obtained from the investigator a Vietnamese-English bilingual dictionary. Toward the middle of the study period, Loc also began to show her school work to the investigator and to ask for help.

Teacher Strategies

Teacher strategies, both cognitive and social, will be described in terms of the strategies listed on page 52. Most of the observations are about the teachers' strategies in general, as opposed to their strategies directed specifically to the subjects, since there were not a significant number of teacher-subject interactions recorded in the data. Where noteworthy teacher-subject interactions were observed, they are referred to here.

The three teachers are all experienced elementary school teachers. Hien's teacher had the least experience and was in her second year of teaching fourth grade. Three rather different teaching styles were observed.

Hien's teacher had the most formal teaching style. Students did not wander freely about the room, although if a student had a specific task, such as turning in an assignment, he did so and returned to his seat. Some students had specified tasks, such as washing the blackboard at the end of the day; the student performed his task at the scheduled time without direction from the teacher. Students were encouraged to respond to questions raising their hands in orderly fashion. This teacher used a low-keyed methodical approach. While she was clearly in control, it was control by agreement almost as if among peers. Her approach to her students was non-authoritarian, and she affirmed the worth of each student.

Loc's teacher permitted the greatest amount of student talk and freedom of movement, although the school day was carefully structured. Students were moved weekly, with desks arranged in pairs, the intent being to teach students how to get along with others. Students also moved freely about the room during individual study periods and free periods. It was the only class in which students freely approached and talked with the investigator during class time. The students were permitted to express enthusiasm and desire to answer questions, verbally and in chorus. Even in this rather permissive climate, the teacher firmly controlled with a commanding air. A somewhat competitive atmosphere characterized the class.

Ha's teacher's style was somewhat informal, although the class was well structured. Students had limited freedom of movement--there were 33 students in a crowded room. Control of verbal activity varied from a fairly tight control to a somewhat more permissive atmosphere. Individual students felt free during lulls or when they first entered the classroom, for example, to approach the teacher with some story of interest. The atmosphere in the classroom was rather like that of a large family, usually cooperative and supportive of one another, and occasionally chaotic as large families are wont to be.

The following observations about the teachers' cognitive strategies can be made.

(1) Remarkable instances of carefully controlled speech can be found in Hien's teacher's speech. Review of her recorded speech showed simple, clear, consistent speech patterns with few asides or tangential remarks or conversations. One of her consistent patterns was "I like the way Walter raised his hand," "I like the way Mary's row is quiet," "I like the way Jim is working," "I like people who try," etc. Here is another example of her clear, consistent language:

> T: In the first sentence, they used the spelling word 'act.' In the next sentence, they added '-ed.' Can anybody tell me: why did they add the suffix '-ed'? The first sentence was, 'You act your part well.' The next sentence was, 'You acted in the play yesterday.' What's the difference? Why did they add the suffix '-ed'?
>
> S: It's in the past.
>
> T: Okay, very good, they added this '-ed' to show that it happened in the past. Okay, after the word 'Spelling,' skip one whole line and on the next line put a number one. Okay, let's make a complete sentence:
>
> ON: (Writes on board while speaking)
>
> T: 'The suffix -ed was added to show that it happened in the past.'

Loc's teacher's language was moderately controlled. She had particularly clear enunciation and exaggerated intonation. Ha's teacher used a conversational style in most of her speech, in keeping with the family-type atmosphere in her classroom. She did use as a regular teaching device a technique using completely controlled language, that is, sentence dictation.

(2) The speech of all three teachers was generally contextualized. As suggested in the discussion of the students' strategies, this may be a product of the classroom situation itself. Speech was not contextualized in tangential remarks of conversations relating a story or an event from experience outside the classroom. Hien's teacher's speech contained the fewest tangential remarks, Ha's the most. Yet Ha's teacher was particularly adept at using real items to contextualize for Ha, actually walking over and touching a nail to tell Ha what a nail was, for example. She also used the following kind of procedure to help contextualize the words:

T: Cindy, you and Jane come up here. Mary, Margaret, I want you two girls to stand right here. Mary and Margaret, right here. Okay, now let's have - uh - Shirley and Melissa. Okay, Ha, how many children are here? How many girls, right here?
ON: (Teacher indicates by pointing)
Ha: Four.
T: Four. All right. And how many girls are here?
Ha: Two.
T: Two. If I put all the girls together, four girls and two girls are how many?
ON: (Physically places girls together as a group)
Ha: Six.
T: Six girls. Okay, what if I do it this way.
ON: (Teacher rearranges the group of six)
T: Two girls and four girls are how many girls?
Ha: Six.

(3) Varying degrees of evidence were found for modification of speech addressed to the subjects. Hien's teacher, just as a rule, used simplification, semantic expansion and extension, and repetition. The following example is illustrative:

T: All right, underneath your table, write this number in standard form. And I need a volunteer to come up and circle the number that is in the tens place. Circle the number that is in the tens place. Don, I like the way you raised your hand. Come on up, grab a piece of chalk, and circle the number that's in the tens place.
ON: (Teacher turns to the rest of the class)
T: Please write it down on your paper and circle the number that you think is in the tens place.

An example of the way she helps to clarify a point is the following:

T: Can you tell me, if I said the vpm is 420, what's the frequency?
S_1: 420.
T: 420. Vpm and frequency mean the same thing. What's it stand for, vpm?
S_2: Vibrations.
T: Vibrations per minute. Frequency is just the number of vibrations per minute. They mean exactly the same thing.

(4) All teachers reinforced the subjects' attempts. This was done in a variety of ways--ignoring errors, repeating answers, filling out answers, etc.

The following observations were made of the teachers' social strategies:

(1) All three teachers encouraged the subjects to be part of a group. Generally speaking, the subjects were treated just like the

other students, and they were included in all activities. Hien's teacher, as noted, assigned one of her best students to be Hien's "buddy." Ha, too, was assigned a "buddy." Loc's teacher did not assign a "buddy," but she occasionally asked a student to be sure Loc was doing what she was supposed to be doing.

Given the character of Hien's classroom, there was little opportunity for social relationships to develop in class; whereas in Ha's class, there was much more opportunity for social interaction between the subject and the other students, and social interaction did occur. Ha's personality was undoubtedly her best social asset, and her teacher enhanced Ha's social standing by her supportive attitude with the other students. Events like the following were common:

S: Mrs. __________, Ha sure is catching on, isn't she?
T: She sure is.

On another occasion, a student commented on Ha's shyness. This was followed by a few brief comments and warm laughter with, not at, Ha. The teacher was instrumental in promoting this kind of support.

Some observations were made on the playground during recess periods. Very early on, Ha was observed to participate in games with her "buddy" and other girls in her class. Hien and Loc, who had recess together at a different time than Ha, tended to seek each other out and simply to watch the activities of others. At first neither was responsive to invitations of classmates to join in an activity. By the end of the study period, however, Hien was observed to accept an invitation to jump rope, and Loc was included in the activity.

(2) All teachers gave the impression that they could understand the subjects. The teachers called on them as they would have on any other students, usually, however, either when the subjects volunteered or for simple questions that the teacher might have expected the subject to be able to answer. The teachers also gave the impression that they believed the subjects could understand them. Loc's teacher was observed to matter-of-factly request Loc to turn off the lights for a film showing. Implicit in the request and the manner of its delivery was the teacher's taking for granted that Loc understood. Loc obviously did, since she turned off the lights.

(3) Similarly, all three teachers gave the impression that they could be counted on for help. This strategy is illustrated in a variety of ways. An example has previously been provided of a tactic that Ha's teacher used to help build confidence and trust: Ha incorrectly answered a question, "Five," and her teacher replied, "There are five. We count, don't we?" All teachers circulated in the classroom as students did individual work; the teachers gave individual help to the subjects on such occasions. As Ha's teacher was circulating one day, the following exchange occurred:

T: Who is not finished?
ON: (Ha raised her hand. Teacher walked over to Ha and addressed her privately)
T: You're not finished?
ON: (Teacher looks at Ha's paper)
T: Oh, you are finished.
Ha: Yes.
T: You are finished. I asked who was not finished.

The teacher's tone of voice throughout the exchange was kind and supportive, not corrective.

Discussion

Learner Strategies

Hien, Loc, and Ha used their cognitive abilities to try to figure out what was going on around them. Ha guessed more than her sisters; Loc guessed the least. Hien demonstrated the best cognitive skills as shown particularly in her academic performance in such areas as science. Overall, the data do not provide as much evidence of guessing as Wong-Fillmore's best learner demonstrated.

In the classroom, none of the subjects was observed to initiate conversations with expressions they knew. They used routine formulas of greeting and departure. Outside the classroom, Hien initiated conversations with the investigator.

Little evidence was found of the strategies of looking for recurring parts in formulas and making use of semantic extensions and over-generalizations.

All three subjects demonstrated evidence that they were working on big things first; they did their work using the whole-task approach Cazden (1972) describes. Loc was the only subject who occasionally seemed worried about the details of particularly difficult material. All subjects tuned out incomprehensible input such as the reading of a story without pictorial clues.

Among the social strategies used, Hien, Loc and Ha all joined in the class and acted as if they knew what was going on. In terms of one-to-one interaction, Ha was the most successful, clearly establishing an amicable social relationship early in the study. Loc, by the end of the study period, demonstrated no evidence of establishing peer relationships. Hien, while she did not initiate any peer relationships, was receptive to the overtures of a peer by the end of the study period.

Hien, Loc, and Ha appeared to employ the strategy of giving the impression that they could speak English in their efforts to answer questions requiring one- or two-word answers. Overall, Ha was the most successful user of this strategy.

Ha was also the most successful in use of the strategy of counting on friends for help, at least as far as counting on peers is concerned. Hien, however, utilized the strategy by counting on a trusted adult for help. Loc showed little evidence during the study period of using this strategy with either peers or adults, although she did seek help from Hien.

Teacher Strategies

Hien's teacher demonstrated the most carefully controlled speech--clear, simple, and consistent speech patterns with few asides. Ha's teacher's speech was the least controlled, and Loc's teacher's speech was somewhere between the two.

Most of the three teachers' speech was contextualized, with the least amount of contextualization occurring in Ha's teacher's speech during asides and tangential remarks. The most abstract speech was found in Hien's teacher in such content areas as science; the teacher's speech in social studies in Loc's class was also quite abstract. Ha's teacher was particularly adept at producing a physical or visual means of contextualization for Ha.

Little evidence of speech modification to subjects was seen in the teachers. However, Hien's teacher just as a rule used much of the language of motherese in her class: simplification, semantic expansion and extension, repetition, etc.

All teachers reinforced the subjects attempts by ignoring errors, repeating the subjects' answers, filling out their answers, etc.

Among the social strategies, all three teachers encouraged the subjects to be part of a group. The subjects were treated generally as regular class members and were included in all activities. Hien's and Ha's teachers assigned "buddies" to Hien and Ha.

All teachers gave the impression that they could understand the subjects. They also gave the impression that they believed that the subjects could understand them.

All teachers gave the impression that they could be counted on for help. This was made clear in both group and individual work. Because of her style, Ha's teacher was perhaps the most accessible.

Implications

Hien made up for shyness by using superior cognitive strategies--an academic approach--and by seeking interaction with a trusted adult. Ha, while using good cognitive strategies, increased her chances for interaction and peer input by her social strategies. It is possible that there is a correlation between Hien's shyness and her seeking adult help and Ha's attractive personality and her seeking peer help. Loc's passive approach may be a result of her position as the middle sister in the family, caught between the domination of her older sister and the attractive personality of her younger sister.

The fact that little verbal production was observed does not seem to be correlated with the girls' English-language ability as evidenced by their performance on written school work and tests and by teacher evaluations.

If there were differences in the subjects, there were also differences in the teachers. Hien's teacher's speech was the most controlled and demonstrated most nearly the qualities of motherese. There would seem to be no correlation between this and grade level in the classes observed. Missing from the classroom, however, not so much because of teacher variables but because of the nature of the classroom, is the opportunity for much one-to-one interaction and hence the conversational management qualities of "fine tuning" as Cross and Urzúa describe it.

Variations in teacher style were also observed and may be significant, although the variable cannot be measured. The high degree of predictability in Hien's class, for example, may have been more facilitative than the less predictable character of Loc's class. Here, one may need to consider cultural variables: an Indochinese child may function better in an ordered environment than a Puerto Rican child, for example.

It is difficult in view of the variables to determine the precise results of teacher-child interaction. Common to the three pairs are these characteristics: While the student focuses her attention on figuring out what is going on and makes guesses, the teacher can help the student by controlling her own speech, contextualizing, and modifying her speech in the manner of motherese. While the student works on big things first and takes in what is comprehensible and tunes out what is incomprehensible, the teacher can reinforce the student's attempts, accept approximations, and accept the student's tuning out incomprehensible input.

Success is enhanced if the student joins a group and establishes peer relationships. The teacher can encourage her class to accept the student and can encourage the student to join a group and to establish peer relationships.

Success will also be enhanced when the student gives the impression that he can understand and the teacher gives the impression that she can understand the student and that she believes the student can understand her.

Finally, success will be enhanced if the student learns to seek help, either from adults or peers. The teacher can help by making the student believe that she and others can be counted on for help.

Cautions

As noted, the Indochinese child may be more comfortable and may function better in an ordered environment than a Puerto Rican child. Attitudes toward education vary from culture to culture; this must affect what the child does initially in the American classroom. Attitudes about cooperation, questioning, time, and assertiveness vary among cultures. This study accounts for children from one culture only--ethnic Chinese from Vietnam. Care must be taken in generalizing the results of this study to other cultures.

This study does not deal with the situation of a black Puerto Rican or Cuban child entering a school in an isolated situation where the child may encounter difficulties deriving from the social and cultural attitudes of Americans. This child's language learning, and all his academic learning, might be affected by negative attitudes of American teachers and most certainly by negative attitudes of American peers. Such learning difficulties result from problems that are outside the scope of this paper. The implications of this study are based on a non-hostile, indeed a receptive, environment for the limited-English-speaking child.

Testing the Hypotheses

The data tend to support the first hypothesis of the study that the shy child will initially fail to demonstrate some of the successful learner strategies identified by Wong-Fillmore: the children in this study tended to interact verbally hardly at all in the classroom. They demonstrated less evidence of guessing than Wong-Fillmore's good learner; and, with the possible exception of Ha, they were less skilled socially than Wong-Fillmore's good learner. The data also suggest that the oldest child, in particular, exercised her best cognitive skills to make up for her weaknesses in social skills.

The data provide uneven support for the second hypothesis that the child's teacher will be able to facilitate interaction and learner strategy as a "caretaker" does. The data support the hypothesis that the teacher can provide meaningful input which shows the characteristics of motherese, but the data suggest that facilitative interaction that provides fairly equal turn-taking does not occur in the classroom except on a very limited scale.

The data provide weak support for the third hypothesis that the task of learning the second language will be easier for the ten- or eleven-year-old child because of the child's superior cognitive and social skills. The data suggest that the oldest child in this study had better cognitive skills and was able to cope with much more difficult academic material than her younger sisters; she did not, however, show superior social skills. The data provide insufficient evidence for the second part of the hypothesis--that the task will be more difficult for the teacher of the oldest child because of the nature of the subject matter being taught.

IV. CONCLUSIONS AND RECOMMENDATIONS

Conclusions About Learner Strategies

Based on the findings of this study, the following conclusions can be made about limited-English-speaking children of elementary-school age. The conclusions are framed in terms of Wong-Fillmore's strategies:

1. Students may be expected to show individual variations in attending skills and in guessing. Some students, especially shy ones, will be less willing than others to volunteer verbal answers unless they are entirely certain of the correct response. One can expect that students will be more willing to guess in written or individual work than in the open classroom.

2. Both shy and outgoing students may be expected to remain quiet and do little talking in class for some time. They will listen a great deal, and they will begin to learn and to use formulas. Students will vary in choice of person to whom they will begin talking: some will choose peers, others will choose adults. One-to-one situations will be more conducive to attempts at talking.

3. The limited-English-speaking child will participate as best she can from the beginning provided she is interested in what

is going on. She will listen carefully to get the gist of things and will begin to build her language from the familiar formulas that she knows.

4. Students may be expected to compensate for differences in cognitive or social skills, as Hien, for example, compensated for her shyness by using her cognitive abilities to full advantage in figuring out what she needed to know in order to do her school work, and by consciously seeking help from adults.

5. While the shy student may fail to demonstrate some of Wong-Fillmore's strategies, compensatory action by the student, such as Hien's as described in item four, may result in negligible differences in language learned at the end of six months or a year. At the end of eight weeks of school, the subjects of this study were evaluated by their teachers for parent-teacher conferences. The girls received A's and a sprinkling of B's, except in such areas as reading and social studies which two teachers chose not to grade. Even where a grade was given in these areas, it was still a passing grade, albeit a D. At this early stage, all three girls were demonstrating fairly sophisticated knowledge of English.

6. Despite the fact that little verbal production by the subjects was observed, this difference between the subjects of this study and Wong-Fillmore's good language learner may be more a reflection of differences in setting: her observations were of one-to-one play which provides considerably more opportunity for

one-to-one interaction than the classroom. Moreover, the fact that a child does not interact verbally very much does not necessarily mean that her knowledge of the language is inferior to a more verbally active child; it may simply mean that she is not demonstrating her knowledge verbally. If children do in fact benefit from initial periods of silence and active listening in acquiring a language, then the shy child may not be at a disadvantage after all, except as in the long run her shyness may affect her social position.

Conclusions About Teacher Strategies

Based on the findings of this study, the following conclusions can be made about the regular classroom teachers of limited-English-speaking children of elementary-school age. The conclusions are framed in terms of the teacher strategies listed on page 52.

1. It is possible for classroom teachers to carefully control their speech in the classroom so as to facilitate the limited-English-speaking child's learning task. Most speech can be contextualized although it becomes increasingly difficult to do this in an area such as social studies as the grade level goes up. A second grade teacher will find it easier to contextualize in terms of subject matter being taught than a fourth grade teacher will.

2. Speech to the limited-English-speaking child can be modified, although if the teacher's language is already carefully

controlled, little if any modification will be necessary. It is possible, as demonstrated by Hien's teacher in this study, to use the language of motherese in the classroom. The classroom setting seems to provide ample opportunity for meaningful input and for listening. The input is suitable for the child's cognitive development and uses the target language--English--to increase the child's knowledge of the world.

One important element that seems to be missing in the classroom environment is the opportunity for one-to-one interaction. If Cross and Urzúa are right, and I think they are, that facilitative language occurs in one-to-one interaction which involves an almost equal number of turns and in which the "caretaker" (whether mother or teacher) is finely attuned to the child's psycholinguistic development, then it may be of significant help to the limited-English-speaking child as she learns English to be provided as many opportunities as possible for one-to-one interaction.

Opportunities for interaction should be provided in light of learner variables such as those seen in this study: an adult may be a better match for some students, while a peer will suit others. Further, despite the common notion that children learn a new language from peers who are native speakers of that language, opportunities for interaction with an adult may be instrumental in the child's language-acquisition process.

Finally, in the context of interactional opportunities, where there are few limited-English-speaking children attending an elementary school, there may actually be greater opportunity for one-to-one interactions. Where there are many limited-English-speaking children in a school, any special ESL classes usually involve pulling the children out as a group with a single ESL teacher, thus limiting opportunity for one-to-one interaction. If the school with few limited-English-speaking children can provide pull-out opportunities, they are more likely to provide opportunity for one-to-one interaction by virtue of fewer students.

3. A teacher may find a more academic approach better suited to a ten- or eleven-year-old child than to a younger child. The teacher of the older child needs to pay special attention to subject content areas that are the most abstract and complex (science, social studies) in her relationship with the child.

4. The teacher can enhance motivation by giving the impression that she can understand the limited-English-speaking child and that she believes the child can understand her. Teacher reinforcement of student attempts can be helpful in building self-confidence and in encouraging the student to be part of the group. However, the teacher can only provide the atmosphere; she cannot make it happen. Much of this is up to the student; what happens depends on her own personality.

Recommendations for Programs

Based on the findings of this study, the following recommendations are made for schools which have only a few limited-English-speaking students.

1. Where possible, provide a break-in period for students before they enter the mainstream of the American classroom. During this period, an ESL course similar to that described in this study could be provided. The class should be located in some place other than the school if the class is concurrent with the regular school periods, although if the class is conducted in summer when there are no other classes in the building, the school might be utilized. This recommendation is made to avoid the possibility of inducing segregated feelings among the limited-English-speaking children and of superior feelings in the English-speaking children.

The course should be clearly delimited in time. Six weeks of four hours a day would seem to be ample for students entering grades two to five. A break-in period should not be necessary for a first-grader and is not recommended for children entering nursery school or kindergarten.

The course should be conducted by a trained elementary school teacher or by an ESL teacher trained in elementary-school teaching materials and methods. ESL, per se, should not be taught. Audio-lingual methods, which for children may produce surface-learning results but not necessarily acquisition, should not be used.

Active listening should be emphasized and spontaneous verbal expression should be encouraged. Writing skills should be taught since many children come having been taught writing styles that differ from those in use in American classrooms. The teacher should work as quickly as possible on vocabulary building, since this is an important requisite for reading. English should be taught not as language _qua_ language, but through regular content subject matter and experiential learning. Any materials used should be representative of the language and subject matter of the regular classroom.

The course should be conducted in orderly but warm manner. The importance of the child's first impression of an American teacher cannot be over-emphasized. The teacher should aim to build trust and confidence and to motivate the child to want to know the language in order to know his American teachers and peers better.

Success here will be worth the postponement by a few weeks of the opportunity for social interaction with English-speaking peers. In fact, the break-in course, if it lives up to its goals, can pave the way for earlier successful social interaction once the limited-English-speaking child enters the regular classroom. However, if the school is unable to provide such a break-in course, many of the recommendations for such a course can be incorporated in the regular classroom and in imaginative approaches to pull-out ESL.

2. The limited-English-speaking child should be fully integrated into the regular classroom at her normal grade level. Her teacher should be informed of strategies she may use to enhance the child's acquisition of English. If workshops for teachers of limited-English-speaking children are available in the area, the teacher should be given the opportunity to attend them.

3. If a break-in course has been provided, the link with the teacher of that course should be maintained after the child enters school. This might be done through weekly half-hour meetings in which the child has the opportunity to bring questions to the teacher. These meetings should be on a one-to-one basis and should continue until the child no longer feels the need for them.

4. In addition to a buddy system utilizing peers, an avenue should be provided for using teacher aides or volunteers who are adults and who might interact with students who are more comfortable seeking input from adults. Such aides or volunteers would have to know appropriate strategies that can be used in communicating with limited-English-speaking children. They would also have to know how to help the child in her school curriculum.

Thus, opportunity for interaction might be provided outside the classroom between the limited-English-speaking child and a peer and between the English-speaking child and an adult. Such meetings should encourage a naturalistic conversational environment. They should be flexible and should essentially be directed by the limited-English-speaking child. This might mean an academic encounter for some and a play encounter for others.*

5. Flexibility should be built into any program to allow for differences in learning styles, both cognitive and social, as well as differences stemming from the input and material that have to be mastered: even if she has superior cognitive abilities, the fourth or fifth grade child is going to have a more difficult task because of the sheer quantity and complexity of what she must master. And a shy fourth grader will have different needs than an out-going, socially aggressive fourth grader.

6. Encourage the child's participation in non-academic subjects such as music and gym and his social interaction on the playground and at lunch. However, permit the child the pressure-release he may obtain by communicating in his native tongue with other limited-English-speaking children, if there are any, during any free periods.

7. Maintain a personal link with the children's parents. Write the parents personal letters and invite them for parent-teacher conferences, open houses, and other activities. Use interpreters wherever they are available.

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*The concept of child-directed encounter is not new. Its principles are based on Carl Rogers' non-directive counseling and are described in Virginia Axline's 1947 publication Play Therapy.

Recommendations for Teachers

Based on the findings of this study, the following recommendations are made for elementary-school teachers who have only a few limited-English-speaking students in their classes.

1. The teacher should carefully control her speech in the classroom. While speech should be representative of the full range of the language, the teacher can simplify her language, limit vocabulary, use repetition, expansion, and other tactics of motherese or caretaker speech. The teacher's attention is drawn to the section of this report on input in first-language acquisition on pages 17 to 26.

2. The teacher should speak at a normal rate of speech and use normal intonation. However, the teacher can train herself to pause more frequently than she would in normal conversation. Pauses at natural juncture points between thought groups can help to make the input comprehensible to the limited-English-speaking child.*

3. The teacher should focus on the message, not the form. This means that the focus will be on communication and understanding. Brown's advice to mothers who want to facilitate their children's acquisition of language is applicable to the teacher

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*See Pimsleur, Hancock, and Furey for a discussion of this device, which is called temporal spacing.

of a limited-English-speaking child: "Believe that your child can understand more than he or she can say, and seek, above all, to communicate. To understand and be understood. To keep your minds fixed on the same target" (1977:26).

4. The teacher should keep her speech suitable for the child's cognitive development. If the teacher focuses on communication and on the subject matter of her class, this should not be difficult.

5. The teacher should provide ample opportunity for the child to obtain input and to listen. The teacher should be alert to the child's non-verbal clues and should try to ensure that the child is actively listening and is not merely silent and withdrawn.

6. The teacher should encourage spontaneous verbal expression, but she should not force verbal production from the child. The teacher should encourage verbal expression by calling on the child whenever she volunteers and by providing as many opportunities as possible for one-to-one interaction where the child may be more likely to express herself verbally.

7. The teacher can facilitate communication by using nonverbal gestures and through body language. She can rely on motor activity and concentrate as much as possible on the "here and now."

8. The teacher should allow the child to make mistakes. In the manner of motherese, she should affirm the truth value of a child's attempt and not its grammatical integrity.

9. The teacher should avoid putting the child on the spot by not asking the child to answer questions that she is not likely to be able to understand.

10. The teacher should recognize that academic skills, such as reading skills, that the child already has are likely to transfer.

11. The teacher should try to assess when the child tunes out input that is incomprehensible. This may be a good time to schedule pull-out interaction meetings for the child.

12. The teacher should treat the child as a full member of the class community and she should encourage the child to participate as best she can from the beginning. The teacher's supportive role is crucial since it can set the entire tone of the child's learning experience.

A Final Note

In summary, this study suggests that the limited-English-speaking child who is isolated in an American elementary school where there are few other children with limited proficiency in English need not be at the mercy of a "sink or swim" approach to acquiring English. The child's teacher can provide facilitative language in the classroom by using the language of motherese, or as Urzúa (1980) suggests, by being a good parent. Innovative approaches using peers, teachers' aides, or volunteers can be used to provide opportunities for one-to-one interaction and hence the opportunity for the fine-tuning lessons of mother-child interaction.

In response to claims that without bilingual education the child's cognitive development will be hindered, I believe that an effective monolingual program as suggested in this report--one which focuses on communication and understanding--need not hamper the child's cognitive development since it will take her best cognitive skills to communicate and understand. She may miss out on a little subject matter, but this is not the same thing as missing out on cognitive development. And as for grammatical integrity, educators should remember that grammatical integrity and conceptualization are not necessarily correlated: just because a child cannot perfectly express a thought in English does not mean she cannot conceptualize something.

APPENDIX A

MOTHERS' SPEECH PARAMETERS

DEFINITIONS OF MOTHERS' SPEECH PARAMETERS
(From Cross 1977)

Discourse Features

Semantically Related to Child Utterance

Imitation

Any maternal utterance that repeated exactly, or in part, one of the child's preceding utterances

Expansion (Cazden 1965)

Complete: An expansion of any preceding child utterance that formed a grammatically complete sentence.

Incomplete: An expansion that did not form a complete sentence.

Elaborated: A complete expansion that also contained additional lexical items.

Transformed: A complete expansion that altered the sentence type (or function) of the relevant child utterance.

Semantic Extension (Cazden 1972)

Noun-phrase extension: An extension of a preceding child utterance which incorporated exactly the child's topic noun phrase.

Pronoun extension: An extension as above, but which incorporated the child's topic (implicit or explicit) by using pronominalization.

Predicated extension: An extension of any lexical item in a preceding child utterance which was not included in the child's topic phrase.

Semantically Unrelated to Child Utterance

Semantically New Utterance

Any utterance that was not included in any of the above categories, with the exception of a single word 'yes,' 'no' or like replies to child questions (see Yes-no replies below).

Novel Isolated Utterance

Any utterance in the above category that was not a stock expression (see below) and was not repeated sequentially (see below).

Maternal Self-Repetitions (Snow 1972; Broen 1972)

Paraphrase (Snow 1972)

An utterance which altered any lexical item contained in the original, but which was restricted to reiterating the sense of any preceding maternal utterance and was not a partial repetition (see below)

Exact Repetition (Snow 1972)

An exact sequential repetition of any preceding maternal utterance.

Partial Repetition (Snow 1972)

An utterance which repeated any phrase (or phrases) of a preceding maternal utterance, but was not an exact repetition.

Transformed Repetition

A sequential repetition of any preceding maternal utterance that altered the sentence type (or function) of the original maternal utterance.

Non-Sequential Repetition

An exact but non-sequential repetition of any maternal utterance already coded in the speech sample.

Other Discourse Parameters

Stock Expression

Any utterance in an individual mother's speech sample that had previously been coded as a 'Non-Sequential Repetition' in at least two other mothers' speech samples.

Yes-No Reply

Any single-word response which expressed either affirmation or negation of a preceding child utterance.

Self-Answer

Any maternal utterance which supplied an answer to the immediately preceding maternal question.

Referential Features

Immediate Utterance

Child-Controlled Events

Any maternal utterance that referred to any activity that the child either had just completed or was currently engaged in, or to any object that the child was manipulating or holding just prior to or at the same time the utterance was produced.

Mother-Controlled Events

As above, except that the activity or object was related to the mother's on-going manipulations.

Persons or Objects Present

Any maternal utterance that referred to any person or object that was present in the immediate recording situation (i.e. in the room in which the recording was taking place).

Non-Immediate Utterance

Any maternal utterance that referred to events, persons or objects spatially and temporally removed from the recording situation.

Conversational Style

Words Per Minute (Broen 1972)

The mean number of words per minute spoken by the mother in a 10-minute period, selected at a point between 10 and 16 minutes into the first recording session.

Proportion of Mother-Child Utterances

The number of mother's utterances spoken during the time the child spoke his first 300 sequential utterances, expressed as a proportion of the child's utterances.

Proportion of Mother Utterances Per Turn

The number of mothers' utterances delivered during the first 100 conversational turns expressed as the proportion of utterances per turn.

Syntactic Features

Syntactic Complexity

Mean Length of Utterance

This was calculated as Brown (1973) recommends for children, for the first 300 utterances in each mother's speech sample.

Long Utterances

The percentage of utterances in 300 sequential utterances that were longer than six morphemes.

Difference Between Child and Mother's MLU

The difference was calculated between the MLU of the first 100 utterances in each child's speech sample and the mother's MLU.

Single-Word Utterance (Broen 1972)

Any utterance that consisted of only a single word, including inflections. Yes-no replies were excluded.

Propositional Complexity (Newport 1976)

All multi-propositional utterances were calculated as Newport suggests (i.e., the number of S-nodes per utterance), with the exception of run-on sentences, which were distinguished by intonation contour, were excluded.

Preverb Complexity (Snow 1972)

The number of morphemes placed before the main verb in any clause, for 200 sequential utterances. Expressed as a proportion of utterances.

Syntactic Integrity

Disfluent Utterances (Broen 1972)

The percentage of utterances that contained within-utterance revisions, hesitations, word repetitions or long pauses.

Unintelligible Utterances (Newport 1975)

The percentage of utterances that were classified partly or wholly as unintelligible by one transcriber.

Run-on Sentences

The percentage of sentences that were not distinguished from the following sentence by a discernible pause, but which were coded as sentences on the basis of final intonation contour and grammaticality.

Abbreviated Utterances

The percentage of utterances that contained at least one non-discourse deletion (as judged by two adult speakers) in comparison with the paraphrase provided in the transcript.

Complete Sentences

The percentage of utterances that were judged to be complete, fluent and grammatical sentences.

Surface Sentence Types

Questions

Wh- questions (including all 'What's that?', 'What is it?', and 'Where is (it) the NP?' questions) and yes-no questions (including all auxiliary-fronted, tagged and rising-intonation questions).

Imperatives

Affirmative (with or without subjects) and negative (with 'don't').

Declaratives

Either simple or multi-propositional.

Deictic Statements

Having the form 'That/this is (not) a NP').

Other Syntactic Parameters

Noun-Phrases

The number of full noun phrases in the first 200 utterances, expressed as a proportion of utterances.

Pronouns

The number of pronouns of any kind in the first 200 maternal utterances expressed as a proportion of utterances.

APPENDIX B

SAMPLE OF OBSERVATIONAL RECORDS

Observational Record
9/9/80
Hien

The setting is mathematics period. The students are learning how to do word problems.

Teacher: Okay, the next part is E. Put an E under the I, which stands for information. E stands for equation. This is where I am going to write a math sentence now. No more writing out in cursive or in words. I'm gonna write out a math sentence. Okay, so you're gonna have to figure out, they want to know how many miles or excuse me, hours they rowed in all. Those two guys, excuse me, those two people. All right, we know that Jill went 3 hours and Greg went 2 hours. Now, are you gonna multiply those two numbers? Are you gonna add those two numbers? Are you gonna subtract those two numbers? Or are you gonna divide? You have four operations. The clue is those words 'in all.' So, you're gonna put those two together. When you do that, what are you gonna do? Are you gonna add, subtract, multiply, or divide? Go ahead, Tom.

Tom: Add.

Later, for another problem:

Teacher: Now we're gonna make our math sentence. All right, the question says, 'How many squirrels did she see in all?' Are you gonna multiply, are you gonna add, you gonna divide, you gonna subtract?

Observational Record
9/11/80
Ha

The setting is mathematics period.

Teacher: We can write it on the board like we did yesterday. Four plus 2 equal

Students: Six.

Teacher: Two plus 4 equals

Students: Six.

Teacher: Six. Bob, are you paying attention? Four plus 2 equals

Students: Six.

Teacher: Six. Two plus 4 equals

Students: Six.

Teacher: Six. It doesn't matter how we say it. Upside, we can turn it upside down, four plus two, two plus four. All right, let's work the problems on page 7. All right, I think everyone can work those, but be sure that you look carefully and work them right.

To Ha:

Teacher: Have you already done yours? Very good, Ha.

Teacher responds to an individual student query, then addresses class as noise level goes up,

Teacher: Come on, let's keep the mouths closed because then everybody does their own work this way. All right, as I check your book, would you turn then to page 8. This is a practice page on page 8 that we need to do. You go ahead and when I come by to check everything you can turn it back . . . .

Observational Record
9/11/80
Ha

The setting is mathematics period. The teacher is making rounds, checking individual work:

Teacher: Tim, what is that?
Tim: 5.
Teacher: That's not a 5 in my book. That's sort of a squiggly snake or an S or something. I don't, I don't like that. So go over, down, and around.

The teacher demonstrates manually.

Teacher: Okay. I'm not gonna count it wrong this time, but I don't like the looks of those. You practice on those. All right?

Observational Record
9/12/80
Loc

Class is going to see a film on telling time. Before the film, the students establish that it is 2:47. Then,

Teacher: In how many minutes do we go home?
Student 1: Uh, 15,000.
Student 2: In about 20.
Teacher: How many, Loc?
Loc: Three o'clock.
Teacher: Three o'clock we go home? Not quite. What time do we go home?
Student 3: 3:15.
Teacher: How many minutes until we go home?
Students: (Several answers in chorus)
Teacher: 25 minutes.

As students get ready to view the film,

Teacher: Loc, would you turn the lights off please.

Loc does so. Following the film, students discuss where in their homes they have clocks. Loc is tuning much of this out. The teacher puts a list of rooms on the board and asks who has a clock in the bedroom, living room, etc. When the list is completed,

Teacher: By looking at this, you could say that everybody in this room has at least how many clocks? Loc? At least how many clocks does everybody have, by looking up here?

No response from Loc.

Teacher: That's a hard question.

Observational Record
9/16/80
Ha

The setting is phonics period. The teacher walked over to Ha and with a pencil indicated to her where she should be looking.

Teacher: Ha, take number 1. Tell me the word. What's it start with?

Ha hesitates.

Teacher: You know this? p-. Remember that igloo we had? Igloo is i-. p-i-. What's this?

The teacher is pointing to pictures as she talks.

Teacher: It's a nail. So, it would be n-. Like pin, p-i-n.

Observational Record
9/18/80
Loc

The setting is phonics period. As lesson progresses, Loc is only half attentive. Students were instructed to take out their workbooks; Loc had the wrong book open; she noticed it and then got out the right book.

Teacher:	All right, everybody put their pencil by the word box.

Teacher pointed the box out to Loc and later continued to assist Loc. Loc was able to complete the exercise. Later, students were instructed to take out their reading books. Loc continued her workbook assignment and did not listen to the reading.

During English later in the hour,

Teacher:	Loc, what should every sentence begin with? What should it begin with? A sentence begins with what kind of a letter?

No response.

Teacher:	Cheryl.
Cheryl:	Capital. Capital letter.

Observational Record
9/23/80
Ha

The setting is mathematics. Students are working individually on work sheets. The teacher helped Ha with her assignment. The teacher made rounds to check each student's work. To Ha:

Teacher: You did a good job, Ha. That's good. I don't even see one mistake on there. Good.

Observational Record
9/26/80
Hien

The setting is science period. The four directions North, East, South, and West are under discussion. The teacher pointed out East and West, then pointed to North.

Teacher: Can anybody tell me what that is.

Hien had her hand half-way up. Later, the teacher has students tell her the abbreviations for the four directions.

Teacher: Okay, East, Hien.
Hien: Capital E.
Teacher: Capital E what?
Hien: East.

Teacher points to a period on the board.

Hien: Period.
Teacher: Period. Uh, come over here and stand. Stand right here.

Teacher has Hien stand at East.

Observational Record
10/2/80
Ha

The setting is phonics period.

Teacher:	Page 40. What sound are we working with today, Ha? What sound?

Ha hesitates.

Teacher:	Ha, can you say /θ/, th, /θ/, like thumb, thumb? Can you say thumb?
Ha:	Thumb.
Teacher:	This is /θ/.

Teacher is next to Ha, pointing to her book. Students then take turns answering whether the word depicted has the sound /θ/.

When it comes to Ha:

Teacher:	And the last one, Ha.
Ha:	Thirty, yes.
Teacher:	Thirty, yes. Good.

Observational Record
10/13/80
Loc

The teacher has asked students to write a letter to their parents about what they would like their parents to know about their third grade classroom. There is an open house tonight. Loc held up her hand to get paper and wrote something.

Later, during social studies, students were reading aloud from the social studies book. Loc was following the reading by pointing to each word with her finger.

Observational Record
10/20/80
Hien

The setting is science period.

Teacher: Take a look at your sound notebook and get your science books out. We took a sound quiz-uh-Wednesday or Thursday last week. (unintelligible sentence) Tomorrow I'm giving you a sound test. It's very, very similar to what I gave you on Wednesday or Thursday of last week. These notebooks can go home. You can study this tonight because I promise you that anything that is on the test, we have either discussed or is written down here. Uh, a question that I can guarantee you that's on there is how many feet per second does sound travel. It's a number I'm talking about.

Student 1: 1000.

Teacher: Uh huh, you're close. She said a thousand. It goes a little bit faster than a thousand feet per second.

Student 2: 1140.

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