

THE RELATIVE EFFECTIVENESS OF
MODELLING AND SHAPING ON ENGLISH
LANGUAGE ACHIEVEMENT OF DEAF CHILDREN

CHIGOROM OKECHUKWU ABOSE

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DEDICATION

It is with deep LOVE and AFFECTION that I dedicate
this work to:

ANTHONIA

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ABSTRACT

The present study investigated the relative effectiveness of modelling and shaping on the English language achievement of deaf students. The study also investigated the possible effect of modelling and shaping on the subjects attitudes, and self-concept during English language sessions.

The sample was a natural cluster of 45 form four secondary school Nigerian deaf students drawn from a secondary school for the deaf in Ibadan. A 3 x 3 factorial design was adopted. Four instruments namely a Special English language achievement test, an attitude scale, and a self-concept scale were used for the study.

The subjects were divided randomly into three groups - the modelling, shaping and control groups. Each group comprised of five students of high, five students of average, and five students of low achievement levels. The three groups were pre- and post-tested. The data obtained were analysed by the analysis of covariance and t-test, using the pre-test scores as the covariate and post-test scores as criterion.

It was found that both modelling and shaping programmes significantly improved the English language achievement of the

deaf subjects ($F=23.87$, $df=2/36$, $P < .01$). When the modelling group was compared with the control group with the help of t-test, the modelling group was superior ($t=3.13$, $df=28$, $P < .001$). The shaping group was also found to be superior to the control group ($t=2.88$, $df=28$, $P < .05$). But there was no significant difference between the modelling and shaping programmes in improving the English language of the deaf when the two procedures were compared, although the modelling group had superior adjusted Y-mean score. The average achievement level subjects who used the modelling programme were however superior to their shaping counterparts ($t=6.3$, $df=8$, $P < .001$).

The treatment programmes also improved the attitude of the subjects during the study, ($F=4.73$, $df=2/36$, $P < .05$). Although there was no significant difference between the effect of modelling and shaping programmes on the subjects attitude both collectively and at various achievement levels, the modelling high achievers were superior to the shaping high achievers ($t=2.31$, $df=8$, $P < .05$). When the modelling group was compared with the control group, the modelling group was superior ($t=3.67$, $df=28$, $P < .001$). The shaping group was also found to be superior to the control group ($t=3.59$, $df=28$, $P < .001$).

Modelling and shaping strategies were found to have significantly influenced the self-concept of the subjects

($F=7.52$, $df=2/36$, $P < .01$). Further analysis showed that the modelling and shaping programmes influenced the self-concept of the subjects equally. But the modelling group was superior to the control ($t=2.08$, $df=8$, $P < .05$). The shaping group was also superior to the control group ($t=2.08$, $df=8$, $P < .05$). Apart from the modelling low achievers who showed superiority over the shaping low achievers ($t=2.96$, $df=8$, $P < .05$), there was no significant difference between the various modelling achievement levels and their shaping counterparts in self-concept.

These findings have important implications for the remediation of deficiencies in underachievement and poor achievement motivation.

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Chigorom Okechukwu Abosi

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CERTIFICATION

This is to certify that this work was carried out by Mr. Chigorom Okechukwu Abosi in the department of Guidance and Counselling, University of Ibadan, Ibadan, Nigeria.



SUPERVISOR

J.O. Akinboye, B.Ed., M.Ed., Ph.D.,
Professor of Psychology,
Department of Guidance and
Counselling,
University of Ibadan, Ibadan,
Nigeria.

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CHAPTER ONE

PROBLEM AND BACKGROUND

INTRODUCTION:

Auditory Perception is one of the main sensory sources through which the human organism understands the world around him. It is through the auditory senses that a large proportion of human information processing takes place. Yet a number of people have this auditory modality either profoundly or mildly impaired. When an individual is hearing impaired, his learning, social interaction, general operation and adjustments are likely to be affected. This is why it is very crucial that intensive studies be conducted in the area of hearing impairment.

A number of studies (Dale¹, MyKlebust², Ivimey³, Cornett et al⁴, Mba⁵) have shown that the average young deaf child progresses more slowly in understanding the environment in language and in social development.

-
1. D.M.C. Dale. Deaf Children at Home and School. London University Press, 1972.
 2. H. MyKlebust. The Psychology of deafness. Grune and Stratton. New York, 1964.
 3. G. Ivimey. "Transformational Grammar" unpublished paper. University of London Institute of Education, 1978.
 4. O. Cornett et al. A theoretical model of the development of reading in hearing impaired children. Gallaudet Conference, Washington, 1978.
 5. P.O. Mba. Language Development in Deaf Children through Natural Method. Unpublished paper Univ. of Ibadan, 1981.

Language is an audition-based symbol by which individuals understand things and express understanding to other people. The ability of man to communicate with his fellow man is the major skill that differentiates him from animals. O'Connor¹ describes language as the gateway to the achievement of educational, vocational, social and civil competence necessary for happy and effective living.

Human beings use language everyday. Most of the time, the medium of language used is either oral or written. Ayodele et al² stressed that whatever kind of language used, the purpose is to communicate ideas, feelings, needs, news to other people.

For centuries, it was considered impossible to develop language skills in the deaf children. For this reason, it was believed that the deaf could not be educated. Initially, deaf people were not allowed to hold a position of responsibility because they lacked or did not have enough language. Language is often referred to as one of the most important sources of knowledge, understanding and self realization.

-
1. C.D. O'Connor. Lexington School for the Deaf. Eighty-eighth Annual Report, June 30, 1965.
 2. S.O. Ayodele et al. Reading to Learn. Hennemann, Ibadan, 1985.

Deafness imposes a heavy burden on a child who begins life without normal hearing. Not only must the deaf develop the ability to communicate without hearing, but he should also acquire the educational, vocational skills, knowledge and competence necessary for effective living through his eyes. In addition to a full life, the deaf should build a set of spiritual and moral values out of his daily experiences in a world devoid of sound and uninfluenced by the shades of meaning conveyed through audible speech.

There is no doubt that the deaf child is severely handicapped in the process of language acquisition. The deaf child cannot hear, and his auditory encoding and decoding process is impossible. He only employs visual decoding in the form of lip-reading, finger spelling and signing. These approaches are very much inadequate. At the age of six years the hearing child on starting school, has a vocabulary repertoire of between 2,500 to 3,000 words whereas the deaf child at the same age has under 100 words. This therefore makes it very necessary that a teacher should have a good knowledge of the pattern of language development in hearing children if he is to work with deaf children. There is therefore the need to conduct more intensive studies on the factors affecting the achievement of the deaf.

The deaf child differs from the hearing child in that he cannot hear and communicate in the ordinary way. His handicap is very great because of lack of words to express his thought, needs and desires. The present study adopted behavioural strategies to enhance English Language Achievement of Deaf Children. The behavioural strategies were adopted because the psychodynamic-interpersonal and the sensory-neurological models are concerned with "why" a child behaves as he does and "how" intrahuman factors affect his behaviour. The practitioner of behaviour modification on the other hand is concerned with "what" behaviour the child exhibits that is inappropriate or unacceptable and what intervention can be applied in efforts to change observable behaviour.

Behaviour modification and its application to individual and group behaviour problems have their roots in the work of (Pavlov¹, Watson², Bandura³).

This study is considered important because the need to determine effective therapeutic techniques in enhancing language

1. I.P. Pavlov. Lectures on Conditioned reflexes Vol. 1 and 2. International Universities Press, New York, 1941.
2. J.B. Watson. Behaviourism. University of Chicago Press, 1930.
3. A. Bandura. Principles of Behaviour Modification. Holt. Rinehart and Watson, New York, 1969.

achievement of deaf children cannot be over-stressed. Secondly, the first set of Nigerian deaf students attempted the West African School Certificate Examination in 1984 and have been seeking admission into various institution of higher learning. The major problem as expressed by the teachers is that of poor English language background. Dale¹ observes that many deaf children who attain mental age of say fifteen years have reading vocabulary ages of only eight or nine years. Their oral English is frequently not as syntactically correct as that of many three-year old children who have normal hearing. Dale¹ however pointed out that deaf children are able to cope with new concepts quite adequately provided they are taught skilfully.

There was therefore the need of finding out whether the two strategies enhanced English language development in deaf children. It was also necessary to know which of the strategies enhanced it more. The result has provided some hope for solution to oral and written English problems among children.

The two therapeutic methods adopted were modelling and shaping. The two methods represent different orientations within behaviour therapy. Modelling is a behaviour change

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1. D.M.C. Dale. Deaf Children at Home and School. London University Press, 1972.

strategy that provides vicarious experience to the observer who imitates the experiences. Shaping on the other hand is a behaviour change process in which cues, prompts and instructions are used to initiate children into performing behaviour. Every approximation to expectant behaviour is continuously reinforced.

Among other things, this study investigated how effective these therapeutic strategies are in relation to one another in enhancing English language achievement in deaf children. It also attempted to see if effectiveness of therapy resulted in improved English language achievement.

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LITERATURE REVIEW

A study of this nature would need to be backed up with sufficient literature. Such literatures will expose the past works done that are relevant to the present study. The result obtained from the study will also be much more meaningful. The literature review on this study will therefore be treated under two headings, thus theoretical and empirical backgrounds.

Theoretical Background:

All normal children in a normal environment acquire language (Ginsberg and Shatz¹). But the mystery of how a child learns to speak has intrigued and puzzled adults for many generations.

Klima², Smith³, Emig⁴, Brown⁵, Brown⁶ maintained that each child exposed to a different sample of language will arrive

1. E.H. Ginsberg and M. Shatz. Linguistic Input and Child's Acquisition of language. Psychological Bulletin 1982, vol. 92, No.I.
2. B. Klima. Linguistic Mechanism underlying child speech. In E.M. Zals (Ed.). Proceedings of Conference on language and language behaviour, Appletton-Century-Crofts 25, N. York, 1968.
3. F. Smith. Understanding Reading. Holt-Rinehart and Winston, Inc. N. York, 1971.
4. J.A. Emig et al. Language and Learning. Harcourt World Inc. N. York, 1966.
5. G. Brown. Child Development. Open Books, London, 1977.
6. R. Brown. Social psychology. The Free Press, N. York, 1966.

at essentially the same grammar in a short time whether the child was taught or not. Each child rapidly becomes a full fledged member of language community, able to produce and comprehend an endless variety of novel and meaningful utterances

Until recently behaviouristic psychology looked upon language and the task of first language learning as just another form of human behaviour which could be reduced to the laws of conditioning. The point that is made here however is that a child creatively constructs his language on his own in accordance with innate and interinsic capacities. In other words, a child develops new theories as he grows. This situation differs radically from the traditional view of a child whose learning is governed by variables such as frequency, recency, contiguity and reinforcement (Black¹).

Black¹ observed that the infants early attempts at vocal communication are quite different from human language in many important ways. There is a repertoire of inborn noises expressing a spectrum of need states. However, it will take a long time before vocalization are used to designate objects or events.

-
1. M. Black. The Importance of Language.
New York Englewood Cliffs, 1972.

Smith¹, Chomsky², Slobin³ all agree that normal children acquire language in the same manner. Thus at the age of three months, the child babbles; at about 18 months, the child produces his first two word utterances; by 3½ years, he appears to have mastered all the important rules of his language. They however point out that the child's vocabulary may not be as rich as that of adults; the child may not talk about such complex events but he has constructed for himself a grammar that gives him the competence to produce and comprehend all the possible types of sentences used by the language community in which he lives.

Supporting the above view (Maratsos and Chalkley⁴, Pinker⁵, Brown⁶ stress that spoken language is literally self taught to a degree far beyond the appreciation of most parents and many specialist in child development.

-
1. F. Smith. Understanding Reading: A Psycholinguistic Analysis of reading and learning to read. Holt Rinehart and Winston Inc. N. York, 1971.
 2. N.A. Chomsky. Language and Mind. Harcourt Brace. New York. 1968.
 3. D.I. Slobin. Recall of full and truncated passive sentences connected discourse. J. Verb learn. Verb. Beh. 7. 1968.
 4. C. Maratsos and T. Chalkley. The internal language of children's syntax. In K. E. Nelson (Ed.). Children's language vol. 2, Gardner Press, N. York, 1980.
 5. S. Pinker. On the acquisition of grammatical morphemes. Journal of child psychology 8, 1981.
 6. R. Brown. How shall a thing be called? Psychological Review 65, 1958.

Maratsos et al¹ (1980) maintain that most children learn to speak without any need for formal instruction. They go on to say that the process of first language learning proceeds in an extremely rapid, smooth and predictable sequence, indicating that a child is well equipped biologically both to learn and use language.

Miller and McNeill² point out that during the first few years of life, children find no particular difficulty in learning any language. They are not born more ready to speak one language than another. They observed that at three months, it is impossible to distinguish the babbling of a Chinese child from that of an African.

Contrary to popular pracental belief, the child is not learning words and then finding meaning for them. Instead he is acquiring or inventing words which may or may not have a close relation to adult language.

Weir³ stresses that even at the holoplastic stage, babies are speaking more language than a Chimpanzee could even learn.

-
1. C. Maratsos and T. Chalkley. The internal language of children's syntax. In K.E. Nelson (Ed.) Children's language vol. 2. Gardner Press, New York, 1980.
 2. G.A. Miller and D. McNeill. Psycholinguistics. In Lindzey and Aronson, E. (Ed). Handbook of Social Psychology. Addison-Wesley Mass. 1968.
 3. R.H. Weir. Language in the crib. The Hague Mouton, 1962.

While Chimpazee words are literally signs, in that there is one to one correspondence between each sound and its meaning, a human infant is already communicating complex underlying structure but not the transformations to put words together at the surface level.

Normally, by 18 months, many children have acquired a powerful syntactic rule. At this age, they are producing two or three word phrases like "see baby" "All gone sugar". Two aspects of this development are significant, firstly these short sentences are certainly not imitated from parents but are genuinely constructed by the child himself and secondly the constructions are not random (Weir¹). The task for the language learning child is to find out what are the rules of grammar - to uncover the structure that lies beneath the surface of every utterance and that bridges the gap between sound and meaning.

Carden² points out that what the child does is to try out alternative rules for constructing the kinds of sentences that he hears. The child never repeats a sentence that he hears an adult utters. In this light, the responsibility of parents becomes clear; they should provide a child with information when

-
1. R.H. Weir. Language in the crib.
The Hague. Mouton, 1962.
 2. C. Carden. Environmental Assistance to the child's acquisition of grammar. Doctoral thesis, School of Education, Harvard University, 1965.

he needs it. The child needs feedback to tell him whether he is observing the significant differences of his language.

When parents expand a child's language, they only provide him with an adult language surface structure for a deep structure that the child already has in his mind. It is not a matter of correcting an item of a child's language but of giving information so that the child can verify a rule that has just been applied at a time when he can relate it to the appropriate deep structure (Baratz and Shuy¹, Carden²).

Chomsky³ and Lenneberg⁴ maintained that the child learning to talk, looks for rules that will reduce some of the uncertainty of the world around him. In the normal progression of development, the child goes on to apply the same rule in order to discover skills to the task of learning how to read.

-
1. J.E. Baratz and R.W. Shuy. Teaching black children to read. Washington D.C. Confer. for Applied Linguistics, 1969.
 2. C. Carden. Environmental Assistance to the Child's acquisition of grammar. Doctoral thesis. School of Education, Harvard University, 1965.
 3. N.A. Chomsky. A review of B.F. Skinner's Verbal Behaviour language 35, 1959.
 4. E.H. Lenneberg. On explaining language. Science 164, 1969.

The frontier knowledge in theory and research of language development in children is to emphasize universality and existence of innate and biological determinants of such universality (Chomsky¹, Lenneberg²). The arguments around the issue of innate factors in language acquisition are complex and heated. The complexity has made it plausible to postulate that the child's mind is somehow set in a pre-determined way to process the sort of structure which characterises human language arriving at something like a transformational grammar of his native language.

Different behavioural principles have been more commonly used to attempt to explain the manner in which words come to be uttered in specific contexts. The explanation hinges upon the fact that acts which are reinforced or rewarded in some way are likely to be repeated. This is a situation which will be exploited in the present study.

Skinner³ proposed a much more detailed and elaborate explanation of behaviour principles. He proposed that an

1. N.A. Chomsky. A review of B.F. Skinner's Verbal Behaviour language. 35, 1959.
2. E.H. Lenneberg. On explaining language Science 1969 164.
3. B.F. Skinner. Beyond Freedom and dignity. Alfred A. Knopf Inc. New York, 1971.

utterance which asked for something would be reinforced if whatever that was asked for was produced. Skinner further said that class of operants were those which the child reinforced by self-stimulation. Repetition of invented sounds or sounds uttered by adults would be the source of what Skinner called echoic responses. And by repeating such sounds to his own satisfaction, the child would be reinforcing himself. These processes of operant conditioning often achieve success by shaping behaviour toward some desired outcome.

Another approach to discovering the mechanism of and constraints on language acquisition has been to construct formal models of the acquisition procedure and subject these models to mathematical proof (Anderson¹, Wexler and Culicover²). Unlike the developmentalists who are concerned with the course of acquisition of language, the focus of this approach has been to account for the fact of acquisition by describing the conditions under which language can be demonstrated to be Learnable (Pinker³). One conclusion with implication for acquisition

-
1. J. Anderson. Language Acquisition by Computer and Child. (Tech. Rep. 55) Ann Arbor. University of Michigan Dept. of Psychology, December, 1977.
 2. K. Wexler and P. Culicover. Formal principles of Language acquisition. Mass MIT Press, Cambridge, 1980.
 3. S. Pinker. On the acquisition of grammatical morphemes. Journal of Child Psychology 8, 1981.

theories is that language is not learnable from an unordered sample of sentences (Gold¹). Some additional constraints must be provided, either in the input or in the form of a priori knowledge, which reduces the number of hypotheses the child has to entertain.

The kind of input that would most easily solve the formal problem is getting feedbacks and identifying ungrammatical strings. This solution has typically been rejected as unrealistic on the basis of Brown and Hanlons (1970) assertion that mothers do not often correct ungrammatical utterances produced by their language-learning children. The children do not even pay much attention to such feedback when they get it. Furthermore (Brown and Hanlon²) found that mothers were equally able to respond with sequiturs to their children's primitive and well-formed utterances.

Language Development in Deaf Children:

In most countries including Nigeria, people still refer to the deaf as dumb. The reason for this misconception could be that in the past many deaf people were unable to talk at all.

1. E. Gold. Language identification in the limit. Information and Control 16, 1967.
2. R. Brown and C. Hanlon. Derivational Complexity and order of acquisition in Child Speech. In J.R. Hayes (Ed.) Cognition and development of language. Wiley, New York, 1970.

Again it has been observed that when children are born deaf, it is impossible for them to develop absolute normal speech (Dale¹). However, we speak as we hear; if a person is born in Ibadan, he hears Yoruba all around him; so that when he is old enough to talk, Yoruba words are produced. Again if the person was born in Abiriba, his speech would have a typical Abiriba accent. But if a child was born profoundly deaf, he would hear no speech at all and as a result would speak little until specially taught to do so.

Deaf children do not realize that words exist. They only see all sorts of movements about them but words play no part in these. Gradually however as Myklebust² puts it, the deaf would become aware that the movements of mother's or father's lips do mean certain things.

In dealing with the language of deaf children, one should be mainly concerned with the semantics rather than the syntax. This is so because research has shown that the language construction of deaf children is full of gaps, although the meaning

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1. D.M.C. Dale. Deaf children at home and school.
University of London Press, 1972.
 2. H. Myklebust. The psychology of deafness.
Grune and Stratton, New York, 1964.

they convey could be conceived with much problem. Ivimey¹, Silverman², Dale³ have shown a lot of interest in this area of language development of the deaf.

Ivimey¹ and Dale³ maintain that the deaf have no orderly syntactic knowledge. Blanton⁴ asserts that the deaf presumably lack English syntactic organization and that if any exists, it is unknown. Furth⁵ seems to agree with Blanton in that view. Fusfeld⁶ goes further to say that the writing of the deaf is a "tangled web type of expression in which words occur in profusion but do not align themselves in an orderly way".

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1. G. Ivimey. Transformational Grammar. Unpublished paper. University of London Institute of Education, 1976.
 2. S.R. Silverman and H. Davies. Hearing and Deafness. Holt Rinehart and Winston, New York, 1960.
 3. D.M.C. Dale. Deaf Children at home and school. University of London Press, 1972.
 4. R.L. Blanton. Symbolic and Linguistic Processes of the deaf. Vanderbilt University, 1974.
 5. H.G. Furth. A comparison of reading test norms of deaf and hearing children. American Annals of the deaf March 1966.
 6. I.S. Fusfeld. The academic programme of school for the Deaf. Volta Review vol. 57, 1965.

Simmons¹ reports deaf children's preference for short, simple expressions. Fusfeld² also categorizes deaf children's language as displaying "poorly developed grammatical abilities". Myklebust³ quotes many features common to the language of deaf children, notably omission of function - as opposed to content - words, with many unnecessary additions and substitutions, especially in verb phrases construction.

Groht⁴ maintains that deaf children cannot express themselves without help. They must be approached as far as language is concerned in very special way. Levine⁵ says that by language of actions, moods and attitudes, the deaf child tries his best to achieve meaningful contact with the world. Pei⁶ maintains that the deaf child knows nothing of structure of

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1. A. Simmon. Comparison of written and spoken language for deaf and hearing children at five age levels. Unpublished doctoral dissertation. Washington University, 1962.
 2. I.S. Fusfeld. The academic programme of school for the Deaf. Volta Review vol. 57, 1965.
 3. H. Myklebust. The psychology of deafness. Grune and Stratton. New York, 1974.
 4. M.A. Groht. Natural language for Deaf children. Alex Graham Bell. Ass. for the Deaf Inc. Washington, 1958.
 5. E.S. Levine. Nursery school and the deaf child. Volta Review 57, 1965.
 6. M. Pei. All about language. J.B. Lippincott Co. New York, 1964.

language but is motivated solely by his needs, feelings, thoughts and emotions. The real purpose of language according to him is to carry meaning and to transfer thought from one human brain to another. If language doesn't do this, it isn't language - it is just sound or gesture he stresses.

McCarthy¹ maintains that a young deaf child should become acquainted with language in the same casual and informal way in which the hearing child does. He says that if language is ever going to be vital to the deaf child, it must be attained by him, not as a lesson but as a meaningful approach to a very necessary, useful and happy way of understanding himself and others.

A central question in developmental psycholinguistics has been the extent to which the course and outcome of normal development are constrained by properties of the environment and by properties of the child.

Caplon and Chomsky² propose that language acquisition depends on input to set a few basic parameters but that once a particular line of development is established, the full richness

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1. D. McCarthy. Language Development in children in Manual of Child Psychology. Carmichael, L. (ed.) John Wiley, New York, 1976.
 2. N. Caplon and N. Chomsky. Language and Mind. Harcourt Brace, New York, 1968.

and detail of language unfold following the blueprint of the genetic programme. As Caplon and Chomsky noted, this model suggests there should be a strong dependence of acquisition on a few critical properties of input. Further specification of genetically defined options and the environmental variables that set those parameters would allow empirical investigations of a position that has generally been impossible to disprove.

Traditionally, some psychologists' claim has been that the child must have rich innate linguistic knowledge because there is no way he could achieve language otherwise. This position reduces to the assertion that the child's input is too poor and her or his general inductive abilities too weak to account for acquisition.

The argument that the child's input is inadequate to support language acquisition has been interpreted in two ways. One view is that the language the child hears is a poor sample of the language he must learn. The operant conditioning theory postulates that the probability of response emission increases with reinforcement and the social learning theory also maintains that all behaviours can be learnt.

A number of published theoretical statements have attempted to account for the development of language in children in recent years. The primary emphasis in these accounts has varied

considerably, from the learning theory accounts of Skinner¹ and Staats² emphasizing the role of reinforcement and imitation, to the accounts of Lenneberg³ and McNeil⁴ which emphasized the role of biological and innate components in language development. Despite the diversity of theoretical orientation, most researchers in Children language agree that children appear to exhibit "generative" repertoires very early in the development of language. That is, children emit language that has appeared in their repertoires previously. Children also emit language that has been neither directly taught nor demonstrated to them by other speakers. Ervin⁵ for example has used the terms "analogy" to refer among other things to the occurrence of plural forms such as "feets" "foots" and "mans". Although these plural forms appear to be extensions of normal English pluralization forms, it appears unlikely that these responses were

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1. B.F. Skinner. Science and Human Behaviour. MacMillan Inc. New York, 1953.
 2. A.W. Staats. Learning language and cognition. Holt-Rinehart and Winston, New York, 1958.
 3. E.H. Lenneberg. On explaining language. Science 164 1969.
 4. D. McNeil. Developmental Psycholinguistics. In F. Smith and G.S. Miller (Eds.) The genesis of language. MIT. Press, Cambridge.
 5. S.M. Ervin, Imitation and structural change in children's language. In E. Lenneberg (Ed.) New directions in study of language. Mass MIT Press, Cambridge, 1964.

taught directly to the child or heard by him in the speech of others. Brown and Bellugi¹ have discussed similar phenomena under the label of "induction of the latent structure".

MODELLING:

Modelling is one of the most frequently applied methods of changing behaviour. It is often one of several components of behavioural training programmes (Gladstone and Sherman², Ringer³, Wetzel⁴, Finney⁵, Strupp and Jenkins⁶). Akinboye⁷ defines modelling as a behaviour change strategy that developed

1. R. Brown and U. Bellugi. Three processes in child's acquisition of syntax. In E. Lenneberg (Ed.). New directions in study of language. Mass MIT Press Cambridge, 1964.
2. B.W. Gladstone and J.A. Sherman. Developing generalized Behaviour modification skills in high school student working with Retarded children. J. App. Analysis, 1975, 8, 169-180.
3. V.M.J. Ringer. The use of "token helper" in the management of classroom behaviour problems and in teaching training. J. of App. Beh. Analysis, 1973, 6, 671-677.
4. R.J. Wetzel. Behaviour Modification techniques and training of teachers aid. Psy. in the school 1970, 7, 325-330.
5. B.C. Finney. Some techniques and procedures for teaching psychotherapy. Psychotherapy: Theory, Research and Practice, 1968, 5.

from social learning principles. The major concept of the social learning principles according to Akinboye is that human behaviour is powerfully influenced by that which he observes, hears, feels, perceives, conceives, creates or participates in. Modelling is thus a behaviour change strategy that provides experiences to observer who may imitate the experiences.

Baer, Wolf and Risley¹ on the other hand had defined applied behaviour therapy as the application of behaviour techniques to the solution of socially relevant problems. They maintained that the successful application of behaviour modification techniques in homes, classrooms, institutional settings has stimulated interest in the experimental psychology. Research has also shown that parents, teachers and others interested in the welfare of children could be taught to apply those techniques themselves.

Skinner² had stressed that in providing effective contingencies, in behaviour modification, teachers may arrange relevant antecedent events by telling their students how to perform through verbal and written instructions and by showing them how

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1. D. Baer, M. Wolf and T. Risley. Some current dimensions of applied behaviour analysis. Journal of Applied Behaviour Analysis, 1968.
 2. B.F. Skinner. Science and Human Behaviour. MacMillan Inc. New York, 1953.

to perform by modelling.

Modelling seems to have many advantages as a therapeutic technique (Adorno¹). Adorno points out that a picture is worth a thousand words. He maintains that a model can provide topographical discriminative cues for desired trainee responses that cannot easily or conveniently be presented through written or verbal instruction.

Modelling by itself may not be sufficient to achieve the desired performance in every situation. This is because in teaching and learning new skills, verbal instruction may complement modelling by increasing the likelihood that trainees will attend to relevant rather than irrelevant features of model's performance (Hall, Lund and Jackson², Harris, Wolf and Baer³, Madsen Becker and Thomas⁴). Factual and corrective feedback may

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1. T.W. Adorno. The authoritarian Personality. Harper and Row. New York, 1950.
 2. R. Hall, D. Lund and D. Jackson. Effects of teachers attention on study behaviour. Journal of Applied Behaviour Analysis I, 1968.
 3. J. Harris, M. Wolf and G. Baer. Language for the pre-school child. Gruns and Straton, New York, 1976.
 4. C. Madsen, W. Becker and D. Thomas. Rules, Praise and Ignoring elements of elementary classroom control. Journal of Applied Behaviour Analysis I, 1968.

also complement modelling by increasing the similarity between trainee responses and the model's performance (Kanfer and Goldstein¹).

Kanfer and Goldstein¹ refer to modelling as the process of observational learning in which the behaviour of the individual or group acts as a stimulus for the thought, attitude or behaviour of another individual who observes the model's performance.

Aniegbuna² distinguished between learning and performance. Bandura³ maintains that the requirement for learning through modelling is the observation of a model. The response of the model is assumed to be acquired by the observer through a cognitive coding of the observed event. It is important to note that whether a learned response is performed, depended on response consequences associated with the response.

Bandura⁴ outlined modelling in the following manner - In the first stage of the process, the model's behaviour is attended

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1. F.H. Kanfer and A.P. Goldstein. Helping people change. Pergamon, New York, 1975.
 2. C.C. Aniegbuna. Differential effectiveness of shaping and modelling on Maths achievement and intelligence of some secondary school blind
Doctoral thesis. University of Ibadan, 1984.
 3. A. Bandura. Principles of Behaviour modification. Holt Rinehart and Watson, New York, 1969.
 4. A. Bandura. Psychotherapy Based Upon Modelling. Wiley, New York, 1971.

to by an observer. This he called "the acquisition stage": during this period, the actions of the model are acquired by the observer. The second stage is the performance of the imitator in the modelled response. The difference between acquisition and performance is very important because the response acquired by the observer may not actually be performed by him.

There are factors that could enhance the acquisition of a response. These have been extensively discussed under the psychological factors. There is another factor which could influence acquisition. This is the characteristic of the modelling presentation. The state of the model - whether the display is life or symbolic, whether the observed response is complex or broken into manageable components and the nature of the given instructions, determine the impact of modelling on the mind of the observer (Akinboye¹).

Another important factor that could enhance performance is adequate vicarious reinforcement. Vicarious reinforcement is in-built into the actions of the model who endeavours to present behaviours that would be reinforcing to the observer.

1. J.O. Akinboye. Lectures on Principles of Behaviour Modification. University of Ibadan, 1983.

SHAPING:

Behaviours that are not in the repertoire of the client are non-existent in the client. Such behaviours are to be newly acquired. Akinboye¹ describes shaping as one of the behaviour change methods that can be used to help acquire many behaviour deficits such as inability to read, write, pronounce words, walk, run, jump, relate and socialize.

Walker and Shea¹ define shaping as a systematic immediate reinforcement of successive approximations of desired behaviour until the desired behaviour is established. They maintain that shaping is primarily used to establish behaviours that have not been previously manifested in the individual's behavioural repertoire. Almost as the sculptor shapes and moulds an object of art from clay, the behaviour modification practitioner shapes and moulds a new behaviour from undifferentiated behavioural response.

Ross² had outlined the following sequences of shaping: the presence of a discriminative stimulus; the emission of operant response; the presentation of a reinforcing stimulus which is usually followed by a consumatory response.

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1. J.E. Walker and T.M. Shea. Behaviour Modification. A practical approach for educators. The C.V. Mosby Co. Saint Louis, 1976.
 2. A. Ross. Behaviour therapy: In B. Wolman (ed.) Manual of child psychopaths. McGraw-Hill Book Company, 1972.

Shaping procedure is very useful in a learning situation where the response is lacking. For shaping, each new form of behaviour to be shaped is identified and approximations to such desired behaviours are also identified for reinforcement. We can produce a new behaviour by picking level of variance of an existing response and reinforcing it. If the various skills involved in shaping procedure are gradually and progressively applied, the behaviour could be moved to the relevant direction. Each new form of behaviour is an approximation to the desired terminal behaviour. This selective reinforcement and extinction process is called "successive approximation" or shaping (Millenson¹).

Walker and Shea² have listed six steps in the behaviour shaping process thus:

- i. Selecting a target
- ii. Obtaining reliable baseline data
- iii. Selecting potent reinforcers
- iv. Reinforcing successive approximation of the desired behaviour each time they occur
- v. Reinforcing the newly established behaviour each time it occurs.

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1. J.R. Millenson. Principles of Behavioural Analysis. MacMillan, New York, 1967.
 2. J.E. Walker and T.M. Shea. Behaviour Modification: A practical approach for educators. The C.V. Mosby Company. Saint Louis, 1976.

- vi. Reinforcing the behaviour on a variable reinforcement schedule.

Kanfer and Goldstein¹ listed seven steps in their own view thus

- i. Begin by observing individuals whose behaviour is considered to be deficient. Observe the responses that occur at high frequency, identify the antecedent and consequent environmental stimuli associated with those high frequency behaviours. Note the variability in topography of the available response.
- ii. Based upon the observational data, decide
 - (a) whether the desired terminal response can be differentiated out of the existing behaviour and if so,
 - (b) what a first approximation to the end goal should be.
- iii. Establish the criterion for the first approximation. Blackwood² points out that the criterion of dividing responses must be divided into two classes.
 - (1) response that we would like most and (2) responses that we would like least.

1. F.H. Kanfer and A.P. Goldstein. Helping People Change. Pergamon, New York, 1975.

- iv. Arrange the setting for maximum likelihood of response emission.
- v. Differentially reinforce (with the most powerful reinforcers at your disposal, food, praise, physical affection etc.). Variants of on-going behaviour that may be crude first approximations of the desired response. Withdraw reinforcement from variants that are incompatible with the desired end goal.
- vi. Observe the shift in the direction of the goal behaviour and shift the criterion accordingly if repeated reinforcement fails to reliably establish a response, the criterion may need to be lowered.
- vii. Use verbal or gestural cues, prompts or instruction at all stages of the process, even though the cues do not at first reliably elicit the behaviour being shaped. At the outset of the shaping procedure, the child's behaviour will determine what cues the shaper will use.

The increase flexibility occurring in shaping approach gives the child much more latitude in terms of shaping his lexicon. The shaping approach then has obvious implications for the way in which the child deals with meaning or semantic development and the consequent implication for the development

of reading ability. The child exposed to language through the shaping process has a clear and complete code to follow. Cornett et al¹ observes that this approach offers fidelity to written code of English that could prove advantageous to development of reading.

While the early laboratory demonstrations of shaping were interesting, it would be right to say that reinforcement is an important aspect of shaping strategy. Some psychologists have also described reinforcement as an important tool in behaviour therapy (Okoye²). However, it was Thorndike³ that originally proposed the law of effect which states that learning occurs as a result of reinforcement. This means that law of effect holds that an act will be strengthened or weakened; that is, it will be reinforced positively or negatively depending on its consequences. In some situation or in the presence of certain stimuli, a particular response may be reinforced, while in other situation or in the presence of other stimuli it is not.

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1. O. Cornett, N.H. Rey, C. Williams and D.A. Knight. Theoretical Model of development of reading in hearing impaired. A paper presented Gallandet, 1978.
 2. N.N. Okoye. The psychology of effective learning. Department of Guidance and Counselling, University of Ibadan, 1981.

Psychological Factors in Language Achievement:

Certain psychological influences have been associated with language achievement. These include motivation, locus of control, self concept, attitude etc.

Motivation and Language Acquisition:

The inner urge or desire to study originates from the expected end-product of studying. Ayodele¹ maintains that the motives of an individual determine why and how he performs particular acts. A student who sets reasonable goals already has the compelling desire to succeed. The increased complexity of living in society has made it necessary to cultivate in the young the will to acquire many varied cognitive as well as physical skills. Child² gave a working definition of motivation to consist of internal process which spur us on to satisfy some need.

Motivation is believed to operate through a common mechanism (McClelland et al³). This commonality is the conceptualization of motives as deficit states which energise an organism

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1. S.O. Ayodele, S.L. James, V.C. Ajala. Reading to Learn. Reading Association of Nigeria (RAN). Monograph series B. Heinemann Education Books, 1985.
 2. D. Child. Psychology and the teacher. Holt, Rinehart and Wiston, London, 1973.
 3. D.C. McClelland, J.W. Atkinson, R.A. Clark and E.L. Lowell. The Achievement Motive. Irvington publishers, N. York, 1976.

until relief is attained or equilibrium restored. This view has received support from many authors (Miller and Dollard¹, Hull², Murray and Kluchahn³). Mowrer⁴ developed the concept of motives as energisers of the activities of the organism. He viewed motivation primarily as anxiety over the possibility of painful sensations to arise from failure to satisfy primary biological needs. Essentially, this view assigns to motive the property of negative effective state derived primarily from painful experience. Mowrer⁴ proposes that all the basic needs are types of discomfort and are in the broad sense painful. Human beings are capable of being motivated not only by organic needs that are immediately present and felt, but also by the mere anticipation of such needs. The key to all motives is anxiety (Mowrer⁵).

In spite of the richness of tensional conceptualization of motive, some psychologists have considered it inadequate for

1. N.E. Miller, and J. Dollard. Social learning and imitation. Yale University Press, New Haven, 1941.
2. C.L. Hull. Principles of Behaviour. Appleton-Century-Crofts. New York, 1943.
3. C. Luckhohn and H.A. Murray. Personality in Nature, Society and Culture. Knopf, New York, 1948.
4. O.H. Mowrer. Learning Theory and Personality Dynamics. Ronald Press, 1950.
5. O.H. Mowrer. Motivation, in C.P. Stone and D.W. Taylor (Eds.). Annual Review of Psychology. Annual Review, Stanford, 1952.

explaining the mechanism of motivation (Allport¹, Young², Hebb³ and Maslow⁴).

Recently, motivation has again been generally looked at from the tension-reduction perspective. This time, however, certain additions and elaboration have been incorporated. Proposing what he described as working mechanics of motivation, Okoye⁵ states that motivation starts off when an individual is pushed off an equilibrium situation, and as a result, the person finds himself in a state of need. Awareness of this state of need produces drive. For drive to be reduced, the activities generated need to be channelled into purposive behaviour. Channelling of activities into purposive behaviour is done by a process Okoye⁵ calls mechanism. In this process, emotions are evoked to sustain the generated activities till the organism attains drive reduction. Okoye therefore stresses that there are motives behind all human

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1. G.W. Allport. Personality. A psychological interpretation. Holt, New York, 1937.
 2. P.T. Young. Food seeking drive, effective process and learning. Psychological review, LVI. 1949.
 3. D.G. Hebb. The organisation of Behaviour. Wiley, New York, 1949.
 4. A.H. Maslow. The instinctoid nature of basic needs. Journal of Personality, 1953.
 5. N.N. Okoye. The psychology of effective learning. Department of Guidance and Counselling, University of Ibadan.

behaviours, and that motivation is a necessary fillip in life for progress and growth as well as adjustment associated with self-actualization.

McClelland et al¹ had acknowledged that psychologists have had difficulty in considering the possibility that certain types of sensory stimulation are innately painful. Some other researchers Young², Sheffield and Roby³, Weiner and Stellar⁴, Sheffield et al⁵ and Nissen and Semmes⁶ have argued in support of motivational effect of certain innate gratification.

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1. D.C. McClelland, J.W. Atkinson, R.A. Clark and E.L. Lowell. The Achievement Motive. Irvington Publishers, New York, 1976.
 2. P.T. Young. Food seeking drive, affective process and learning. Psychological Review, LVI 98, 1949.
 3. F.D. Sheffield and T.B. Roby. Reward value of a non-nutritive sweet taste. J. of Comp. Physiol. Psychol. 43. 1950.
 4. I.H. Weiner and E. Stellar. Salt preference of the rat determined by a single stimulus method. J. Comp. Physiol. Psychol. 44, 1951.
 5. F.D. Sheffield, J.J. Wulff and R. Backer. Reward value of copulation without sex drive reduction. J. Comp. Physiol. Psychol. 44 1951.
 6. H.W. Nissen and J. Semmes. Comparative and physiological psychology. In C.P. Stone and D.W. Taylor (Eds.). Annual Review of Psychology. Stanford: Annual Review, 1952.

Self-Concept and Language Acquisition:

The self concept is the totality of attitudes, judgement and values of an individual relating to his behaviour attitudes and qualities. The self concept reflects who the person is. It does not only include feelings towards the self and others but also the moral structure, attitudes values and ideas that propel one to action or on the other hand, to inaction. Mouly¹ says that self concept includes feelings about self both physical self, psychological self in relation to the environment. Calhoun and Acocella² define self concept as "Your own view of your self" and pointed out that it has three dimensions. They are one's knowledge of one's self, one's expectations for one's self and one's evaluation of one's self.

Within a healthy person, there should be a good deal of compatibility among the three dimensions of self. In other words, self consistency is basic to self competency in human functioning. If discrepancy exists among the components, anxiety is created. Pietrofesa et al³ maintains that one's

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1. G.J. Mouly. Psychology for effective teaching. Holt Rinehart and Winston Inc., New York, 1973.
 2. F.J. Calhoun and Acocella, R.J. Psychology of adjustment and human relations. Pandom House Inc. New York, 1978.
 3. H. Pietrofesa and Splete, P. Counselling theory Research and Practice. Rand McNally College Publishing Co., Chicago, 1978.

self concept tends to reinforce itself through selective perception. A person selects from an experience which reinforces the self concept he has already developed and rejects that which might be contrary to present feelings or beliefs.

A major aspect of the self concept is one's knowledge of one's self. People are generally aware of several things about themselves. However, these qualities about one's self undergo changes as people gain more experience and better understanding of themselves. An important fact with regard to one's knowledge of one's self is its subjectivity. In other words, one's knowledge of one's self might be positive or negative depending on how we perceive ourselves. Some seemingly permanent and outstanding aspects of one might be played down in our self concept while some other insignificant parts might be highlighted. Rogers¹ points out that the greater the discrepancy between our picture of what we are and our picture of what we should or could be, the lower our self esteem. This leads us to an examination of positive and negative self concept.

Self-Concept can be negative or positive. Negative self concept correlates positively with low self esteem while

1. C.R. Rogers. On becoming a Person: A therapist's view of psychotherapy. Houghton Mifflin Sentry Edition, Boston, 1970.

positive self concept correlates positively with high self esteem. In some cases people with negative self concept are characterized by a disorganised sense of self as is the case with some adolescents who are undergoing a transition from childhood to adulthood. On the other hand a negative self concept could be that characterized by too much rigidity such that the individual becomes threatened by new information about him or herself. This is also the case with the individual who has a disorganised concept of himself. Sullivan¹ points out that a person with a disorganised or narrow self-concept simply does not have any mental categories to which he can relate conflicting information about himself.

A negative self-concept is consequent to a negative self judgement and in this case individuals with negative self concept never see anything good about themselves. Calhoun and Acocella² believe that they are characterised by a relatively high level of anxiety. The positive self concept is that which results from self acceptance. Chodorkoff³ had

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1. H.S. Sullivan. The structure of personality in Hall, C.S. and G. Lindzey. Theoriest of personality. John Wiley and Sons, New York, 1978.
 2. F.J. Calhoun and R.J. Acocella. Psychology of adjustment and human relations. Pandom House Inc. New York, 1978.
 3. B. Chodorkoff. Self-Perception, Perceptual defence and adjustment. Journal of Abnormal and social psychology, vol. 49, No. 62, 1954.

pointed out that the individual with positive self concept could be characterized by a very thorough knowledge of himself. He is aware of and gives room for positive and negative information about self. Thus the person with a positive self-concept can understand and accept a great deal of disparate information about self. Because positive self concept is large enough to accommodate the entire range of the person's mental experience, his evaluation of himself is positive. This does not mean however that such individuals do not recognise their faults. The fact is that they have no regrets about their existence. People with positive self concept have the ability to set appropriate and realistic goals for themselves which they normally achieve and this further enhances their positive self-concept. This seeming vicious circle of success and positive self-concept enable the individual to face life without fear. The role of one's self concept in influencing behaviour cannot be over-estimated, deaf children not being an exception.

A self accepting person knows his weakness. He knows which fault he can alter and learns to live with others. He feels that despite his limitations he is a person to be approved. He feels that he is doing what can reasonably be expected of him. He approves himself without the feelings that

he is perfect (Cromberch¹). In contrast a person who questions his own basic worth may try to avoid attention which would expose his weakness. He may avoid commitments because trials and failures might confirm his feelings painfully. Another person feeling inferior may spend his time in day dreams. He never learns to live with his real self. One can suspect a sense of inadequacy wherever one observes lack of persistence excessive upset following conflict and neurotic anxiety.

The influence of self concept on the achievement of deaf children operates by way of attributional processes. Basic to this operation is a self-consistency hypothesis predicting that individuals interpret events in a way consistent with their self evaluation (Feather², Jones³). High self concept individuals tend to attribute positive or successful experiences to their own personal characteristics. Low self concept persons conversely, tend to attribute negative or failure experiences to their own personal inadequacies. In these ways, high self concept individuals maintain their positive self-evaluation while those with low self concept maintain their negative self evaluation.

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1. L.J. Cromberch. Educational psychology. Harcourt Brace and Com. New York, 1954.
 2. N. Feather. Organisation and discrepancy in cognitive structures. Psy. Review, 78, 1971.
 3. S. Jones. Self and Interpersonal evaluation: Esteem theories versus consistency theories. Psy. Bull. 79, 1973.

EMPIRICAL BACKGROUND:

Language Development in Children:

How does a verbally helpless infant develop into an articulate adult? A widely held belief is that we are born with vocal equipment and neural system which gives us the capacity to verbalize.

Guess, Sailor, and Baer¹ provided a starting point for experimental analysis of language development. Their studies on operant procedures were used to establish productive use of language in severely retarded children who have no language.

Recently, Newport and Morgan² showed that adults can use both prosodic and transformational information to arrive at an understanding of grammatical structure. In their study, they found that adults were able to learn to distinguish grammatical from ungrammatical strings provided that the input data somehow revealed the constituent boundaries in the input strings.

Newport et al³ had argued that the pattern of effects and non

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1. D. Guess, W. Sailor and D.M. Baer. To teach language to retarded children. In R.L. Shiefelbusch (Ed.) Language perspective. Macmillan, London, 1974.
 2. J.L. Morgan and E.L. Newport. The role of constituent structure in the induction of an artificial language. Journal of verbal learning and verbal behaviour 20, 1981.
 3. E.L. Newport, H. Gleitman and L.R. Gleitman. Mother I'd rather do it myself: Some effects and non effects of maternal speech style. In C. Snow and C.A. Ferguson (Eds.). Talking in children: Language Input and acquisition. Cambridge University Press, 1977.

effects they found in their study is consistent with a nativist model of language acquisition according to which universal properties of language are innately specified. Newport et al¹ study suggest procedures that are possibly involved in the child's analysis of her or his input, although the findings are consistent with multiple interpretations. The results of other studies are equivocal with regard to the special importance of "Yes/No questions" Hoff Ginsberg² found for example of 22, 2½ year olds that the frequency of some wh- questions in their mother's speech predicted what auxillaries did not. On the other hand, preliminary data analysis suggests that the frequency of Yes/No questions in experimenter-provided input to these children was related to their auxillary growth (Shatz and Hoff Ginsberg², Depaulo and Bonvillan³).

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1. E.L. Newport, H. Gleitman and L.R. Gleitman. Mother I'd rather do it myself: some effects and non effects of maternal speech style. In C. Snow and C.A. Ferguson (Eds.) Talking in children: Language Input and acquisition. Cambridge University Press, 1977.
 2. M. Shatz and H. Ginsberg. Beyond syntax: The influence of conversational constraints on speech modification. In C. Snow and C.A. Ferguson (Ed.) Talking to children: Language Input and acquisition. Cambridge University Press, 1977.
 3. B.M. Depaulo and J.D. Bonvillan. The effect on language development of special characteristics of speech addressed to children. J. of Psy. Research 7. 1978.

Another type of developmental analysis that might operate in the child's achievement of syntactic competence, but one that is independent of semantics is suggested by work on the acquisition of artificial languages. Morgan and Newport¹ found that adults were able to learn to distinguish grammatical from ungrammatical strings provided that the input data somehow revealed the constituent boundaries in the input string. The source of this information could be semantic. For example, the child might derive the constituent structure of "The boy rolls the red ball" from real world semantic correlates; that is red ball form a single constituent separate from 'rolls' because the property 'red' is part of the ball in a way that the action of 'rolling' is not.

The child may derive constituent structure from non-semantic sources such as pauses and the terminal fall in fundamental frequency that mark constituent boundaries although the reading of such clues is not necessarily straightforward (Cooper and Cooper²).

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1. J.L. Morgan and E.L. Newport. The role of constituent structure in the induction of an artificial language. Journal of verbal learning and verbal behaviour 20 1981.
 2. W. Cooper. and P. Cooper. J. Syntax and Speech. Harvard University Press, 1980.

Studies of the nature of the dependencies that obtain between properties of the child's input and properties of syntax acquisition are of two major types. Naturalistic studies make use of the naturally occurring variability in the way different mothers talk to their children and look for correlated variability in children's syntax development: Experimental studies explicitly create variability in the input children receive and look for effects of that manipulation. Interpreting the results of both types of studies is complicated because the particular findings that have emerged do not transparently reveal the mechanism that produced them and because numerous methodological problems plague this new area of research (Ginsberg and Shatz¹). Nonetheless, the research to date suggests certain significant relations between input and syntax acquisition, and these relations have implications for the nature of the child's contribution.

In a naturalistic study, Newport et al² tape recorded the utterances of 15 girls (age 12-27 months) and their mothers

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1. E.H. Ginsberg and M. Shatz. Linguistic Input and the child's acquisition of language. Psychological Bulletin vol. 92, No. 1, 1982.
 2. Newport, E.L., Gleitman, H. and Gleitman, L.R. Mother, I'd rather do it myself: Some effects and noneffect of maternal speech style. In C. Snow and C.A. Ferguson (Eds.). Talking in children: Language Input and acquisition. Cambridge University Press, 1977.

in two sessions of 6 months apart. Correlations were computed between properties of the mother's speech during the first session and the children's growth in language ability between sessions 1 and 2. Because the children were of different ages and because neither variation in maternal speech nor variation in child growth rate is independent of initial age and stage in language development, the child's age and initial level of advancement on the dependent language measure were particular out of each correlation. All findings were validated on split halves of the speech sample.

Newport et al¹ argued that the pattern of effects and non-effects they found is consistent with a nativist model of language acquisition according to which universal properties of language are innately specified, and only the acquisition of language-specific properties depends on input. For example, nouns and verbs are generally considered to be linguistic universals, and Newport et al¹ found that the children's growth in the number of noun and verb phrases per utterance was unrelated to

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1. E.L. Newport, H. Gleitman and L.R. Gleitman. Mother, I'd rather do it myself: Some effects and noneffects of maternal speech style. In C. Snow and C.A. Ferguson (Eds.). Talking in Children: Language Input and acquisition. Cambridge University Press, 1977.

any maternal speech variable that they measured. On the other hand, verb auxiliaries and noun inflections are not universal - other languages accomplish their work in a variety of different ways (Ginsberg and Shatz¹). As Newport et al² themselves pointed out, however, conclusions drawn from negative findings are tenuous. Some input-output relations probably change over the course of language development, depending both on changes in how the child processes input and where the child's linguistic system is growing. Newport et al's subjects covered an age range of 15 months. Thus, their study could find only dependencies that hold across a variety of language levels or are strong enough when they do hold that a few children can carry a significant correlation.

Another study that has directly examined the relation between a wide variety of maternal speech properties and aspects

1. E.H. Ginsberg and M. Shatz. Linguistic Input and the Child's acquisition of Language. Psychological Bulletin. vol. 92, No. 1, 1982.
2. E.L. Newport, H. Gleitman and L.R. Gleitman. Mother, I'd rather do it myself: Some effects and noneffects of maternal speech style. In C. Snow and C.A. Ferguson (Eds.). Talking in Children: Language Input and acquisition. Cambridge University Press, 1977.

of child language development was conducted by Furrow, Nelson, and Benedict¹. Furrow et al claimed that their data suggests an account of the relation between input and acquisition that is very different from that suggested by the results of Newport et al's² study. Furrow¹ subjects were eight mothers and their 18-month-old children. All of the children were at the one-world stage at the start of the study. Because their subjects were equalized by selection, their finding was slightly different from previous findings. Furrow et al found that the children's development of language-universal structures, verbs and nouns phrases, was related to properties of maternal speech.

Cross³ in a related study found that mothers of linguistic sequences - expansions of their own previous utterance than do mothers of less advanced speakers.

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1. D. Furrow, K. Nelson and H. Benedict. Mothers' speech to children and syntactic development. Some simple relations. Journal of child language 6, 1979.
 2. E.L. Newport, H. Gleitman and L.R. Gleitman. Mother, I'd rather do it myself: Some effects and non-effects of maternal speech style. In C. Snow & C.A. Ferguson (Eds.). Talking in children: Language input and acquisition. Cambridge University Press, 1977.
 3. T.G. Cross. Mothers speech and its association with linguistic development of special characteristic of speech addressed to children. J. of Psy. Research 7, 1978.

Other related findings include Brown's¹ and Moerk's² reports on the more advanced children in their samples as measured by age-related mean length of utterances. More recent enrichment attempts have demonstrated a positive relation between expansions in input and syntax development. In a series of experiments (Nelson³, Nelson et al⁴) reported producing specific positive effects on the syntactic development of children by providing them with recasts of their own utterances in experimental settings.

Shatz⁵ investigated whether maternal speech modifications might restrict the variety of possible form-function pairings, thus providing the child with functional correlates of syntax.

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1. R. Brown. How shall a thing be called? Psychological Review 65, 1958.
 2. E.L. Moerk. Relationship between parental input frequencies and children's language acquisition: A reanalysis of Brown's data. Journal of child language, 7, 1980.
 3. K.E. Nelson. Facilitating children's syntax acquisition. Developmental Psychology, 13, 1976.
 4. K.E. Nelson, G. Carskaddon and J.D. Bonvillian. Syntax acquisition: Impact of experimental variation in adult verbal interaction with the child. Child Development 44, 1973.
 5. M. Shatz. How to do things by asking: Form-Function pairings in mothers questions and their relation to children's responses. Child Development 50, 1979.

It has been observed informally, Shatz¹, and experimentally (Bridges², Garnica³) that mothers use more explicit gestures in talking to children than in talking to adults and that the explicitness of the maternal gestures decline with the increasing age of the child. Although no known correlational studies examine the relation of maternal gestures to child language acquisition, Macnamara⁴ found that two gestures at least aid comprehension. He found that children under 20 months were able to use line of regard and gesture to interpret adult requests, and they were able to make fairly accurate interpretations on this basis when the language of the request was entirely foreign.

1. M. Shatz. On mechanisms of language acquisition: Can features of communicative environment account for development? In L. Gleitman and E. Wanner (Eds.) Language acquisition: The State of the art. Cambridge University Press, New York, 1982.
2. A. Bridges. The role of context and linguistic cues in the language comprehension of pre-school children. Unpublished Ph.D. thesis, University of Bristol, 1977.
3. O.K. Garnica. Non-verbal concomitants of language input to children. In N. Waterson and C. Snow (Eds.) The development of communication, Wiley Chichester, 1978.
4. J. Macnamara. From sign to language. In J. Macnamara (Ed.) Language learning and thought. Academic Press, N. York, 1977.

Language Development in Deaf Children

The impairment of hearing has apparent significant impact on a child's ability to acquire language based in audition. Numerous studies have shown that hearing impaired children do not show the same level of achievement in language skills (Myklebust¹, Furth², Trybus and Buchanan³, Simmons⁴, Stuckless and Marks⁵, Marshall and Quigley⁶, Quigley and Power⁷, Quigley⁸) as do hearing children.

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1. H. Myklebust. The psychology of deafness. Grune and Stratton, New York, 1964.
 2. H.G. Furth. A comparison of reading test norms of deaf and hearing children. American Annals of the Deaf, March, 1966.
 3. R. Trybus and C. Buchanan. Studies in achievement testing of hearing impaired students. Gallandet College, 1971.
 4. A. Simmons. Comparison of written and spoken language for deaf and hearing children at five age levels. Unpublished doctoral dissertation. Washington University, 1962.
 5. R. Stuckless and C. Mark. Assessment of the written language of deaf students. University of Pittsburgh, 1966.
 6. W. Marshall and S. Quiley. Quantitative and qualitative analysis of syntactic structure in the written language of deaf students. Institute for Research on exceptional children, Urbana, 1970.
 7. S. Quigley and D. Power. The development of syntactic structures in the language of Deaf Children. IREC, Urbana, 1972.
 8. S. Quigley. Syntactic structures in language of deaf children. Urbana Champaign Report, 1976.

Many linguists, including Hersov¹, McMahon² represented the conversion process in the various approaches in language development among deaf children by postulating a series of transformations. That such representations may be necessary for linguists to describe adult language is one thing and that children or even adult use these representations to produce the utterances they make is quite different claim (Hersov¹). A number of experiments in the 1960s resulted in conflicting evidence. At first, there was some support for claiming that one approach or the other had some psychological reality or influence (McMahon², Mehler³, Miller and McKean⁴, Savin and Perchonock⁵).

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1. L.A. Hersov. Language and Language Disorders in Childhood. Pergamon Press, Oxford, 1980.
 2. L.E. McMahon. Grammatical analysis as part of understanding a sentence. Doctoral thesis, Harvard University, 1983.
 3. J. Mehler. Some effects of grammatical transformations on the recall of English sentences. J. Verb Learn, Verb, Behaviour 2, 1963.
 4. G.A. Miller and K.C. McKean. Chronometric study of some relations between sentences. Quart. J. Exp. Psychol. 16, 1964.
 5. H.B. Savin and E. Perchonock. Grammatical structure and immediate recall of English sentences. J. Verb, Learn, Verb, Behaviour 4, 1963.

Later experiments however cast some doubts on this assumption (Fodor and Garrett¹, Slobin², Slobin³). It is now generally accepted that language achievements are more complex than formally believed and that many factors other than one approach play a vital part.

Hughes⁴ made a comparison of verbal conceptualization in deaf children and hearing children. The purpose of the study was to compare the verbal percept concept sorting performance of three groups of deaf children with a group of children with normal hearing. The pupils were tested on the meaning of 241 percept words and were then asked to sort the words they knew into appropriate categories.

The hard of hearing children knew the meaning of 163 of the 241 percept words but were able to sort 46 of them

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1. J.A. Fodor and M. Garrett. Some syntactic determinants of sentential complexity. Perception and Psychophysics 2, 1967.
 2. D.I. Slobin. Recall of full and Truncated Passive sentences connected discourse. J. Verb Learn Verb Behaviour, 1968.
 3. D.I. Slobin. Grammatical, Transformations in Adulthood and Childhood. Journal of verbal learning and Verbal Behaviour, 1966.
 4. H. Hughes. Assessment of language development among the deaf. Journal of teachers of the Deaf, 1959.

correctly. The hearing recognised 230 of the 241 and were significantly superior in their ability to sort them correctly. The verbal behaviour of the deaf was more perceptual than conceptual. This study is significant because it suggests that perhaps the methods by which deaf children are taught may emphasise perception and knowledge of single words meaning so that concept formation is inhibited.

Myklebust¹ carried out an investigation of language of the deaf by observing the inter-relationship of measures of language abilities and other factors and comparing the read and written language of the deaf and hearing. The following information were found:

- (i) Teachers' rating of lip reading ability
- (ii) Scores on the "draw-a-man" test
- (iii) The Columbia Vocabulary test
- (iv) The picture story language test and
- (v) Teachers' rating on pupils ability to use spoken language.

Comparison on all measures were made between the deaf and the hearing on the vocabulary and language tests and between

1. H.M. Myklebust. Development and Disorders of Written Language. Vol. I, Picture Story Language Test. Grune and Stratton, London, 1960.

the deaf in residential and day schools. The following findings were made:

- (i) Children rated as excellent, good or average in lip reading were also the more intelligent.
- (ii) More females than males were found to have excellent, good, average lip reading ability.
- (iii) The results indicate a definite correlation between lip reading ability as rated by teachers and reading as well as between lip reading and ability to use written language.
- (iv) Females were rated higher than males and day-school students higher than residential students in spoken language.
- (v) Ratings in spoken language were found to be unrelated to intelligence.
- (vi) The deaf group was significantly inferior to the hearing on sentence length and syntax; the two measures of language productivity were considered most valid.
- (vii) The deaf group was significantly inferior to the hearing group (at the one percent level of significance).
- (viii) On comparison between the deaf and hearing on the use of abstract-concrete concepts in a written story, the deaf were inferior at all age levels.

Other studies have assessed the relative efficacy of various approaches in effecting differential language related achievement among deaf children (Masdow¹, Quigley², Vernon and Koh³). The natural approach show advantage over other methods. In some studies the natural approach has been compared to home situation. In either, there is improvement (Yule and Berger⁴, Guess et al⁵, Lovass⁶.)

1. K. Meadow. Early Manual Communication in relation to deaf child's intellectual, social and communicative functioning. American Annals of the Deaf. Jan. 1968.
2. S. Quigley. Syntactic structures in language of deaf children. Urbana Champaign report, 1976.
3. M. Vernon and S. Koh. Early manual communication and deaf children's achievement. American Annals of the Deaf, 1970.
4. W. Yule and M. Berger. Behaviour Modification principles and speech delay. In the Child with delayed speech, Rutter, M. and Martin, J.A. (Eds.). Clinics Developmental Medicine, No. 43, Simp. Heinemann, London, 1972.
5. D. Guess, W. Sailor and D.M. Baer. To teach language to retarded children. In language perspectives. Lloyds, L.L. (Ed.). MacMillan, London, 1974.
6. O.I. Lovass. The autistic child; Language development through Behaviour modification, Wiley, New York, 1974.

Malouf and Dodd¹ demonstrated that imitation and expressions could be used to teach an artificial grammatical rule concerning word order. Whitehurst et al² use selective modelling to teach children passive construction at an age when they are very rarely used.

Nelson³ in a naturalistic study investigated language development in some selected deaf children. He found that the number of adults the child was exposed to and the number of outings per week both significantly and positively correlated with language development. Interestingly, the correlation with television watching was negative. The evidence suggests that active social inter-changes rather than any particular linguistic style is the most important feature.

Clarke-Stewart's⁴ findings also indicate that language

1. R.E. Malouf and D.H. Dodd. Role of exposure imitation and expansion in the acquisition of artificial grammatical rule. Developmental psychology, 1972.
2. G.J. Whitehurst, M. Ironsmith and M. Goldfein. Selective imitation of the passive construction through modelling. Journal of experimental psychology 17, 1974.
3. K. Nelson. Structure and Strategy in learning to talk. Monogr. Soc. Res. Child development 44, 1973.
4. K.A. Clarke-Stewart. Interactions between mothers and their young children. Characteristics and consequences. Monogr. Soc. Res. Child Development 38 serial No. 153, 1973.

development is positively correlated with material stimulation and responsiveness. Newport et al¹ found no consistent relationships between the child's language development and the complexity or length of the mothers utterances or the amount of repetition. The form of the mother's syntax was associated with some aspects of the child's grammar but not with other features of his language.

Brown et al² in an experimental study of some deaf children compared the effects in language of expansion, modelling and non-verbal play. Modelling proved to be most effective treatment.

Young and McConnel³ studied vocabulary retardation in hard of hearing children. They matched 20 hard of hearing with 20 normally hearing on age, race, sex, socio-economic levels and non-verbal intelligence levels as measured by the Raven's pro-

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1. E.L. Newport, H. Gleitman and L.R. Gleitman. Mother, I'd rather do it myself: some effects and noneffects of maternal speech style. In C. Snow and C.A. Ferguson (Eds.). Talking in children: Language Input and acquisition. Cambridge University Press, 1977.
 2. R. Brown and U. Bellugi. Three processes in the Child's acquisition of syntax. Harvard educational Review 34, 1969.
 3. C. Young and F. McConell. Vocabulary Retardation in hard of hearing children. Volta Review 16, 1957.

gressive matrices. Then the Ammons full Range Vocabulary Test was administered to individual child. The words were presented visually and verbally. The result showed a significant difference between the groups in favour of the hearing group. No hard of hearing subject received a higher score on the test more than his matched control peer. The hard of hearing were retarded verbally in comparison to their respective intellectual levels.

In another related study, Pintner¹ measured the language abilities and progress of deaf children. He found that the verbal behaviour of the deaf was more perceptual than conceptual.

Modelling:

The analysis and modification of children's behaviour in the classroom has become an active area of investigation in recent years. Many studies have shown that disruptive behaviour can be reduced, study behaviour increased, and grades improved by the relatively simple application of behaviour modification techniques (Bailey, Wolf and Phillips²). Most of the techniques

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1. P. Pintner. Language abilities and Language progress of deaf children. Volta Review 45, 1979.
 2. J.S. Bailey, M.M. Wolf, E.L. Phillips. Home-Based Reinforcement and the modification of pre-delinquents' classroom behaviour. Journal of Applied Behaviour Analysis 3, 1970.

developed have involved the teacher as the key element in the modification of student behaviour (Hall, Lund, Jackson¹, Thomas, Becker and Armstrong² Madsen, Becker and Thomas³)

The above reaffirms that the teacher has been taught how to deliver social reinforcers more efficiently, to ignore inappropriate behaviour, and how to provide other consequences to improve the academic behaviour of her students (O'Leary, Becker⁴).

The operant characteristics of modelling have been well

1. R. Hall, D. Lund, D. Jackson. Effects of teacher action on study behaviour. Journal of Applied Behaviour Analysis I, 1968.
2. D. Thomas, W. Becker, M. Armstrong. Production and elimination of disruptive classroom behaviour by systematic varying teachers behaviour. Journal of Applied Behaviour Analysis I, 1968.
3. C. Madsen, W. Becker, D. Thomas. Rules, praise and ignoring elements of elementary classroom control. Journal of Applied Behaviour Analysis I, 1968.
4. K.D. O'Leary and Becker, W.C. Behaviour modification of an adjustment class. A token reinforcement programme. Exceptional children 33, 1967.

established (Holland¹, Holland², Schroeder³). As such, modelling is subject to methods of behavioural modification that have proved successful for a wide range of classroom situations. Coupled with the recent success of behavioural modification programme in the classroom (Birnbrauer, Bijou, Wolf and Kidder⁴, Birnbrauer, Wolf, Kidder and Tague⁵, Hewett⁶, Nolen, Kunzelmann

1. J.G. Holland. Techniques for behavioural analysis of human observing. Science, 125, 1957.
2. J.G. Holand. Human vigilance: Science, 128, 1958.
3. S.R. Schroeder. Operant control of eye movement during vigilance. Doctoral dissertation, University of Pittsburgh, 1967.
4. J.S. Birnbrauer, S.W. Bijou, M.M. Wolf and J.D. Kidder. Programmed instruction in the classroom. In L. Ullman and L. Krasner (Eds.) Case studies in behaviour modification. Holt, Rinehart and Winston, New York, 1966.
5. J.S. Birnbrauer, M.M. Wolf, J.D. Kidder and C.E. Tague. Classroom behaviour of retarded pupils with token reinforcement. Journal of Experimental Child Psychology 2, 1965.
6. F.M. Hewett. Education engineering with emotionally disturbed children. Exceptional children. 33, 1967.

and Haring¹, O'Leary and Becker² and Valett³), these experiments provide a basis for attempts to alter behaviours in the classroom situation.

To date, no known behaviour modification research has been reported in Nigeria for classroom average deaf children. However modelling is especially essential to the deaf child's classroom education. This is so because the deaf child is virtually cut off from the auditory stimuli surrounding those who hear. If the deaf child does not look directly at the information-bearing stimulus, he is categorically prevented from acquiring that information. In the classroom situation, the instructional stimuli from the teacher and from fellow students who contribute to the discussion must become the model to imitate.

Modelling has been found to be effective strategy that could be used in helping deaf children in language development.

1. P.A. Nolen, H.P. Kunzelmann and Haring, N.G., Behaviour Modification in a junior high learning disabilities classroom. Exceptional children, 34, 1967.
2. K. O'Leary, W. Becker, M. Evans and R. Sandargas. A token reinforcement programme in a public school: a replication and systematic analysis. Journal of Applied Behaviour Analysis 2 1969.
3. R. Valett. A social reinforcement technique for classroom management of behaviour disorders. Exceptional Children. 33, 1966.

Schumaker et al¹, Crayer², Goldstein³, Holman⁴ and Carnine⁵ have all shown in their various studies the effectiveness of modelling as a strategy in solving various social problems.

The studies of modelling procedures show that providing factual information to teachers about designated behaviour will reliably change their behaviour in the desired direction (Cooper and Thomson⁶).

Paloutzian⁷ had worked with non-imitative children, teaching them social interaction with peers. The children were

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1. J. Schumaker and J.A. Sherman. Training Generative Verb Usage by Imitation and reinforcement procedures. Journal of Applied Behaviour Analysis 3, 1970.
 2. T.L. Crayer. Application of self-modelling procedure to modify inappropriate Behaviour. Behaviour Research and Therapy. vol. 8, 1970.
 3. A.P. Goldstein. Increasing independence via use of modelling procedures. Journal of educational research vol. 72, No. 4, 1980.
 4. L.R. Homan. The effect of stimulus presentation mode and cognitive style on sentence recognition memory. J. of educational research, vol. 72, No. 4, 1980.
 5. D. Carnine. Relationships between stimulus variation and formation of misconception. Journal of edu. Res. vol. 74, No. 2, 1980.
 6. M.L. Cooper and C.L. Thomson. The experimental modification of teacher attending behaviour. Journal of Applied Behaviour Analysis 3, 1970.
 7. R.F. Paloutzian and J. Hasazi. Promotion of Positive social interaction in severely retarded young children: American journal of mental deficiency, 1971.

taught to imitate some social interaction behaviours. The researcher reported that the children required only a few training sessions to learn to imitate these complex behaviours.

In another study Stromer¹ remediated various letters and number reversal difficulties in children from regular and special education classes by modelling correct and incorrect symbol formation, providing differential feedback following correct and incorrect symbol formation. All reversals were virtually eliminated in all cases with follow-up observations indicating enduring effects.

Recognising that many children with learning problems have reading comprehension problems, Lahey et al² developed a behaviour management programme to deal specifically with deficits in reading for comprehension. Some children whose reading comprehension were two years below their oral reading grade level were provided social and tangible reinforcers following correct answers to comprehension questions. Under the new contingency, reading comprehension rose to grade level performance and

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1. R. Stromer. Modifying letter and number reversals in elementary school children. Journal of Applied Behaviour Analysis, 1975.
 2. B.B. Lahey, M.P. McNees and C.C. Brown. Modification of deficits in reading for comprehension. Journal of Applied Behaviour Analysis 1973.

remained there throughout the periods in which consistent reinforcement was provided.

Many researchers have re-emphasized the importance of imitative programme in the general education of the child. Piaget¹ had theorized that from the beginning to the final stage of mental development, the child learns to imitate and to respond to people through imitative behaviour.

Piaget¹ had observed that at a certain stage of development, the child looks beyond the family for models to imitate. These observations imply that a strategy such as modelling would be effective in improving the language of the deaf.

In related development, Crayer² carried out a study and found that modelling improves the self-concept of an individual. He applied self-modelling techniques successfully to accomplish modification of withdrawal tendencies.

The effectiveness of the modelling strategy in improving self-concept was also seen in the work of Goldstein,³ who

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1. J. Piaget. Psychology of the child. Basic Books Inc. New York, 1969.
 2. T.L. Crayer. Application of self-modelling procedure to modify inappropriate Behaviour. Behaviour Research and Therapy vol. 8, 1970.
 3. A.R. Goldstein. Increasing independence via use of modelling procedures. Journal of educational research, vol. 72, No. 4, 1980.

conducted three experiments aimed at increasing independence via use of modelling procedures. In two respective samples of neurotic out-patients and a sample of psychiatric in-patients significant gains in independence emerged in all three investigations.

Other studies which involved the use of psychological strategies in solving problems include that of Malin¹. He tried to determine the differential effectiveness of modelling in improving the performance of junior high school algebra students. The students were instructed to solve problems using various directions of search. Significant differences were noted in the performance of the students.

Holman² had also studied the effects of stimulus presentation mode and cognitive style on sentence recognition memory. Results showed that verbal recognition memory was sensitive to both cognitive tempo and stimulus presentation mode. Supporting the effectiveness of modelling, Piaget³ had asserted that

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1. J.T. Malin. Strategies in mathematical problem-solving: Journal of educational research, vol.73, No.2, 1979.
 2. L.R. Holman. The effect of stimulus presentation mode and cognitive style on sentence recognition memory: Journal of educational research, vol.72, No.4, 1980.
 3. J. Piaget. Psychology of the child. Basic Books Inc. New York, 1969.

imitative learning is a very crucial process in mental development.

Shaping:

The successful application of reinforcement principles to modify the academic and social behaviour of children in the classroom has been demonstrated in a number of recent studies.

Wolf, Giles and Hall¹ adopting the shaping strategy and using token economy as a reinforcer accelerated achievement in low-achieving fifth and sixth graders. They also found that daily performance depended on relative rate of "pay".

Hawkins² modified out-of-seat behaviour in a year old emotionally disturbed boy by training the teacher to avoid talking to the boy when out of his seat and to talk to him more often when he was in his seat.

Geller, Johnson and Petton³ demonstrated the efficacy of a simple incentive procedure for prompting seat-belt use that involved the distribution of seat-belt promotion fliers.

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1. M.W. Wolf, D.K. Giles and R.V. Hall. Experiments with token reinforcement in a remedial classroom. Behaviour Research and Therapy 6, 1968.
 2. R.P. Hawkins. The public school classroom as a behavioural laboratory. American psychological proceedings. Washington, 1967.
 3. E.S. Geller, R.P. Johnson and S.L. Pelton. Community based interventions for encouraging safety belt use. American journal of Community Psychology, 10, 1982.

For example prompts to drivers who stopped at a pedestrian cross walk on a university campus with the contingency (announced on the first flier per driver) that a prize would be awarded to those who collected each of the six different fliers. Of 180 drivers who received two fliers, 17.2% were wearing a lap and or shoulder belt during the first flier receipt, whereas 42.2% of these same drivers were wearing a seat belt when given a second flier prompt. Only 25 drivers received four or more fliers, but 52% of these drivers were wearing a seat belt upon receiving fourth flier.

In a second experiment Geller et al¹ demonstrated that a similar prompting and incentive strategy can be applied in a community setting. However, several questions regarding optimal application of prompts and incentives for motivating seat belt use remain unanswered especially as regards the use of response-reward contingency. The present study was designed to examine the relative need for a response-reward contingency in English achievement of deaf children.

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1. E.S. Geller, J.G. Casali, R.P. Johnson. Seat-Belt usage: A potential target for applied behaviour analysis. Journal of Applied Behaviour Analysis, 13, 1980.

In another development, Hingtgen and Trost¹ sought to establish co-operative and vocal response in a group of young children diagnosed as schizophrenic. It was expected that the acquisition of these responses would lead to increased freedom of action and to greater acceptance of these children in the natural environment. The investigators worked with four children, who were trained in pairs and alone. Vocal responses were shaped in the morning session for the child alone and cooperative responses in an afternoon session.

The cooperative response was shaped using four steps. Firstly, touching was reinforced using the process of successive approximation. Secondly, only physical contact and vocalization were rewarded. Thirdly, touching with both hands, and vocalization were required. And lastly, reinforcement was only given if both children touched each other with both hands and made a vocal response. The results of this programme were positive in that children who initially showed no tendency towards recognizable speech nor towards peer interaction, learned the rudiments of interpersonal behaviour.

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1. J.N. Hingtgen and T. Trost. Intensive Reinforcement of Imitative Behaviour in Mute Autistic Children. American Medical Association, 1967.

Cruickshank¹ had employed shaping (Prompting procedure) in influencing the behaviour of a child with some exceptional characteristics. The work of Gardner² is an illustration of a more complex behaviour pattern that was developed by initial reinforcement of less complex segments and gradual integration of these into the desired goal. The behaviour objective was to get a girl to sit at her desk when the work time was announced, attend to instructions provided to her group, and complete the ten perceptual motor tasks presented and bring the completed work to the teacher. The reinforcement procedure was providing the child with a 'smiling face' sticker on completed work, and social reinforcement of 'praise' as well as getting the child to engage in some activities such as listening to the music, looking at a slide view, taking a polaroid picture and finger painting.

The result of this treatment was that the child was able to sit at her desk when work time was announced, attended to group instruction, completed the task and took it to the

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1. W.M. Cruickshank. The learning environment. In M.W. Cruickshank and D.P. Hallathan (Eds.). Perceptual and learning Disabilities in Children, Syracuse University Press, New York, 1975.
 2. W.I. Gardner. Children with learning and Behaviour Problems. Allyn and Bacon Inc. Boston, Massachusetts, 1978.

teacher's desk. The entire sequence of behaviour was being maintained by the final reinforcing consequences provided by the teacher. Reinforcement was continued for a sufficient period of time to ensure that the behaviour is maintained by more natural reinforcing events.

The ultimate goal of shaping is complete rehabilitation. In this study, deaf students, resorting to their lip-reading, sign language skills were trained through shaping and with the use of sign language to carry out desirable behaviours like "word usage" "sentence making".

Many researchers had employed shaping or allied strategies to improve on the English achievement for the hearing children and not for the deaf students.

Scopes¹ had employed the investigation strategy in teaching some group of children. The principle of investigation concerns a method of learning by discovery. Under this strategy, as in shaping students, were given cues and instructions, and they went on to perform some tasks following a step-by-step procedure. Although, no mention was made of the reinforcement schedule employed, the researcher had pointed out a number of advantages

1. J. Scopes. Teaching Mathematics in the Secondary School. Cambridge University Press, 1973.

to be derived from an application of this strategy.

Witman¹ had used positive reinforcement, physical guidance and fading procedures to teach two severely retarded children motor responses to a variety of verbal instructions. The responses of the children to one set of instructions, indicated the baseline condition, while the responses to a second set of instructions were used to assess the generalized effects of training. Results indicated that the subjects showed pronounced increases in instruction following behaviours. The results also showed the applicability of the training procedures for producing and maintaining instruction following behaviours for instructions not directly involved in the treatment.

Chadwick² in his own study clearly showed the effectiveness of shaping on academic performance of under-achieving students. The research was carried out in an experimental classroom of 25 selected under-achieving students. The effects of reinforcement on three measures of academic performance - percent of time at work, work output minute and accuracy were

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1. T.L. Witman. Effect of Reinforcement and Guidance procedures on instruction following behaviour of severely retarded children. Journal of Applied Behaviour Analysis, vol. 4, 1971.
 2. B.A. Chadwick. Systematic Reinforcement: Academic Performance of Under-achieving students. Journal of Applied Behaviour Analysis, vol. 4, 1971.

assessed. Results showed that with combined tangible and social reinforcement, students work-time rate of output per hour and accuracy in all activities substantially increased.

A number of researchers, Lowenfeld¹, Scholl² have investigated and asserted that a behavioural strategy like shaping would improve the intelligence, self-concept, motivation etc. of an individual.

Motivation and Language Acquisition:

The motive to achieve, whilst having no well-established origins in primary needs, is nevertheless, a useful concept which has some face validity in the class-room. Researchers have been trying to understand nature of achievement motivation for many years now. Ausubel³ conceived three component drives (cognitive, ego-enhancing and affiliative) in achievement motivation. Based on this, Bakare⁴ generated items making up his Academic Need Achievement Scale. Komolafe⁵ utilizing the

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1. B. Lowenfeld. Creative and Mental Growth. Macmillan, New York, 1967.
 2. G.T. Scholl. Meeting Developmental Needs of the Blind. School of Education, University of Michigan, 1969.
 3. D.P. Ausubel. Educational Psychology: A cognitive view. Holt, Rinehart and Winston, New York, 1968.
 4. C.G.M. Bakare. Academic need achievement scale and manual. Department of Guidance and Counselling, University of Ibadan, 1976.
 5. O.O. Komolafe. Academic Need Achievement of a group of students in Oyo State, Nigeria. Unpublished M.Ed. Project, Department of Guidance and Counselling, University of Ibadan, 1981.

scale in a sample of Nigerian adolescents demonstrated significant positive relationship between drive and academic achievement. Komolafe¹ also established positive relationship between academic achievement motivation and academic achievement.

Another direction of exploration arises from the work of McClelland et al². He introduced the term need for achievement. The persistence of both children and adults to master objects and idea would suggest that they have a strong desire to achieve. Whatever the cause, its presence is a constant source of hope and encouragement. McClelland et al² adopted 'projection' techniques to differentiate the levels of need to achieve following from a variety of experimental conditions. In one research there were two stages to the experiment: the first stage consisted of seven pencil-and-paper verbal and motor test; the second stage followed with a test of creative imagination. The results seem to show that the difference between the success and the failure groups is statistically significant.

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1. O.O. Komolafe. Academic Need Achievement of a group of students in Oyo State, Nigeria. Unpublished M.Ed. project. Department of Guidance and Counselling, University of Ibadan, 1981.
 2. D.C. McClelland, J.W. Atkinson, R.A. Clark, E.L. Lowell. The Achievement Motive. Appleton-Century-Crofts, New York, 1953.

Much important recent research, Birney¹ points to the paradox in our society, with its over-riding respect for those who think they have failed, especially those who have tasted success.

Empirical support has likewise been explored for Veroff's² autonomous and self-other social orientations of achievement motivation. Ruhland et al³ reported that empirical support has been found for these forms of motivation. They also reported that Feld et al⁴ found moderate relationships between autonomous achievement motivation and scholastic performance for second graders, and between social comparison achievement motivation and scholastic performance for fifth graders. Thus scholastic performance was differentially predicted by the two types of achievement motivation for younger and older children in elementary school.

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1. R.C. Birney, H. Burdick and R.C. Teevan. Fear of Failure, Van Nostrand Reinhold, New York, 1969.
 2. J. Veroff. Social comparison and the development of achievement motivation. In C.P. Smith (ed.). Achievement-related motives in children. Russell Sage Foundation, New York, 1969.
 3. D. Ruhland, M. Gold and F. Feld. Role problems and the relationship of achievement motivation to scholastic performance. Journal of educational psychology, 70, 1978.
 4. S. Feld, D. Ruhland and M. Gold. Developmental changes in achievement motivation. Merrill-Palmer in press, 1978.

Self-Concept and Language Acquisition:

Positive and negative self evaluation have their emotional implications in relation to achievement motivation. Weiner et al¹ showed in their study that causal attributions determine affective reactions to achievement outcomes. Ames² reported that high self concept children engage in more self congratulatory behaviour following success than did low self-concept children. This particular study is relevant to the present study.

Smith³ made a study of 200 physically disabled adolescents attending ordinary schools. He found that those with mild hearing problems had a higher self-concept scores than those with a more severe hearing problem. The severely deaf girls had the lowest self concept scores.

Behre⁴ in a similar situation studied 32 male and 32 female deaf adolescents with the age range of 11 to 16 years. She

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1. B. Weiner, I.H. Frieze, A. Kukla, L. Reed, S. Rest and R.M. Rosenbaum. Perceiving the causes of success and failure. General learning press, Morristown, 1971.
 2. C. Ames. Children's achievement attributions and self-reinforcement: Effects of self concept and competitive reward structure. Journal of educational psychology, 70, 1978.
 3. S.J. Smiths. Reaction of self-concept and others to the obviousness and severity of physical disability. Dissertation Abstract, St. Louis University, 1964.
 4. A.C. Behre. Effects of Role playing on the self-concept of deaf adolescents. Dissertation Abstract. Columbia University, 1971.

divided her subjects into groups A and B and randomly assigned them to experimental and control group. The treatment consisted of 24 sessions of role playing based on incidents relating to problem areas in adolescent life experience at home, school, neighbourhood. The finding was that the deaf adolescents had difficulties in attaining realistic self-concept.

In a related development, Elmore¹ found in his own study that the stigma of deafness on the deaf subjects affected their self-concept.

Gwenth² carried a study on the self concept and academic ability and academic performance of deaf adolescents in residential and non-residential schools. His findings showed that there was higher correlation, in the residential group between self concept of academic ability and grade point average.

Abosi³ had carried out a comparative study between Nigerian

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1. A.P. Elmore. An inquiry into self-concept of Deaf Adolescents. Dissertation Abstract, University of Minnesota, 1977.
 2. J.M. Gwenth. Self concept among deaf adolescent and its relationship to social sensitivity and personality. Dissertation Abstract. Catholic University, 1975.
 3. C.O. Abosi. Comparative study of self-concept of Nigerian Deaf and Hearing adolescents. Journal of Curriculum Studies, 1985.

deaf and hearing adolescents. The instrument used in this study was the section A of the Adolescent Personality Data Inventory designed by Akinboye. The result showed that the normal hearing adolescent group had higher score, hence it was concluded that normal hearing adolescents have higher concept score than the hearing impaired adolescent.

Ames¹ in the previous work had also shown that high self-concept students attributed success outcomes more to their higher ability and engage in more positive self reinforcement following success than low concept students. The implication of this finding in the classroom setting and its interpretation involves explanation about the causes of achievement outcome that may have important implication for one's subsequent achievement oriented behaviour, self evaluation and interpersonal relationship.

A CONCEPTUAL MODEL FOR THE STUDY

The following conceptual model explains the process by which a change of behaviour is affected in the study of English language by deaf children. The various methods of teaching English language namely modelling-life model, symbolic model,

1. C. Ames. Children's achievement attributions and self-reinforcement. Effects of self concept and competitive reward structure. Journal of educational psychology, 70, 1978.

self modelling, participants modelling and shaping-cues, prompts, instructions, positive reinforcement are the treatment strategies in this study. They also form the independent variable. This aspect of the model is seen as the stimulus dimension, S.

Some personality correlates of the organism such as self-concept, motivation locus of control, attitude, Age, intelligence, emotional states, perceptual faculties, Health attributes are considered as the first-order intervening variable or organismic variables. These are factors which are expected to affect performance in English language development thus determining the efficacy of the treatment strategies. There is also a second order intervening variables. This considers the environment and level of interaction during the study. This could affect the outcome of the study. These variables are denoted by 'O' residing in the biological system of the organism.

The response of dimension 'R' of this model will be the measurable dependent variable namely growth in language ability - English language competence, syntactic development.

Kanfer and Phillips¹ had interpreted the 'O' of the S-O-R

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1. F.H. Kanfer and J.S. Phillips. Learning foundations of behaviour therapy.

model as biological state of the organism. Organismic variables include other variables other than biological state (Goldfried and Davison¹).

The conceptual model given diagrammatically in Fig I explains how English language could be effectively achieved through modelling and shaping within the limits of the individuals intellectual and personal functioning.

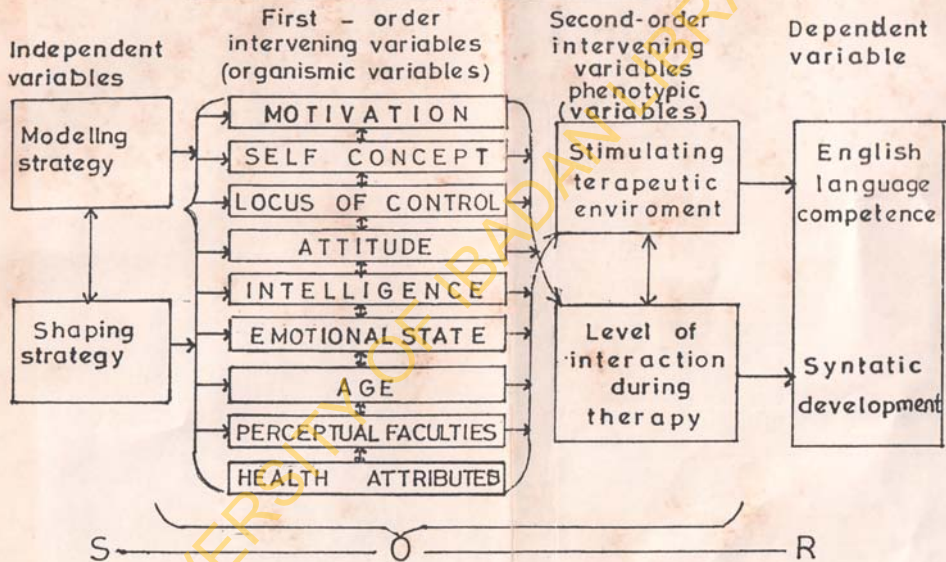
Hypotheses:

The following Null hypotheses were tested in the present study.

1. There is no significant difference between the English Achievement of deaf students treated with modelling programme and deaf students who are not exposed to such treatment.

1. M.R. Goldfried and G.C. Davidson. Clinical Behaviour Therapy. Holt Rinehart and Winston, New York, 1976.

Fig. 1. THE CONCEPTUAL MODEL.



2. There is no significant difference between the English Achievement of deaf students treated with shaping programme and deaf students who are not exposed to such treatment.
3. There is no significant difference between the English Achievement of deaf students treated with modelling programme and those treated with shaping programme.
4. There is no significant difference in the attitude of students treated with modelling, shaping programmes and deaf students who are not exposed to such treatment.
5. There is no significant difference in the self concept of deaf students treated with modelling, shaping programmes and deaf students who are not exposed to such treatment.

CHAPTER TWO

DESIGN AND PROCEDURE

Design:

A 3 x 3 factorial design was used for the study (Fig. 2). This gave nine treatment groups in all. Six of these groups were randomly assigned to treatment groups while the remaining three were assigned to the control groups. The modelling, shaping and control groups were on the rows while the low, average and high levels of achievement constituted the columns. These were labelled from I to IX.

Fig. 2 Design of the study

Treatment Programme	Academic Achievement Levels		
	Low	Average	High
Modelling	Group I	Group II	Group III
Shaping	Group IV	Group V	Group VI
Control	Group VII	Group VIII	Group IX

Subjects:

45 deaf students consisting of males were used in the study. The sample was drawn from their natural cluster environment because deaf students of the standard required for this study are not many in this country. In short all the form four students available were used. Thus the subjects were drawn from a deaf secondary school unit in Ibadan. Form four was deliberately chosen to allow at least one year follow-up before the students pass out from school. Their age ranged from 17-22 years with a mean of 19.5. Students who had acquired speech before becoming deaf were not involved in the study because such students were likely to have a slight advantage over the other subjects in English language.

The Academic Achievement Test (Abosi¹) scores were used to match the subjects. The subjects were grouped into low, average and high levels of academic achievement. Thus subjects who scored 55 and above formed the high achievers, 43-54 average and 42 and below constituted the low achievers.

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1. C.O. Abosi, Academic Achievement Test. Department of Guidance and Counselling, University of Ibadan, 1986.

The 15 subjects selected for each of low, average and high levels of academic achievement were assigned to three groups by the random blocks technique. These three groups (each containing 5 subjects) were then randomly assigned to treatment programmes as follows: (1) to modelling, (1) to shaping, and (1) to control. Therefore, of the 15 subjects selected for each of low, average and high levels of academic achievement, 5 went to each of modelling, shaping programmes and control. In other words each of the nine groups involved in the study contained 5 subjects (see figure 2).

Instruments:

The following instruments were used in the study:

1. Academic Achievement Test (Abosi¹).
2. Self Concept Scale (Akinboye²).
3. Attitudes Towards English (Akinboye³).

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1. C.O. Abosi. Academic Achievement Test. Department of Guidance and Counselling, University of Ibadan, 1986.
 2. J.O. Akinboye. Adolescent Personality Data Inventory (APDI). Maritime Printers, Ibadan, 1977.
 3. J.O. Akinboye. Attitudes Towards English. University of Ibadan, 1974.

1. Academic Achievement Test (AAT)

Academic achievement test was constructed for measuring the academic level of the subjects involved in this study by the researcher. The test which consists of 100 items was used in placing the children in the different levels thus low, average, and high achievement levels. Subjects who scored below 43 on the test formed the low achievers, while subjects who scored between 43 and 54 formed the average and those who scored 55 and above formed the high level achievers.

The psychometric information has been obtained on the instrument. The test has a face validity hence the involvement of some classroom teachers in the selection of the items. The index validity of the test is 0.75.

To determine the internal consistency of the test, the split Half Reliability was computed based on the correlation of the scores of the odd and even components. After adjusting for full length using the Spearman Brown Prophecy Formular, 'r' was found to be 0.82. The test exhibited a coefficient of stability of 0.81 after correlating the scores on two administration with two weeks interval with the same set of students.

2. Adolescent Personality Data Inventory

Adolescent personal Data Inventory (APDI) (Akinboye¹) is

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1. J.O. Akinboye. Adolescent Personal Data Inventory (APDI). Maritime Press, Ibadan, 1977.

primarily designated to serve as a battery of non-intellective ability tests. It may be used with other cognitive tests in assessing the characteristic behaviour patterns of adolescents.

APDI consists of six sub-scale (A, B, C, D, E, and F) as follows:

- A - Self-concept
- B - Study behaviour
- C - Health attributes
- D - Psychopathology
- E - Vocational interest
- F - Questionnaire tapping facts about adolescents' biological characteristics.

The present study employed the sub-scale A of the APDI. Sub-scale 'A' is a general self perception scale which may be able to tap academic social, personal and intellectual ability perception of the adolescents. It consists of 30 items. A coefficient alpha of 0.75 was established for internal consistency reliability (Akinboye^{1,2}). Akinboye¹ further noted that

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1. J.O. Akinboye. Adolescent Personal Data Inventory (APDI): Users Manual. Maritime Printers, Ibadan, 1985.
 2. J.O. Akinboye. Research reports on the adolescent personal data inventory. Paper presented at departmental seminar. Department of Guidance and Counselling, University of Ibadan, 1981.

apart from the fact that a face validity was assured by the process of item analysis and careful observation of the meaning of the 30 items, factor analytic characteristics were established for the sub-scale. Nine factors were isolated. Of these, 20 items loaded heavily on factor one which accounted for 16.0% of the variance while the other 8 factors accounted for 54.6%.

The sub-scale is scored by subjects rating themselves numerically on a ten-point scale. Ratings on the nine-point scale range from 0 to 8. Total scores on the sub-scale therefore range from 0 to 240. Subjects scores are interpreted according to the following norms:

- (1) 120 raw score represents just the minimum acceptable self-concept for a psychologically healthy person;
- (2) 220 raw score represents a high self-concept.
- (3) Any score below 120 indicates low self-concept.

3. Attitude Towards English Scale

The scale was constructed, developed and validated by Akinboye¹. The scale is based on (Shaw and Wright). The scale was used to discriminate attitudes to reading between different

1. J.O. Akinboye. Study habits modification study attitudes change and academic performance. Unpublished M.Ed. dissertation, University of Ibadan, 1974.

levels. The English attitudes scale (EAS) has a test-retest reliability of 0.94 and high construct validity.

PROCEDURE:

Heads of schools are somewhat reluctant to allow researchers to carry out studies in their various schools since as they claimed the result of such studies are never utilized. So apart from making sure that the study was carried out in the subjects school environment, permission was obtained from the school before the study commenced. Deaf children could be unfriendly and suspicious when they are not sure of one's mission. The experimenter, apart from conducting the experiment himself, took time off to familiarize himself with the children - especially as regards what they like. This situation helped the experimenter to determine what the children would like as reinforcers.

PRE-TREATMENT ASSESSMENT:

Before training started, all subjects were assessed in the following areas:

1. Academic Achievement Test (Abosi¹ Appendix 3).

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1. C.O. Abosi. Academic Achievement Test.
Department of Guidance and Counselling,
University of Ibadan, 1986.

2. Self-Concept by Adolescent Personal Data Inventory (Akinboye¹ Appendix 5).
3. Attitude Scale (Akinboye² Appendix 4).

After the English Achievement Test, the question papers were retrieved from the subjects and they were not given the papers until post-test assessment. The subjects were not also told that it was the same test that would be given again at the end of the treatment, thus reducing to some extent, the sensitization to the criteria tests which might contaminate the effects of the treatment.

The subjects were ranked-ordered according to their performances on the achievement test. The subjects who scored 55% and above were ranked the high achievers, those who scored between 43 and 54 formed the average achievers while those who scored 43% and below formed the low achievers.

The subjects were then divided into nine groups thus the low achievers were randomly divided into three groups. The average and high achievers were also randomly divided into three groups each. The balot system was adopted in randomization.

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1. J.O. Akinboye. Adolescent Personal Data Inventory (APDI). Maritime Press, Ibadan, 1977.
 2. J.O. Akinboye. Study habits modification study attitudes change and academic performance. Unpublished M.Ed. dissertation, University of Ibadan, 1974.

The resulting nine groups were again randomly assigned to the different methods for the different level.

The random method of selection was deliberately chosen to ensure that other extraneous variables resulting from differences in socio-economic background, previous knowledge of English language etc. were brought into control.

Means of Communication adopted for the study:

This study adopted the sign language and finger spelling aspect, of "total communication".

Total Communication:

Total communication traditionally means the use of any mode of communication or combination of modes in establishing a two-way communication system with the deaf. It includes speech, speech reading, audition, finger spelling, sign language, gestures, pantomimes, reading, writing and drawing. There is undisputable research evidence pointing to the fact that deaf children gain greater improvement educationally, psychologically and socially when total communication is used with them, than when any other single mode of communication is employed (Mba¹).

Finger Spelling:

Finger spelling is a system whereby an individual can represent manually each of the twenty-six letters in the English

1. P.O. Mba (Ed.). Syllabus in total communication for the Deaf. NERC, 1978.

alphabet on a single hand. Finger spelling is thus a kind of writing in the air.

Sign Language:

Sign language is a language in which what are commonly called gestures do the usual work of words.

The sign language and finger spelling were used in teaching English language to the subjects, employing modelling and shaping techniques with the relevant groups. The technique of dividing the subjects of each group into low achievers, average achievers and high achievers sub-groups was helpful for data analysis, but for purposes of treatment, each group was taught together, differences in level of achievement notwithstanding. Different programmes for modelling and shaping were built round relevant sign language and finger spelling.

BASELINE:

Information collected before the behaviour change intervention was implemented is referred to as baseline or pre-intervention data (Walker and Shea¹). Akinboye² describes

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1. J.E. Walker and T.M. Shea. Behaviour modification a practical approach for educators. The C.V. Mosby Co. Saint Louis, 1976.
 2. J.O. Akinboye. Introduction to clinical behaviour therapy in African contexts. Department of Guidance and Counselling, University of Ibadan, 1984.

baseline as the initial repeated measurement of the target behaviour frequency before treatment.

Baseline data indicate the natural frequency of the behaviour before it is manipulated in a therapy. The importance of a baseline data in a behaviour modification programme cannot be over-stressed because it provides the foundation on which the behaviour change process is evaluated. The data was also used to determine the effectiveness of the intervention during the evaluation phase of the behaviour change process. Hersen and Barlow¹ have however warned that when selecting a baseline, its stability and variability must be carefully examined. This study in appreciation of the warning, used the average or the mean of the baseline scores in plotting the baseline graph.

During baseline, data on English achievement was collected for five days. No attempt was made to teach the students. The students were told that the exercise was to help prepare them for their final examination which would come up in the following year. Also to enable them do well in English which many students failed in the last West African School Certificate examinations. Initially the subjects thought the exercise was

1. M. Hersen and D.H. Barlow. Single-case experimental designs: Strategies for studying behaviour change, 1977.

for screening for those who would go on to form five but after the second day, they became more relaxed and showed more interest in the exercise. The mean for the scores obtained by each group was recorded for the five days especially when it was observed that the response had become stable (see figure 5, 6, 7, 8, 9 and 10 and tables 1a, b, c, 2a, b, c.).

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Table 1A: Baseline Data in English for Modelling group

High Achievers

DAYS	MEAN GRADE BASELINE	MEAN GRADE INTERVENTION
1	6	7
2	6	7
3	7	8
4	6	8
5	8	9

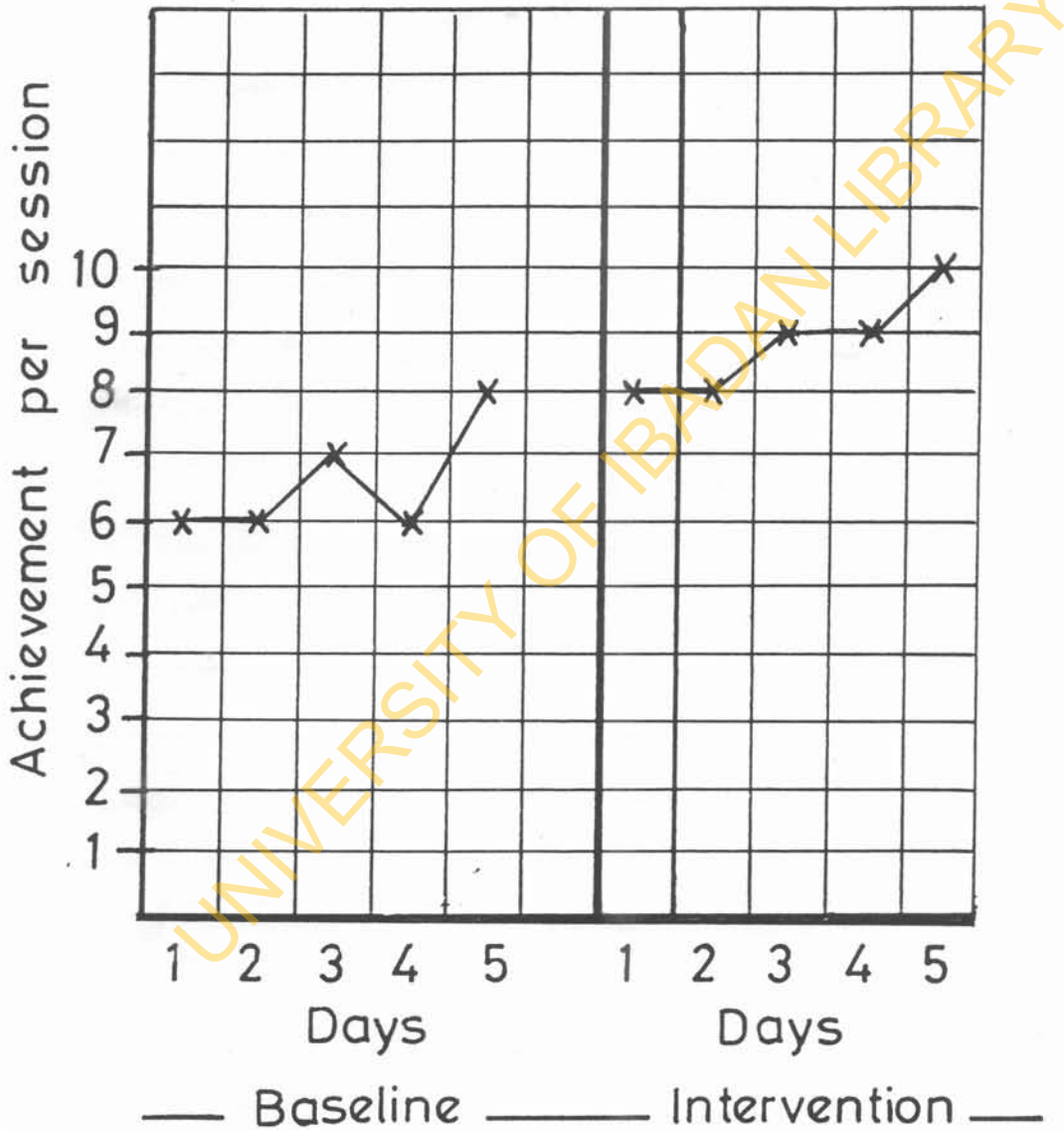


Fig. 5. Achievement of the modeling high achievers group before and during intervention.

Table 1B: Baseline Data in English
for Modelling group

Average Archivers

DAYS	MEAN GRADE BASELINE	MEAN GRADE INTERVENTION
1	5	5
2	5	7
3	6	8
4	5	10
5	5	10

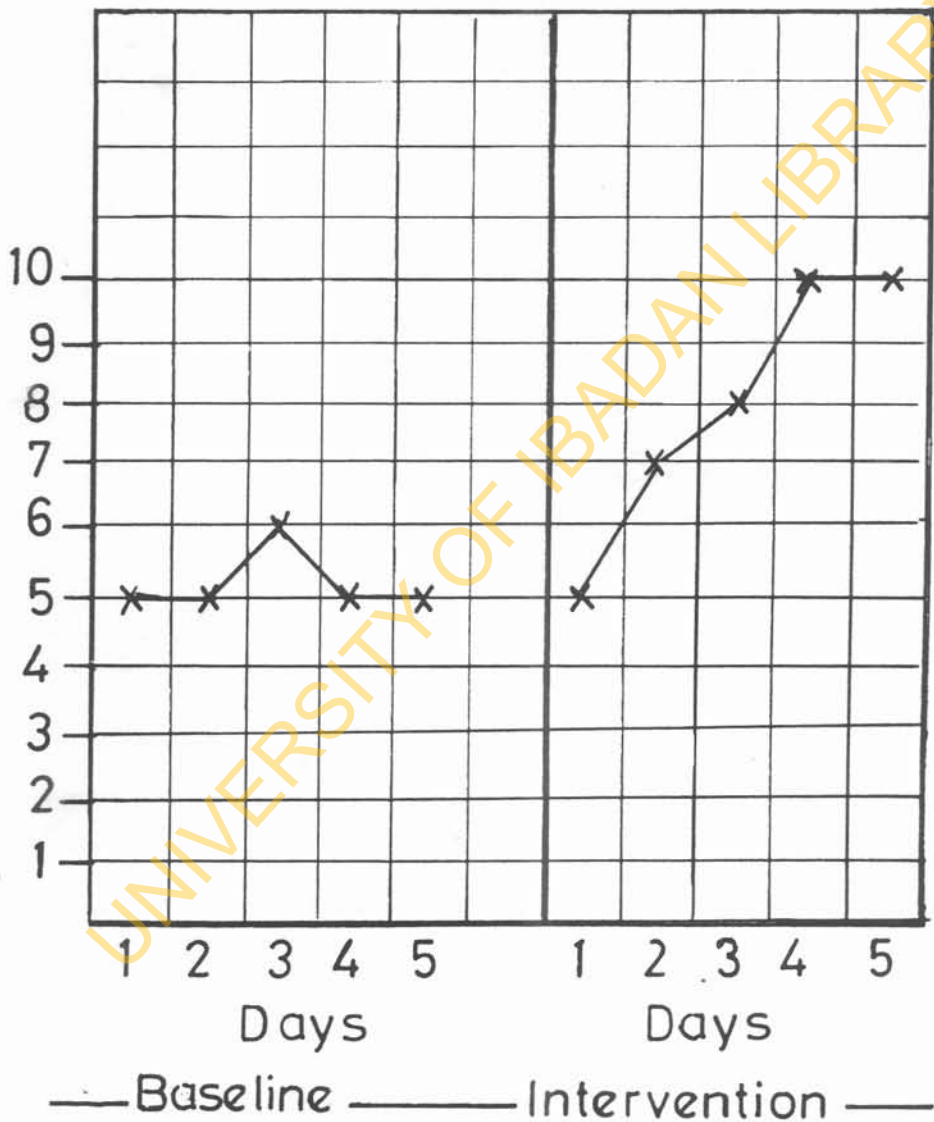


Fig. 6. Achievement of the modeling average achievers group before and during the intervention.

Table 1C: Baseline Data in English
for Modelling group

Low Achievers

DAYS	MEAN GRADE BASELINE	MEAN GRADE INTERVENTION
1	3	4
2	2	4
3	4	5
4	4	5
5	5	5

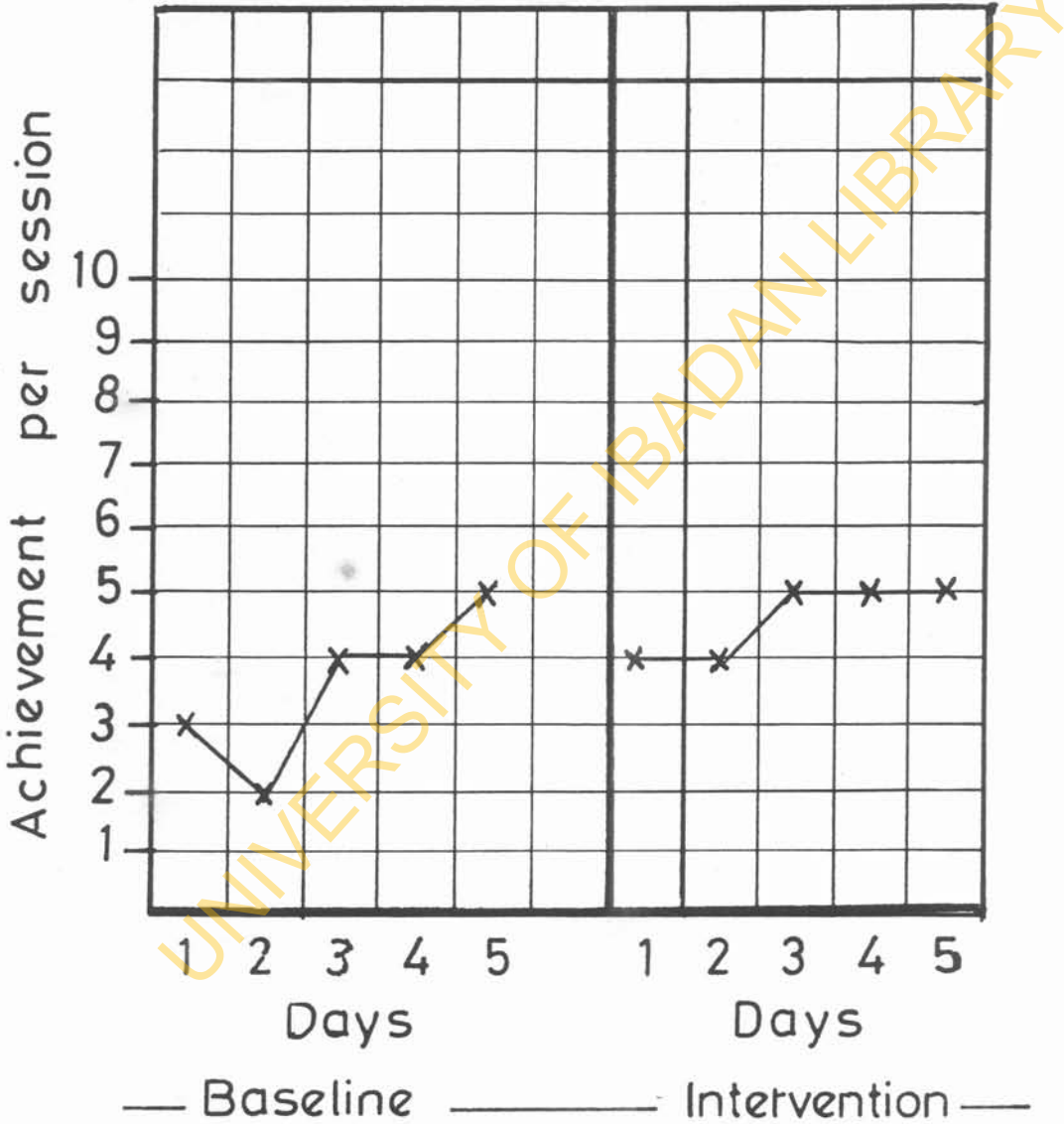


Fig. 7. Achievement of the modeling low achievers group before and during intervention.

Table 2A: Baseline Data in English
for Shaping group

High Achievers

DAYS	MEAN GRADE BASELINE	MEAN GRADE INTERVENTION
1	6	6
2	6	6
3	7	7
4	6	7
5	8	8

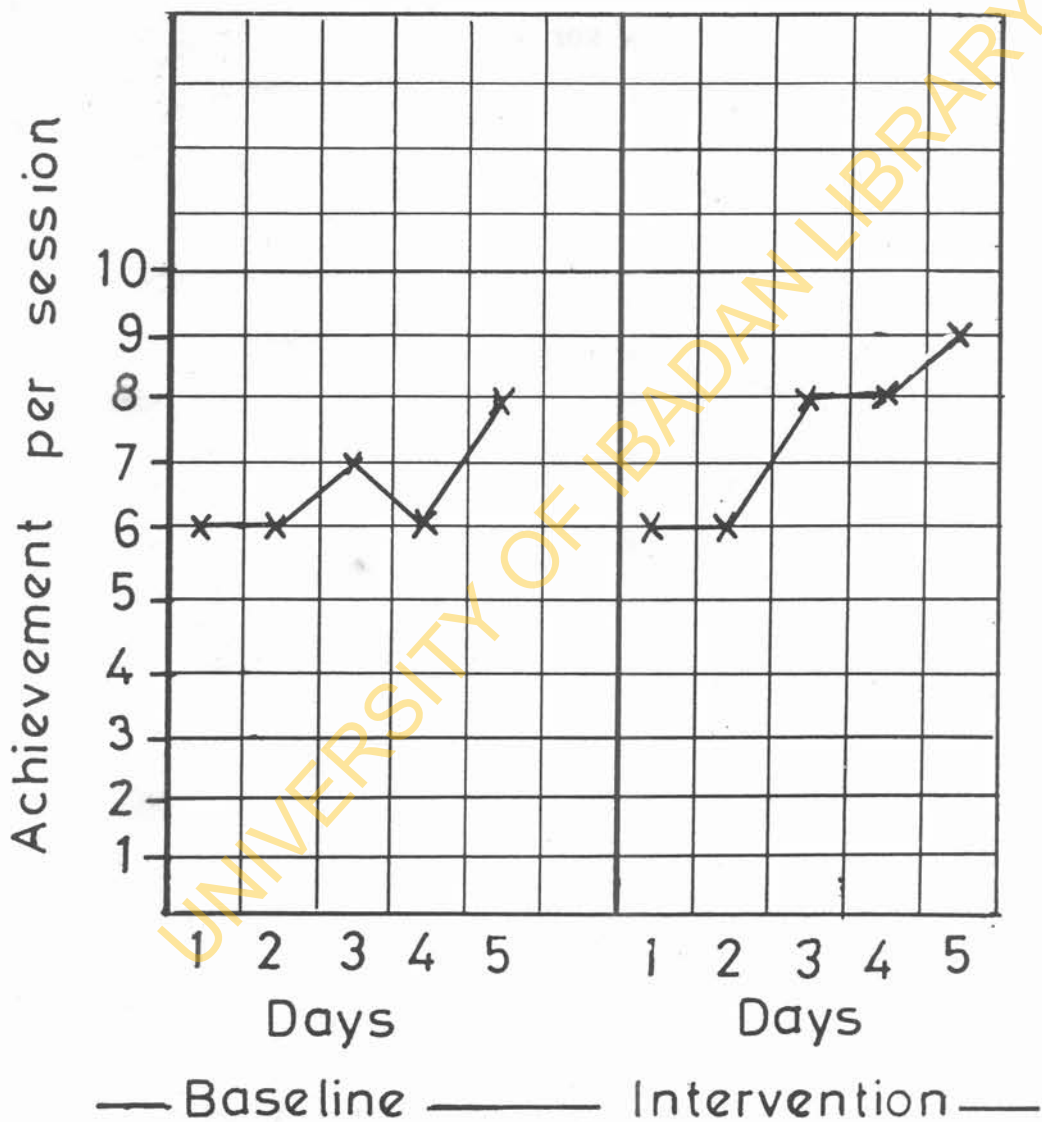


Fig.8 Achievement of the shaping high achievers group before and during intervention.

Table 2B: Baseline Data in English
for Shaping group

Average Achievers

DAYS	MEAN GRADE BASELINE	MEAN GRADE INTERVENTION
1	5	5
2	5	6
3	6	6
4	5	7
5	5	7

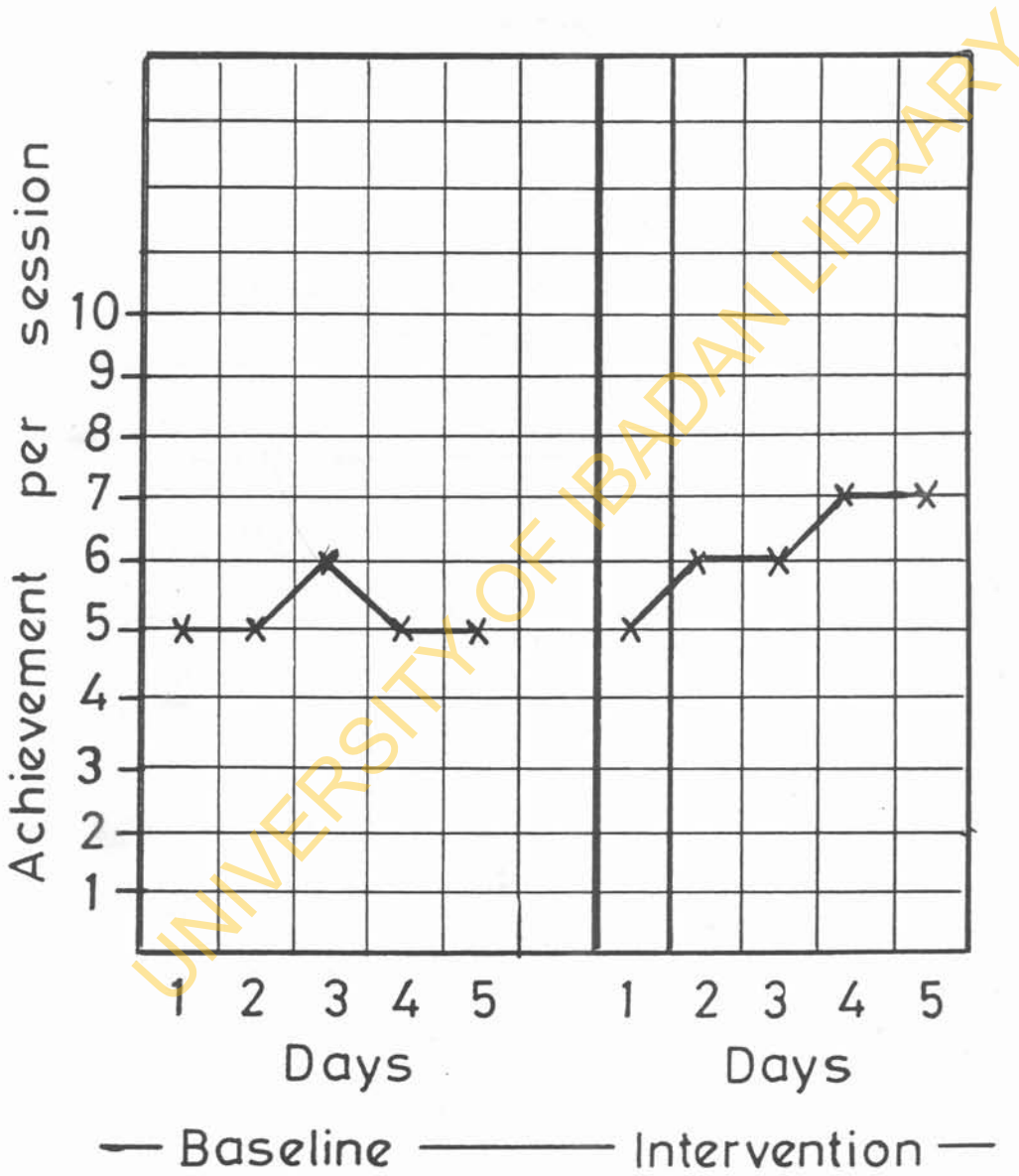


Fig.9. Achievement of the shaping average achievers group before and during intervention.

Table 2C: Baseline Data in English
for Shaping group

Low Achievers

DAYS	MEAN GRADE BASELINE	MEAN GRADE INTERVENTION
1	3	3
2	2	4
3	4	4
4	4	5
5	5	5

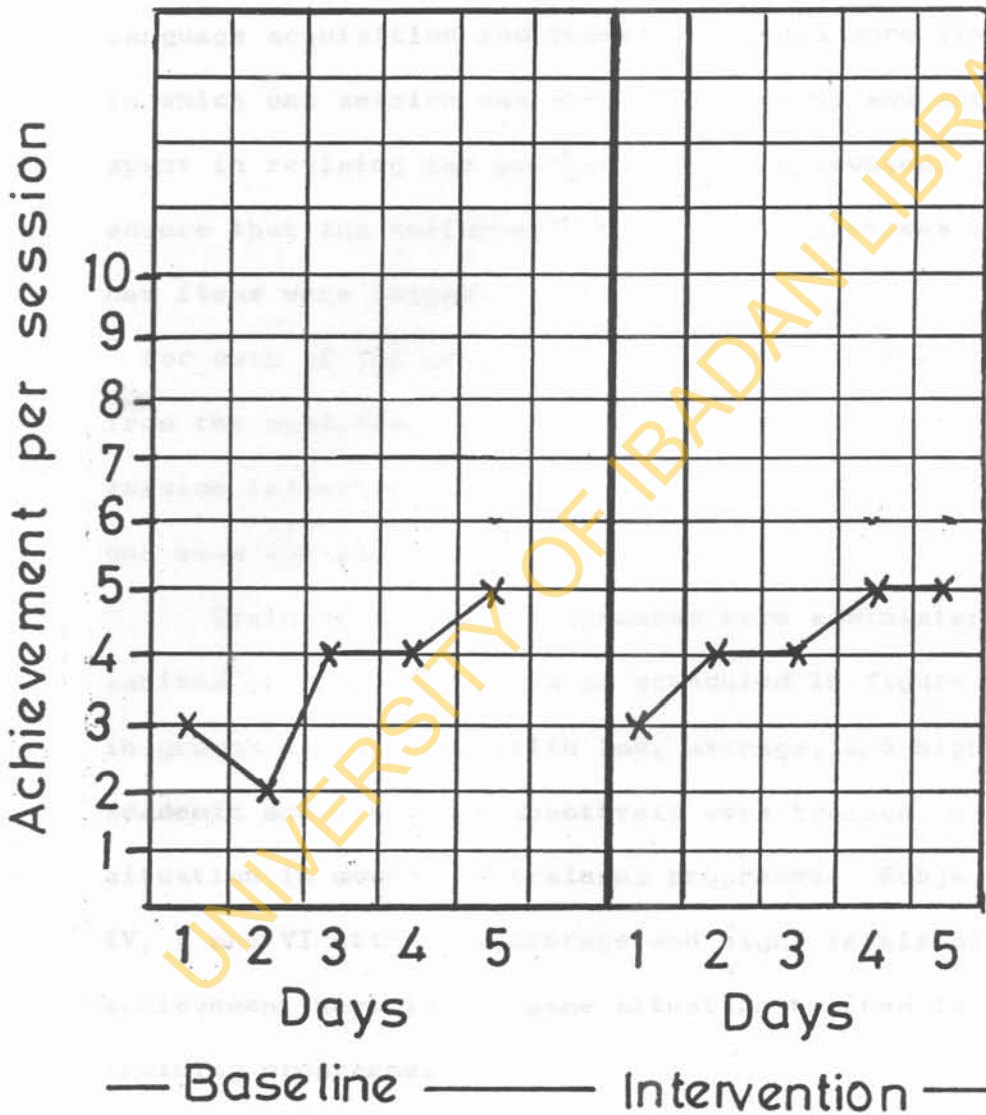


Fig.10. Achievement of the shaping low achievers group before and during intervention.

The Treatment:

The programmes were originally scheduled to last for nine sessions, but at the end of the introductory session, it was realized that the deaf children progressed rather slowly in language acquisition and therefore needed more time. A method in which one session was spent on teaching and another session spent in revising the previous work was adopted. This was to ensure that the children understood the previous work before new items were introduced to them.

For each of the programmes, modelling and shaping, apart from the post-test session, sixteen sessions were held. Each session lasted for 45 minutes and two sessions were held in one week for each programme.

Training in these programmes were administered to the various groups of subjects as scheduled in figure 2. Subjects in groups I, II, III, (with low, average, and high) levels of academic achievement respectively were trained in the same situation in modelling training programme. Subjects in groups IV, V and VI with (low, average and high) levels of academic achievement were in the same situation trained in shaping training programme.

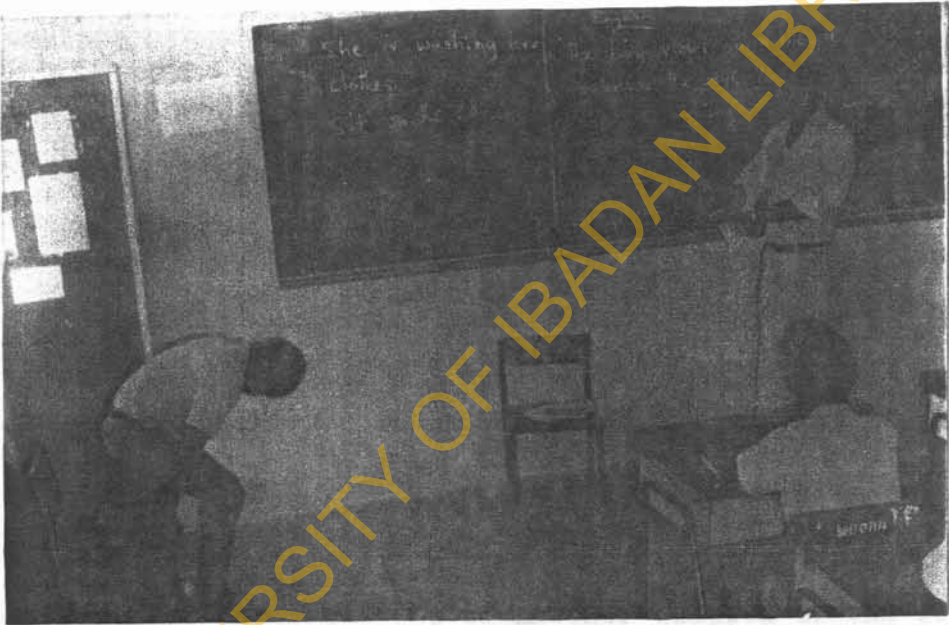


Fig. 11: (Demonstration of Modelling techniques)

A student demonstrates while peers observe in a modelling session as they would be expected to imitate him later.

Subjects in groups VII, VIII, IX with (low, average and high) levels of academic achievement respectively in the same situation formed the control groups. The programmes were held on Thursdays and Fridays of every week. At the end of each session a take-home assignment covering the topic dealt with, was given the subjects. The following topics were dealt with on each programme.

- i. The use of Nouns
- ii. The use of present tense
- iii. The use of personal pronouns
- iv. The use of past tense
- v. The use of future tense.

The take-home assignment given to the subjects at the end of a session were completed and the scripts submitted for marking during next session. The marked scripts were returned to the subjects at the beginning of another session of the same programme. Prizes in form of tokens were awarded to the best and second best respectively in each of the modelling and shaping groups in the post-test. The subjects were appropriately informed before the commencement of treatment.

Token economies and social reinforcement which were contingent on performance were employed in each programme. Apart

from the above in-built, reinforcement strategy, the subjects were trained to make certain self-statements after their completed assignments have been marked, irrespective of whether they were successful or not. This helped the subjects to evaluate themselves and make certain self-instructions and self-reinforcement.

The Modelling Programme:

During modelling the task was divided into components and arranged in proper sequence. The researcher was the model. The subjects were instructed to watch the performance of the model quite closely and note the different steps taken by the model and the sequence the steps were taken because they would later be asked to do exactly what the model had done.

The model first demonstrated what should be done. He commented as he moved from step to step; for example, he said "The first thing to do is this" (he performed it), "then the next is this" (he performed) and so on. When the whole task had been performed, the model repeated it about three times before asking the observer to perform.

Token economies and social reinforcement were made contingent on performance. During modelling programme, vicarious reinforcement was essentially employed. The researcher rehearsed any task to be learnt before hand so as to be sure

he was sufficiently competent to perform behaviours that would be reinforcing to the observer.

Each session was divided into:

- (i) Behavioural objective: where the aim for the session was stated.
- (ii) Teaching aid: the aids used during the session were listed.
- (iii) Exposure to model: Period when the model demonstrated and the subjects observed.
- (iv) Acquisition: when subjects imitated and performed.
- (v) Reinforcement: Reinforcement strategy used.
- (vi) Performance: Evaluation strategy used.

Session-by-session account of modelling programme is given below - (for fuller details, see Appendix I).

Session one:

In this session, the subjects were taught how to identify and use nouns. For example - common nouns are objects; proper nouns are names of persons and places, abstract nouns are names of ideas. (see Appendix I for details).

Session Two:

In this session, subjects revised what they were taught in session one. More practice was on topics like the abstract nouns. A take-home assignment was given on the topic taught. This was assignment I.

Session Three:

This session began with subjects submitting assignment I. to the experimenter. The subjects were taught how to identify and use personal pronouns. For example - I; you; he; she.

Session Four:

Subjects in this session, revised what they were taught in session three. The subjects practised how to use personal pronouns in making correct sentences. A take-home assignment was given on the topic dealt with. This was assignment 2.

Session Five:

This session started with the returning of the marked scripts on the last assignment I to the subjects. Reinforcers were used to reward good performance. The subjects were then taught how to identify and use personal pronouns - They; we, it; in a sentence. The subjects submitted assignment 2 to the experimenter.

Session Six:

Subjects in this session revised what they were taught in session five. The subjects used personal pronouns - they, we, it making more sentences. A take-home assignment was given on to topic dealt with. This was assignment 3.

Session Seven:

This session began with subjects submitting assignment 3 to the experimenter and they were given marked assignment 2. The subjects were taught how to make sentences in the present tense using personal pronouns (I, you, he, she).

Session Eight:

In this session, the subjects revised what they were taught in session seven. The subjects practised sentence making in the present tense using (I, you, he, she). A take-home assignment was given on the topic done. This was assignment 4.

Session Nine:

In this session, the subjects were taught how to make sentences in the present tense using personal pronouns (they, we, it). The subjects submitted assignment 4 to the experimenter and they were given marked scripts on assignment 3.

Session Ten:

The subjects revised what they were taught in session nine. The subjects practised sentence-making using personal pronouns, they; we; it; in the present tense. They were given a take-home assignment 5.

Session Eleven:

The session began with returning of the marked scripts to the subjects. The subjects submitted assignment 5. to the experimenter. The subjects were taught how to make sentences in the past tense using personal pronouns already learnt. For example, he; she; I; you; they; we; it (see Appendix I).

Session Twelve:

The subjects were given more practice on the use of personal pronouns - they, we, it, you, he, she, in making correct sentences in the past. The subjects were given take-home assignment 6.

Session Thirteen:

In this session, the subjects were taught how to make correct sentences in future tense using personal pronouns. At the end of the session, the subjects were given marked scripts and they in turn submitted assignment 6 to the experimenter for marking.

Session Fourteen:

Here, the subjects were given more practice on future tense. They used personal pronouns in making more sentences in the future. The subjects were given a take-home assignment 7.

Session Fifteen:

This session began with subjects submitting the take-home assignment 7 to the experimenter for marking. The subjects

were then drilled on sentence making involving past tense, present tense and future tense. The subjects were also given marked scripts on assignment 6.

Session Sixteen:

The subjects were given final practice on sentence-making involving the use of personal pronouns. The subjects were also given the marked scripts on assignment 7 which is the last assignment for the programme. (See Appendix I for full details).

Session Seventeen:

This was the terminal session. The post-test was administered on the subjects. All the children who participated in the programme were reinforced with various items ranging from biro, pencil to exercise books depending on the individual subject's choice. The outstanding subjects were given a special token.

The shaping programme:

Under shaping, each learning task was divided into little steps and arranged in the proper sequence. From an observation of the manner in which subjects handled the pieces of apparatus and their behaviour therein, the experimenter identified those behaviours that were related to the first-step of the problem-solving behaviour and capitalize on them. Using prompts, cues and instruction, the subjects were initiated into performing the first-step behaviour. Even approximations to this behaviour



Fig. 12: (Demonstration of shaping technique)
Prompting being used in a Shaping
session.

were continuously consistently and contingently reinforced until the experimenter was satisfied that the behaviour had been considerably mastered. Then with further cues and instructions serving as discriminative stimuli, the subjects were led into attempting the second-step behaviour. Approximations to this behaviour being reinforced till mastery. In this way, progress was successively made towards the target behaviour which was the last step in the hierarchy of events. At each level of performance, the experimenter went round the class to see the individual performances of the subjects. Poor performance on the part of a subject was not reinforced, rather the subject was urged to go ahead and perform the desired behaviour. In this, undesired behaviour was extinguished while only the desired or approximations to the desired behaviour were reinforced.

Each session was divided into:

- (i) Behavioural objective: where the aim for the session was listed.
- (ii) Teaching aid: the aids used during the session were listed.
- (iii) Exposure to shaping: period when experimenter uses cues, prompts and instruction to initiate the children into performing the desired behaviour.

(iv) Acquisition: when subjects performed the desired behaviour without cues and prompts.

(v) Reinforcement: Reinforcement strategy used.

(vi) Performance: Evaluation strategy used.

Session-by-session account of shaping programme is given below - (see Appendix I for fuller details).

Session One:

In this session, the subjects were taught how to identify and use nouns. For example - common nouns are objects; Proper nouns are names of persons and places; abstract nouns are names of ideas. (See Appendix 2 for details).

Session Two:

In this session, subjects revised what they were taught in session one. More practice was given topics like the abstract nouns. A take-home assignment was given on the topic taught. This was assignment 1.

Session Three:

This session began with subjects submitting assignment 1 to the experimenter. The subjects were taught how to identify and use personal pronouns. For example - I, you, she.

Session Four:

Subjects in this session revised what they were taught in session three. The subjects practised how to use personal pronouns in making correct sentences. A take-home assignment

was given on the topic dealt with. This was assignment 2.

Session Five:

This session started with the returning of the marked scripts on the last assignment 1 to the students. Reinforcers were used to reward good performance. The subjects were then taught how to identify and use personal pronouns - they, we, it, in a sentence. The subjects submitted assignment 2 to the experimenter.

Session Six:

Subjects in this session revised what they were taught in session five. The subjects used personal pronouns - they, we, it in making more sentences. A take-home assignment was given on the topic dealt with. This was assignment 3.

Session Seven:

This session began with subjects submitting assignment 3 to the experimenter and were given marked assignment 2. The subjects were taught how to make sentences in the present tense using personal pronouns (I, you, he, she).

Session Eight:

In this session, the subjects revised what they were taught in session seven. The subjects practised sentence making in the present tense using (I, you, he, she). A take-home assignment was given on the topic done. This was assignment 4.

Session Nine:

In this session, the subjects were taught how to make sentences in the present tense using personal pronouns (they, we, it). The subjects submitted assignment 4 to the experimenter and were given marked scripts on assignment 3.

Session Ten:

The subjects revised what they were taught in session nine. The subjects practised sentence-making using personal pronouns - (they, we, it) in the present tense. They were given a take-home assignment 5.

Session Eleven:

The session began with the returning of the marked scripts to the subjects. The subjects submitted assignment 5 to the experimenter. The subjects were taught how to make sentences in the past tense using personal pronouns already learnt. For example, he, she, I, you, they, we, it.

Session Twelve:

The subjects were given more practice on the use of personal pronouns - they, we, it, you, he, she, in making correct sentences in the past. The subjects were given take-home assignment 6.

Session Thirteen:

In this session, the subjects were taught how to make correct sentences in future tense using personal pronouns. At the end of the session, the subjects were given marked scripts and they in turn submitted assignment 6 to the experimenter for marking.

Session Fourteen:

Here the subjects were given more practice on future tense. They used personal pronouns in making more sentences in the future. The subjects were given a take-home assignment 7.

Session Fifteen:

The session began with subjects submitting the take-home assignment 7 to the experimenter for marking. The subjects were then drilled on sentence making involving past tense, present tense and future tense. The subjects were also given marked scripts on assignment 6.

Session Sixteen:

The subjects were given final practice on sentence - making involving the use of personal pronouns. The subjects were also given marked scripts on assignment 7 which is the last assignment for the programme.

Session Seventeen:

This was the terminal session. The post-test was administered on the subjects. All the children who participated in the programme were reinforced with various items ranging from biro, pencil to exercise books depending on the individual subjects choice. The outstanding subjects were given a special token. (See Appendix 2 for full details of the shaping programme).

POST-TREATMENT ASSESSMENT:

At the end of treatment period, all the subjects were re-assessed in the same respects and by the same instruments as done during pre-treatment assessment.

CONTROL OF EXTRANEIOUS VARIABLES:

This study could rightly be described as a field experiment. (Kerlinger¹) describes field experiment as a research study in a realistic situation in which one or more independent variables are manipulated by the experimenter under as care fully controlled conditions as the situation will permit. As a result, the control of the experimental field situation cannot match that obtainable from laboratory experimental situation.

1. F.N. Kerlinger. Foundations of Behavioural Research.
Holt, Rinehart and Winston, 1973.

This is due to the possibility of independent variables manipulated by the experimenter being contaminated by uncontrolled environmental variables. In other words, one of the main tasks of the field experimenter is to try to make the research condition approximate the conditions of the laboratory experiment more closely - This is rather difficult thing to do.

This study was carried out in accordance with certain strategies that would reduce a great deal of the contamination by extraneous variables. By adopting factorial design, the recognisable extraneous variable - variations in subjects pre-test academic achievement was controlled by incorporating achievement levels into the design. Extraneous variables were also controlled by selection of subjects through several stages of randomisation. Testing conditions were uniform for all subjects in the subject. There was one therapist - the experimenter himself. The experimenter administered the two treatment programmes. The use of more than one experimenter would have introduced more bias.

Hawthorne effect (subjects reactions to novelty or change other than specifics of the treatment programmes) might also not have contaminated the independent variables recognisably. In addition to treating in the same situations all subjects scheduled for same treatment, Hawthorne effect would have been controlled through extended period of treatment, and more so

when homework assignments are a significant component of each programme.

As an additional strategy for controlling extraneous variables, it was hoped that the sensitivity of analysis of covariance would control for variations beyond the reach of the design and other procedures of research. The overall situation is that where the effects of extraneous variations still remain, the efficacy of the treatment programmes would be reduced. But where the efficacy of the treatments remain significant despite the effects of extraneous variations, and through analysis of covariance which has the advantage of regression and analysis of variance, then the treatments will be regarded as effective.

ANALYSIS OF DATA:

Data obtained in this study were analysed to determine the effects of the independent variables on the dependent variables. The main independent effects of modelling and shaping methods (on the rows) and Low, Average and High levels of academic achievement (on the column) on English language achievement of deaf children including their self concept, locus of control, and attitude were determined. In addition, the interactive effects of modelling and shaping programmes

(on the rows) and low, average and high levels of academic achievement (on the columns) on the dependent variables were determined. Furthermore, differential effects of these independent variables on the dependent variables were investigated.

Analysis of covariance and t-test (using standard error of means) were employed to analyse the data. Analysis of covariance was adopted for this purpose on the basis of its advantages in increasing precision in randomised experiments. Kerlinger¹ points out that analysis of covariance is a form of analysis of variance that tests the significance of the differences between means of final experimental data. This is done by taking into account the correlation between the dependent variable and one or more covariates, and by adjusting initial mean difference in the experimental groups. Operationally, analysis of covariance corrects initial mean differences in the pre-test measures between the experimental groups taking the correlation between the pre-test and the post-test measures into account. In effect, analysis of covariance reduces the effect of extraneous variations in pre-test measures and on post-test measures. (Cochran², Smith³).

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1. F.N. Kerlinger. Foundations of Behavioural Research. Holt, Rinehart and Winston, London, 1973.
 2. W.G. Cochran. Analysis of covariance: its nature and uses. Biometrics. 1957, 13.
 3. H.F. Smith. Interpretation of adjusted treatment means and regressions in analysis of covariance. Biometrics, 1957, 13.

By the way of 't'-test using standard error of means, differential effectiveness of the independent variables was ascertained.

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CHAPTER THREE

RESULTS

The chapter on Results is organized in such a way that the hypotheses posed in chapter one of this report might be tested. The results of the tested hypotheses essentially form the content of this chapter. Hypotheses are tested one by one, and the results are explained by reference to the tables.

In testing the hypotheses that there is no significant difference between the English achievement of deaf students treated with modelling and shaping programmes respectively and the control group. Tables 3-6 indicate the results of possible combined effects of the treatment programmes (modelling and shaping) and academic achievement levels (high, average and low) on the English language achievement of some secondary school deaf children. The rows show the effects of the treatment programmes, while the columns show the effects of levels of academic achievement on English achievement of the subjects. Table 4 specifically shows that the treatment programmes had statistically significant effects on English language achievement of deaf children ($F=23.87$, $df=2/36$, $P < .01$). The main effects of level of academic achievement and the interaction effects of the treatment programmes were also statistically significant.

TABLE 3: ADJUSTED Y-MEANS OF SUBJECTS ENGLISH LANGUAGE ACHIEVEMENT SCORES BASED ON TREATMENTS AND ACHIEVEMENT LEVELS.

ROWS*	COLUMNS**								
	ACADEMIC			ACHIEVEMENT			LEVELS		
	HIGH			AVERAGE			LOW		
	X- \bar{X}	Y- \bar{X}	N	X- \bar{X}	Y- \bar{X}	N	X- \bar{X}	Y- \bar{X}	N
MODELLING	59.80	68.80	5	48.20	70.40	5	27.25	46.50	5
SHAPING	60.60	66.40	5	49.20	58.0	5	30.80	52.20	5
CONTROL	59.00	59.60	5	48.40	48.80	5	28.75	27.25	5

* ROWS: TREATMENTS: MODELLING
SHAPING

** COLUMNS: Academic Achievement levels
High
Average
Low

TABLE 4: ANALYSIS OF COVARIANCE OF SUBJECTS ENGLISH LANGUAGE
SCORES ON TREATMENTS AND ACHIEVEMENT LEVELS

VARIABLE	SOURCE	SS	DF	MS	F	P
ENGLISH LANGUAGE ACHIEVE- MENT	ROWS	458.70	2	229.35	23.87	<.01
	COLUMNS	100.97	2	50.48	5.26	<.05
	INTERACTION	161.27	4	40.31	4.2	<.05
	WITHIN	1638.25	36	9.60		

TABLE 5. INTER-TREATMENT GROUP T-TEST COMPARISON OF ADJUSTED Y - MEANS OF SUBJECTS ENGLISH LANGUAGE ACHIEVEMENT SCORES.

VARIABLE	MODELLING GROUP			CONTROL GROUP			t	P _L
	N	\bar{X}	SD	N	\bar{X}	SD		
ENGLISH LANGUAGE	15	63.0	15.18	15	46.8	13.6	3.13	.001
	SHAPING GROUP			CONTROL GROUP				
	N	\bar{X}	SD	N	\bar{X}	SD		
	15	58.8	9.0	15	46.8	13.6	2.88	.05
	MODELLING GROUP			SHAPING GROUP				
	N	\bar{X}	SD	N	\bar{X}	SD		
	15	63.0	15.18	15	58.8	9.0	0.9	NS

NS = Not Significant at .05.

TABLE 6: T-TEST COMPARISON OF ADJUSTED Y - MEANS OF SUBJECTS ENGLISH LANGUAGE ACHIEVEMENT SCORES BASED ON TREATMENT AND ACADEMIC ACHIEVEMENT LEVELS.

VARIABLE	MODELLING HIGH GROUP			SHAPING HIGH GROUP			t	P <
	N	\bar{X}	SD	N	\bar{X}	SD	0.74	NS
	5	68.8	9.36	5	66.4	8.45		
ENGLISH	MODELLING AVERAGE GROUP			SHAPING AVERAGE GROUP			6.37	.001
	N	\bar{X}	SD	N	\bar{X}	SD		
LANGUAGE	5	70.4	4.32	5	58.8	7.93	1.00	NS
	MODELLING LOW GROUP			SHAPING LOW GROUP				
	N	\bar{X}	SD	N	\bar{X}	SD		
	5	46.50	16.72	5	52.2	3.96		

NS = Not Significant at .05

It was also found by a surface observation of the means of the pre-test scores ($X - \bar{X}$) and post-test scores ($Y - \bar{Y}$) and of the adjusted Y- scores (Adjusted $Y - \bar{Y}$) - (table I) that both the modelling and the shaping procedures improved to some extent the English achievement of the high, average and low achievers.

To analyse the data further, t-tests were employed to compare the adjusted Y-means of pairs of sub-groups (tables 5 and 6).

Tables 5 and 6 indicate the following results:

- (a) There was no significant difference between the scores of subjects who were trained under modelling and those trained under shaping.
- (b) Subjects treated with the modelling programme scored significantly higher than those in the control group ($t=3.13$, $df=28$, $P < .001$).
- (c) Subjects trained with the shaping programme performed better than those in the control group ($t=2.68$, $df=28$, $P < .05$).
- (d) There was no significant difference between the high achievers of the modelling group and the high achievers of the shaping group.
- (e) The average achievers of the modelling group were superior to the average achievers of shaping group

in English achievement ($t = 6.3$, $df = 8$,
 $P < .001$).

- (f) There was no significant difference between the low achievers of the modelling group and the low achievers of the shaping group.

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- (f) And finally among subjects treated with shaping programme, the average achievers scored higher than the low achievers ($t=7.52$, $df=8$, $P < .001$).

These results indicate that the effects of the treatment programmes (Modelling and Shaping) on English language development were mediated by the academic achievement levels of the treated groups. For each of the programmes (modelling and shaping), subjects with high academic achievement ability scored significantly higher than those with low academic achievement ability. For subjects in the control group, no mediation effect was observed between the high achievers and low achievers.

In testing hypothesis 3 that there is no significant difference between the English achievement of deaf students treated with modelling programme and those treated with shaping programme. Table 5 shows no significant difference between the effect of the two programmes, but a closer observation of the adjusted Y-means of the subjects scores on table 3 shows that the modelling group has a higher mean than the shaping group.

In testing hypothesis 4 that there is no significant difference in the attitude of students treated with modelling, shaping programmes and the control group; analysis of covariance (table 8) which is robust in nature confirms that both modelling

and shaping were statistically significant in improving the attitude of the deaf towards English language ($F=4.73$, $df=2/36$, $P < .05$).

Using a t-test to further analyse the differential effectiveness of modelling and shaping in improving the attitude of the deaf towards English, (table 9) indicates the following results:

- (a) There was no significant difference in the attitude of the subjects treated with modelling programme and those treated with shaping programmes towards English.
- (b) Subject treated with the modelling programme scored significantly higher than those in the control group ($t=3.67$, $df=28$, $P < .001$).
- (c) Subjects treated with shaping programme scored significantly higher than those in the control group ($t=3.59$, $df=28$, $P < .001$).
- (d) The high achievement subjects of the modelling group were superior to the high achievement subjects of the shaping group ($t=2.31$, $df=8$, $P < .05$).
- (e) There was no significant difference in the attitude of the average academic achievement subjects of modelling and shaping groups respectively.

TABLE 7: ADJUSTED Y-MEANS OF SUBJECTS ATTITUDES SCORES
BASED ON TREATMENTS AND ACHIEVEMENT LEVELS

ROWS*	COLUMNS**								
	ACADEMIC ACHIEVEMENT LEVELS								
	HIGH			AVERAGE			LOW		
	X- \bar{X}	Y- \bar{X}	N	X- \bar{X}	Y- \bar{X}	N	X- \bar{X}	Y- \bar{X}	N
MODELLING	36.80	47.80	5	41.20	41.80	5	38.50	49.15	5
SHAPING	35.60	39.20	5	35.40	40.4	5	40.60	44.00	5
CONTROL	37.60	38.40	5	30.60	33.60	5	31.25	35.00	5

* ROWS: TREATMENTS: Modelling
 Shaping

** COLUMNS: ACADEMIC ACHIEVEMENT LEVELS
 High
 Average
 Low.

TABLE 8: ANALYSIS OF COVARIANCE OF SUBJECTS ATTITUDE
SCORES ON TREATMENTS AND ACHIEVEMENT LEVELS

VARIABLE	SOURCE	SS	DF	MS	F	P
ATTITUDE	ROWS	101.39	2	5.69	4.73	<.05
	COLUMNS	14.31	2	7.15	0.67	(NS)
	INTERACTION	41.23	4	10.30	0.9	(NS)
	WITHIN	1828.08	36	10.70		

NS = Not significant at .05.

TABLE 9: INTER-TREATMENT GROUP T-TEST COMPARISON OF ADJUSTED Y - MEANS OF SUBJECT'S ATTITUDE SCORES.

VARIABLE	MODELLING GROUP			CONTROL GROUP			t	P <
ATTITUDE	N	\bar{X}	SD	N	\bar{X}	SD	3.67	.001
	15	47.2	10.9	15	35.8	4.68		
	SHAPING GROUP			CONTROL GROUP			3.59	.001
	N	\bar{X}	SD	N	\bar{X}	SD		
	15	44.7	8.26	15	35.8	4.68		
	MODELLING GROUP			SHAPING GROUP			1.09	NS
	N	\bar{X}	SD	N	\bar{X}	SD		
	15	47.2	10.9	15	44.7	8.26		

NS = Not Significant at .05

TABLE 10: T-TEST COMPARISON OF ADJUSTED \bar{Y} - MEANS OF SUBJECTS ATTITUDE SCORES BASED ON TREATMENT AND ACADEMIC ACHIEVEMENT LEVELS.

VARIABLE	MODELLING HIGH GROUP			SHAPING HIGH GROUP			t	P
	N	\bar{X}	SD	N	\bar{X}	SD		
ATTITUDE	5	47.8	14.8	5	39.20	12.17	2.3	.05
	MODELLING AVERAGE GROUP			SHAPING AVERAGE GROUP				
	N	\bar{X}	SD	N	\bar{X}	SD		
	5	41.8	3.18	5	40.4	3.93	1.2	NS
	MODELLING LOW GROUP			SHAPING LOW GROUP				
	N	\bar{X}	SD	N	\bar{X}	SD		
	5	49.15	8.83	5	44.00	5.84	1.87	NS

NS = Not Significant at .05

- (f) There was also no significant difference in the attitude of low academic achievement subjects of modelling group and the low academic achievement subjects of shaping group.

Further analysis with t-tests reveal some significant differences in the effects of the programmes (modelling and shaping) on the attitudes of the different academic achievement levels (high, average and low) for each treatment groups. Adjusted Y-means scores of the subjects attitude based on treatments and academic achievement levels were compared using the t-test statistics.

Table 10 indicates the following results:

- (a) Among subjects treated with modelling and shaping programmes the modelling high achievers scored higher than the shaping high achievers ($t=2.3$, $df=8$, $P .05$).

In testing hypothesis 5 that there is no significant difference in the self-concept of deaf students treated with modelling, shaping programmes and the control group; table 12 indicates that both modelling and shaping programmes were statistically significant in improving the self-concept of the deaf students ($F=7.52$, $df=2/36$, $P < .01$).

Using a t-test to further analyse the differential effectiveness of modelling and shaping in improving the self-concept of the deaf subjects, Tables 13 and 14 indicate the following results:

- (a) There was no significant difference in the self-concept of subjects treated with modelling programme and those treated with shaping programme.
- (b) Subjects treated with modelling programme scored significantly higher than those in the control group ($t=2.08$, $df=28$, $P < .05$).
- (c) Also subjects trained with the shaping programme scored higher than those in the control group ($t=2.08$, $df=28$, $P < .05$).
- (d) There was no significant difference in the self-concept of the high academic achievement subjects of modelling group and high academic achievement subjects of shaping group.
- (e) There was no desirable significant difference in the self-concept of the average academic achievement subjects of the shaping group.

**TABLE 11: ADJUSTED Y-MEANS OF SUBJECTS SELF CONCEPT SCORES
BASED ON TREATMENTS AND ACHIEVEMENT LEVELS.**

ROWS*	COLUMNS**								
	ACADEMIC ACHIEVEMENT LEVELS								
	HIGH			AVERAGE			LOW		
	X- \bar{X}	Y- \bar{X}	N	X- \bar{X}	Y- \bar{X}	N	X- \bar{X}	Y- \bar{X}	N
MODELLING	15.20	16.60	5	13.00	17.00	5	14.50	15.50	5
SHAPING	15.60	16.60	5	15.60	16.60	5	13.20	10.00	5
CONTROL	16.80	16.80	5	16.60	16.00	5	15.25	14.75	5

*ROWS: TREATMENTS: Modelling
Shaping

**COLUMNS: ACADEMIC ACHIEVEMENT LEVELS

High
Average
Low

TABLE 12: ANALYSIS OF COVARIANCE OF SUBJECTS SELF CONCEPT SCORES ON TREATMENTS AND ACADEMIC ACHIEVEMENT LEVELS.

VARIABLES	SOURCE	SS	DF	MS	F	P
SELF CONCEPT	ROWS	11.45	2	5.72	7.52	< .01
	COLUMNS	1.32	2	0.62	0.87	(NS)
	INTERACTION	9.88	4	0.47	3.2	(NS)
	WITHIN	129.91	36	0.76		

NS - Not significant at .01.

TABLE 13: INTER-TREATMENT GROUP T-TEST COMPARISON OF ADJUSTED Y - MEANS OF SUBJECTS SELF CONCEPT SCORES.

VARIABLE	MODELLING GROUP			CONTROL GROUP			t	P <
	N	\bar{X}	SD	N	\bar{X}	SD		
SELF CONCEPT	15	16.46	2.22	15	14.8	2.19	2.08	.05
	SHAPING GROUP			CONTROL GROUP				
	N	\bar{X}	SD	N	\bar{X}	SD	2.08	.05
	15	16.43	2.05	15	14.8	2.19		
	MODELLING GROUP			SHAPING GROUP				
	N	\bar{X}	SD	N	\bar{X}	SD	0.92	NS
15	16.46	2.22	15	16.33	2.05			

NS = Not Significant at .05

TABLE 14: T - TEST COMPARISON OF ADJUSTED Y - MEANS OF SUBJECTS SELF CONCEPT SCORES BASED ON TREATMENT AND ACADEMIC ACHIEVEMENT LEVELS.

VARIABLE	MODELLING HIGH GROUP			SHAPING HIGH GROUP			t	P <
	N	\bar{X}	SD	N	\bar{X}	SD		
SELF CONCEPT	5	16.6	1.35	5	16.6	1.35	0.0	NS
	MODELLING AVERAGE GROUP			SHAPING AVERAGE GROUP				
	N	\bar{X}	SD	N	\bar{X}	SD		
	5	17.0	1.25	5	16.4	1.95			0.98	NS
	MODELLING LOW GROUP			SHAPING LOW GROUP				
	N	\bar{X}	SD	N	\bar{X}	SD		
	5	15.5	3.25	5	10.0	2.61	2.96	.05

NS = Not Significant at .05

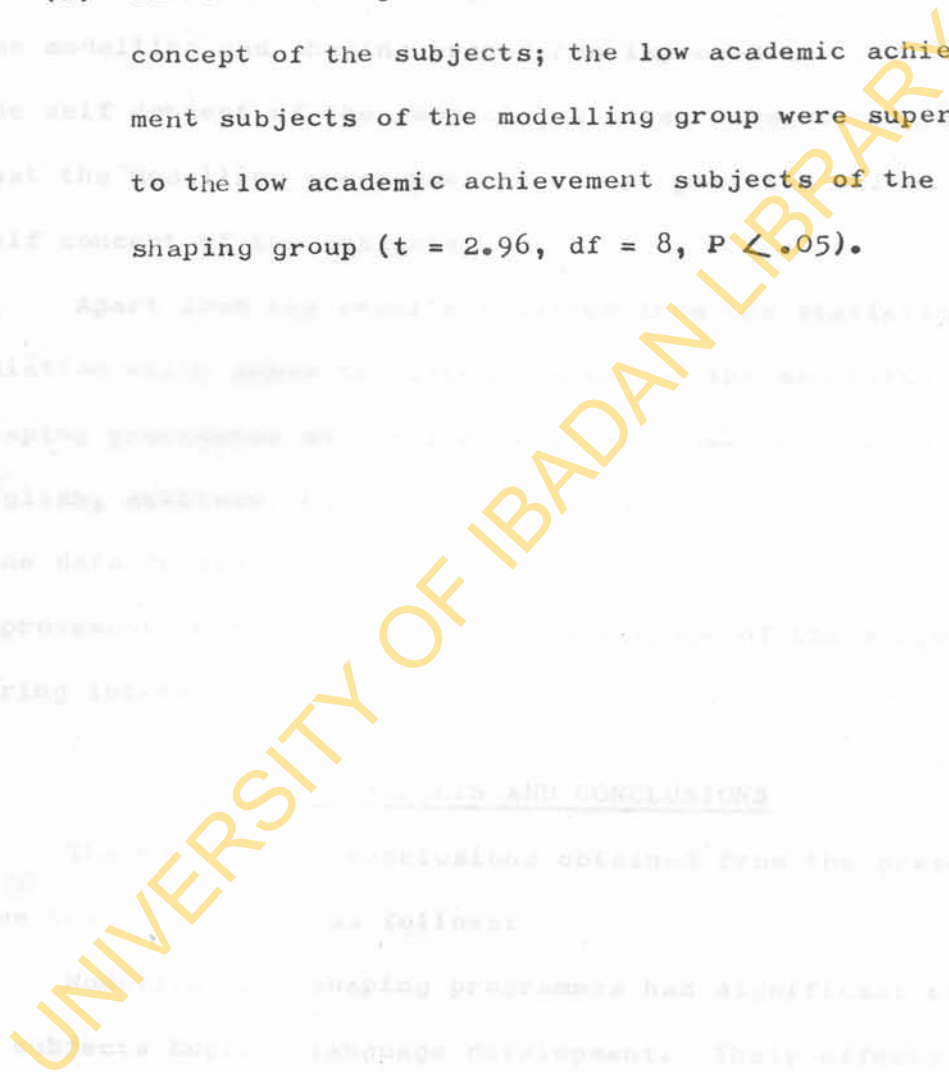
although it was found by a ...
means of the pre-test scores ($A-\bar{X}$), ...

(f) There was a significant difference in the self
concept of the subjects; the low academic achieve-
ment subjects of the modelling group were superior
to the low academic achievement subjects of the
shaping group ($t = 2.96, df = 8, P < .05$).

Apart from the ...
culative ...
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improvement ...
during inter ...

DISCUSSION AND CONCLUSIONS

The ...
conclusions obtained from the present study
have ...
shaping programme had significant effects
on ... language development. Their effects ...
were ... academic achievement levels ...
during treatment ...



Although it was found by a surface observation of the means of the pre-test scores ($X-\bar{X}$), post-test scores ($Y-\bar{Y}$), and of the adjusted Y-scores (adjusted $Y-\bar{Y}$) - (table 11 that both the modelling and shaping procedures improved to some extent, the self concept of the subjects, a closer observation shows that the modelling programme had a more positive effect on the self concept of the subjects.

Apart from the results obtained from the statistical calculation which shows the effectiveness of the modelling and shaping procedures on the four variables used in this study - English, Attitude, Locus of Control and Self Concept, the baseline data graphs (fig. 5, 6, 7, 8, 9 and 10) clearly show improvement in English language achievement of the subjects during intervention.

SUMMARY OF RESULTS AND CONCLUSIONS

The results and conclusions obtained from the present study have been summarized as follows:

Modelling and shaping programmes had significant effects on subjects English language development. Their effects however, were mediated by academic achievement levels of the subjects involved in the therapy. Across the treatment programmes,

subjects who were trained under modelling programme scored significantly higher than those treated under shaping programme. The high academic achievers scored significantly higher than the low academic achievers. There was no change in the scores of the control group.

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CHAPTER FOUR

DISCUSSION

Efforts are made in this chapter to discuss the findings of the study as they relate to the earlier posed research questions. The peculiarities of this study are highlighted so that readers may interpret the findings within such peculiarities. The limitations of the study will also be outlined before the actual discussions. This is to enable the reader appreciate the contribution of this study in line with such limitations. The implications of the findings of this study for schools, teachers and further researches will be specified and relevant recommendations made.

Peculiarities of the study:

A number of studies have been carried out in Europe and America in line with the present study but none of these studies has African background in terms of home and environmental influences. The present study took into consideration the influence of Nigerian culture, including Nigerian attitude towards the hearing impaired.

Here in Nigeria, some researchers had however studied the effectiveness of modelling and shaping on some school subjects. Many have also compared the methods in terms of their effectiveness in improving these abilities. But such studies were carried

out with hearing students and not with the deaf.

Again even though adequate randomization and necessary experimental controls were adopted in this study, it was not possible to remove inter subject differences such as intellectual ability levels, socio-economic background and other personality influences. These are normally not reduced by randomization, so statistical control was used. If statistical control had any limitations, it was felt that this would be minimal. In spite of this, it is important to report that statistical control was used to equate factors like differences in intellectual ability levels, socio-economic background and other forms of inter subject differences.

One area of possible limitation is the fact that the experiment was conducted in the open school system. It is possible that routine school procedure would have been a source of distraction to the experimental subjects. If such distractors should have effect, it should show on the effect of the programmes on the treated subjects. Possibly, the effect of the programmes would have been more profound if it was conducted in an entirely stimulus environment.

Yet another problem that was encountered was how to keep students of different groups (modelling, shaping and control) apart to avoid possible interactions that might prevent the

differential effects of the methods from being realized. The groups to which the students belong were not considered when placing them in the various classrooms. The precaution taken to avoid contamination of the methods was to teach the groups the same day. While one group was receiving treatment, the rest of the groups were kept under control with the help of the class teachers.

Control of extraneous variables could not have been absolute in the present study, especially as it was a field experiment. Nevertheless, the design and procedure of the study would have minimized contamination by extraneous variables.

Discussion on the Findings:

The findings of the present study indicated that the subject treated with modelling and shaping programmes showed significant difference in English language across treatments and academic achievement levels. This therefore means the rejection of hypotheses one and two which state that there is no significant difference between the English achievement of deaf students treated with modelling and shaping programmes respectively and the control groups. Results of the analysis of covariance showed significant differences in the English language achievement between the three groups. Further analysis with the t-test statistic revealed that subjects treated with either Modelling or shaping scored significantly higher than the control group. But there

was no difference between the English language scores of the modelling group and that of the shaping group.

The finding that modelling programme had statistically significant effect on English language achievement of secondary school deaf students corroborates the findings of researchers who found that modelling is an effective strategy that could be used in helping deaf children in language development. (Schumaker et al¹). Other researchers with similar findings include Crayer², Goldstein³, Holman⁴ and Cornine⁵.

Supporting the effectiveness of modelling, Piaget⁶ had asserted that imitative learning is a very crucial process in mental development. In another study which is in line with the

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1. J. Schumaker and J.A. Sherman. Training Generative verb usage by imitation and reinforcement procedure. Journal of Applied Behaviour Analysis 3, 1970.
 2. T.L. Crayer. Application of self-modelling procedure to modify inappropriate behaviour. Behaviour Research and Therapy vol. 8, 1970.
 3. A.P. Goldstein. Increasing independence via use of modelling procedures. Journal of educational research vol. 72, No. 4, 1980.
 4. L.R. Holman. The effect of stimulus presentation mode and cognitive style on sentence recognition memory. J. of educational research vol. 72, No.4, 1980.
 5. D. Carnine. Relationship between stimulus variation and formation of misconception. Journal of educational research, vol. 74, No. 2, 1980.
 6. J. Piaget. Psychology of the child. Basic Books Inc., New York, 1969.

present study, Stromer¹ remedied various letters and number reversal difficulties in children by the modelling techniques.

Malouf and Dodd² not only demonstrated that imitation and expansion could be used to teach an artificial grammatical rule concerning word order but also showed the effectiveness of modelling. The operant characteristics of modelling have been well established Holland³, Holland⁴, Schroeder⁵. As such modelling which has proved a successful behaviour modification technique in the classroom situations has also corroborated its efficacy in the present study.

One explanation for the enhanced English language achievement of the students treated with modelling programme could be that the modelling procedure, through showing students what to

1. R. Stromer. Modifying letter and number reversals in elementary school children. Journal of Applied Behaviour analysis, 1975.
2. R.E. Malouf and D.H. Dodd. Role of exposure, imitation and expansion in the acquisition of artificial grammatical rule. Developmental Psychology, 1972.
3. J.G. Holland. Techniques for behavioural analysis of human observing. Science 125, 1957.
4. J.G. Holland. Human Vigilance. Science 128, 1958.
5. S.R. Schroeder. Operant control of eye movement during vigilance. Doctoral dissertation, University of Pittsburgh, 1967.

do by concrete examples and active participation improved the information gathering ability, facilitated comprehension and memory and therefore enhanced the overall English language acquisition. It is through observational learning-modelling that a student comes to see similarities and differences and understand some cause-effect relationships.

Further more the deaf child is virtually cut off from the auditory stimulus surrounding those who hear. If the deaf child does not look directly at the information-bearing stimulus, he is categorically prevented from acquiring that information. In the classroom situation, the instructional stimuli from the teacher and from fellow students who contribute to the discussion usually become the model to imitate. Modelling has therefore been found to be effective strategy for helping deaf children in language development.

Another possible reason for improved achievement in English by the deaf students was that they were strongly motivated to learn English during this experiment so as to perform well in their forth-coming General Certificate Examination.

Modelling programme improved the attitude of the subjects towards English language. This finding is supported by Scopes¹

1. J. Scopes. Teaching Mathematics in the secondary school:
Cambridge University Press, 1973.

studies. Scope¹ discovered that participation in a modelling programme led some secondary school students to drop their negative attitude towards mathematics and therefore achieved.

The haunch that satisfaction with school work and favourable attitude towards studying are logically related to scholastic achievement has been extensively investigated in psychological research. The results of some of the studies are relevant to the outcome of the present study. Capella et al² in a study came with the finding that actual study time employed by a student is important but that the attitudes determine the productivity of that study time. In the same light, Lavin³, Kniveton⁴ and Malpass⁵ revealed from their findings that study behaviours and study attitudes each contribute independently to academic performance.

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1. J. Scopes. Teaching Mathematics in the secondary school: Cambridge University Press, 1973.
 2. B.J. Capella, M. Wagner, J.A. Kusmier. Relation of study habits and attitudes to academic performance. Psychological Reports, 1982, 50 (2).
 3. D. Lavin. The prediction of academic performance. Russel Saga Foundation, 1965.
 4. B.H. Kniveton. An investigation of the attitudes of adolescents to aspect of their schooling: British Journal of Educational Psychology, 1969, 39.
 5. L.F. Malpass. Some relationship between students perception of school and their achievement. Journal of Educational Psychology, 1953, 44 (8).

The traditional principle of demonstrating the task to be learnt, including the principle of "attitude development" were embeded in the modelling procedure which is therefore very likely to be effective in teaching English and other school subjects.

The effect of modelling on the self concept of the subjects was determined. It was found that the programme (modelling) improved the self-concept of the deaf students. This finding

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supported the findings of Crayer¹, Scholl². Crayer had applied self-modelling techniques successfully to accomplish modification of withdrawal-tendencies. This study also corroborates the finding of Goldstein³ that modelling was effective in improving the self-concept in an individual.

On the other hand, one reason why modelling improved the self-concept of the treated subjects so quickly might be that in this particular study the observers had confidence in the model's knowledge of sign language which is an important means of communication for the deaf. This was enough reinforcement for the students to go ahead and accomplish the tasks and were able to apply the gained confidence to other problems. Generally, the deaf are more relaxed if they realized that one is quite knowledgeable in their language.

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1. T.L. Crayer. Application of self-modelling procedure to modify inappropriate behaviour; Behaviour Research and Therapy, 1970, vol. 8
 2. G.T. Scholl. Meeting Developmental Needs of the Blind. School of Education, the University of Michigan, 1969.
 3. A.P. Goldstein. Increasing independence via use of modelling procedures. Journal of Educational Research, 1980, vol. 92, No. 4.

Hypothesis 2 had specifically stated that there is no significant difference between the English achievement of deaf students treated with shaping programme and the control group. This hypothesis was rejected. It was found by an analysis of covariance and t-test statistics that the shaping strategy had statistically significant effect in improving the English language achievement of deaf students. This finding is in agreement with the findings of Wolf, Giles and Hall¹ who adopted the shaping strategy and using token-economy as a reinforcer accelerated achievement in low achieving fifth and sixth graders.

Cruickshank's² work corroborates with this study and the two findings are quite similar. Cruickshank had employed shaping programme in influencing the behaviour of a child with some exceptional characteristics. The study of Gardner³ also supports shaping as an effective strategy that was used to get a girl to sit at her desk when the work time was announced.

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1. M.M. Wolf, D.K. Giles and R.V. Hall. Experiments with token reinforcement in a remedial classroom. Behaviour Research and Therapy 6, 1968.
 2. W.M. Cruickshank. The learning environment. In M.W. Cruickshank and D.P. Hallathan (Eds.). Perceptual and learning Disabilities in Children. Syracuse University Press, New York, 1975.
 3. W.I. Gardner. Children with learning and Behaviour Problems. Allyn and Bacon Inc., Boston, 1978.

Witman¹ used positive reinforcement physical guidance and fading procedures to produce pronounced increases in instruction following behaviour in severely retarded children.

Witman's¹ study is quite in line with the present study.

Other findings which corroborate with the present finding include the works of Geller et al², Scopes³, Hingtgen and Trost⁴. Chadwick⁵ in his own study clearly showed the effectiveness of shaping on academic performance of under-achieving students.

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1. T.L. Witman. Effects of Reinforcement and Guidance procedures on instruction - following Behaviour of severely Retarded children. Journal of Applied Behaviour Analysis 4, 1971.
 2. E.S. Geller, R.P. Johnson and S.L. Pelton. Community based interventions for encouraging safety belt use. American Journal of Community Psychology 10, 1982.
 3. J. Scopes. Teaching Mathematics in the secondary school: Cambridge University Press, 1973.
 4. J.N. Hingtgen and T. Trost. Intensive Reinforcement of Imitative Behaviour in Mute Autistics Children. American Medical Association, 1967.
 5. Chadwick, B.A. Systematic Reinforcement: Academic Performance of under-achieving student's Journal of Applied Behaviour Analysis. Vol. 4, 1971.

A good understanding of the shaping process reveals that some of the traditional principles for the teaching of English: the step-by-step principle, the schematic principle and the principle of programming (individualized instructions) are embedded in the shaping strategy. If the traditional principles can produce good results, it is not surprising therefore that shaping is an effective strategy for teaching English, whether to the deaf or hearing students.

The child exposed to language by the shaping process has a clear and complete code to follow. Cornett¹ observes that this approach offers fidelity to written code of English that could prove advantageous to development of English.

Another explanation for the high achievement in English by deaf students of the shaping group was that the students were highly motivated to the subject. Deaf students in general, live in a world of imagination and guesses; shaping which is a prompting procedure seems to fall in line with their style of life, thus acceptable to them.

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1. O. Cornett, N.H. Rey, C. Williams and D.A. Knight. Theoretical model of development of reading in hearing impaired. A paper presented at Gallaudet, 1978.

Hypothesis 3: That there is no significant difference between the English achievement of deaf students treated with modelling programme and those treated with shaping was accepted. The two programmes were found to be equally effective. The various research findings which corroborate the effectiveness of modelling and shaping in the present study are quite relevant here.

The effect of shaping on other variables (attitude, locus of control and self concept) employed in this study was ascertained. The results obtained from the analysis of covariance and t-test statistics show that shaping improved the attitude of the subjects towards English language. This finding is supported by Scopes¹ studies. Scopes¹ discovered that participation in a new behavioural approach led to some secondary school students to drop their native attitude towards mathematics and therefore achieved.

The hypothesis that positive attitudinal dimension towards learning and satisfaction with academic environment are positive

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1. J. Scopes. Teaching mathematics in the secondary schools. Cambridge University Press, 1973.

indices of scholastic attainment has attracted a lot of psychological investigations. The outcomes of some of the studies are relevant to the findings of the present study. Capella et al¹ found out in their study that actual study time employed by a student is important but that attitudes determine the productivity of that study time.

In the same light, Lavin², Kniveton³ and Malpass⁴ revealed from their studies that study behaviours and study attitudes each contributes independently to academic performance.

The traditional principle of progressive learning including the principle of "attitude development" are embeded in the shaping procedure which is therefore very likely to be effective

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1. B.J. Capella, M. Wagner and J.A. Kusmiers. Relation of study habits and attitudes to academic performance. Psychological reports, 1982, 50(2).
 2. D. Lavin. The prediction of academic performance. Russel Saga Foundation, 1965.
 3. B.H. Kniveton. An investigation of the attitudes of adolescents to aspect of their schooling. British Journal of educational psy. 1969, 39.
 4. L.F. Malpass. Some relationship between students perception of school and their achievement. Journal of educational psy. 1953, 44 (8).

in teaching English and other school subjects.

Although the results of analysis of covariance indicated that modelling and shaping programme had significant effect on the attitude of the secondary school deaf students, across treatment programme and academic achievement levels showed varied results. There was no significant difference between the attitude of modelling group and the shaping group; nonetheless, the high academic achievers of the modelling group were superior to the high academic achievers of the shaping group.

No doubt, what an individual sees would have a more positive and a lasting effect on him than what he is told.

The effect of shaping on the self-concept of subjects was determined. It was found that the programme (shaping) improved the self-concept of the deaf students. This finding agrees with the findings of Lowenfeld¹ and Scholl², who had investigated and ascertained that a behavioural strategy like

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1. B. Lowenfeld. Creative and Mental Growth.
Macmillan, New York, 1967.
 2. G.T. Scholl. Meeting Developmental Needs of the Blind:
School of Education, University of Michigan,
1969.

shaping improved the intelligence, self-concept, motivation etc. of an individual.

The shaping programme encouraged the students to meet challenges and to recognise their capacities and limitations realistically. Success increased their self-esteem and they were motivated to explore further; failure did not lead to depression, the net result enhanced self-concept even within a short period of time.

Another reason why shaping improved the self-concept of the treated subjects so quickly might be that the experimenter combined finger spelling and sign language most effectively in prompting the subjects, so the lessons were progressively presented to them. This new innovation was enough reinforcement for students to go ahead and accomplish the tasks and were able to apply the gained confidence to other problems.

The study also tried to compare the effect of modelling and shaping programmes on English achievement of deaf students. The analysis of covariance and t-test statistics used in the study showed no significant differences between modelling and shaping programmes on the English achievement of the deaf. But closer observation of the table of the adjusted Y-means for both strategies shows that modelling had a slight advantage over

the shaping programme in improving the English achievement of the deaf. This outcome corroborates the finding of Marlin¹ that modelling was superior to shaping in improving the problem solving behaviour of his experimental subjects.

Other studies which support the superiority of modelling over shaping includes, Meadow², Quigley³, Vernon and Koh⁴. They maintained that modelling showed advantage over other methods.

A number of reasons could be advanced for this finding. Modelling demonstrates exactly the task to be performed, and the subjects invariably imitated correctly. This probably raised their morale and interest. Shaping on the other hand, is essentially a prompting and eliciting strategy for evoking new ideas, the group that used it did not perform better than

1. J.T. Malin. Strategies in Mathematical problems-solving. Journal of educational Research, vol. 73, No. 2, 1979.
2. K. Meadow. Early manual communication in relation to deaf child's intellectual, social and communicative functioning. American Annals of the Deaf, Jan. 1968.
3. S. Quigley. Syntactic structures in language of deaf children. Urbana Champaign Report, 1976.
4. M. Vernon and S. Koh. Early Manual Communication and Deaf Children's attachment. American Annals of the Deaf, 1970.

the modelling group. The reason could be that the deaf children might have missed some of the instructions while the modelling group did not. This might be because they observed the model. This was a visual process. In teaching the deaf such little things that could be taken for granted may tilt the balance.

IMPLICATION OF THE FINDINGS

The results of this study have important implications for application in the Nigerian educational settings. It was shown in this study that the academic achievement level could be fostered experimentally in the deaf. In formulating programmes for fostering academic achievement, characteristics of the deaf should be taken into account. For example, it was found in the present study that achievement level had significant effect on English development. Subjects, high in academic achievement scored higher than those low in achievement. This outcome therefore means that it will be more challenging to foster English language in subjects whose academic achievement levels are low. A longer period may be required for the low achievers.

The common features between the treatment programme appeared to have been more important than distinguishing features regarding the effects of the programmes on English language

improvement. These common features centred around goal setting, task performance towards achievement of goals, and self-reinforcement and self-instruction during task performance. It seems that treatment programme incorporating these features will foster or improve English language. The apparent effects of the common features across the various treatment programmes notwithstanding, differential effects were observed across programmes. This means that the distinctive features of the treatment programmes were of importance in fostering English language. It may be necessary to stress these features (modelling and shaping) as specific therapeutic goals.

However, it is of the opinion here that a blend of both the modelling and shaping procedures can produce even better effects. The teacher might start with giving cues and instructions and urge the students to go ahead to perform the first step of the task. But when the first trial has failed, he then demonstrates the task to be learnt. When the first step has been mastered, the teacher goes to the second step using the same technique - shaping followed by modelling. In this way, some of the advantage of shaping and modelling will be realized and retention enhanced.

It is obvious that modelling and shaping are just some of the techniques that can be fostered in individuals learners

in academic settings. It is recommended here that a more comprehensive study guidance programme that would be most suitable to the Nigerian educational setting should have some guide-post. Among these are individualization. Deaf students have different programmes of needs, different ability patterns and different methods of learning. To yield best results therefore, any dynamic psychological programme in Nigeria should be individualized as the student progresses in learning the essential skills. An effective psychological programme should go beyond helping a student discover what is wrong but should include the relevant therapy.

SUGGESTIONS FOR FURTHER RESEARCH

The behavioural techniques employed in the present study are essentially promising for fostering and improving the English language development in clients of varying characteristics. The outcome of the present study calls for further research for developing relevant therapies for fostering and improving English language in subjects whose academic achievements are relatively low. For example extension of treatment duration for subjects with low academic achievement could result to considerably higher improvement in English language

performance than observed in the present study.

The design of the study may be modified to ascertain the kind of information that subjects can best acquire with each of the strategies (Modelling and Shaping). In other words, did the subjects learn more specific facts or general ideas through the use of the different psychological procedures?

The present study was rather detached from the subjects regular academic activities in the school. There is therefore the need to investigate the effectiveness of the modelling and shaping therapies when incorporated into the regular academic activities in the school. In such a situation the daily or weekly study assignments in the various school subjects will be built into the programmes as study tasks.

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Introduction

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APPENDIX I

MODELLING TRAINING PROGRAMME:

Introduction

Language is an auditory based symbol by which we understand things and express our understanding to other people. Infact, we need language for communication, self expression, learning and pleasure.

The modelling programme is aimed at helping children acquire and improve on the important skills of generating English sentences that they would need as individuals. Under modelling, the task to be learnt is divided into components and arranged in proper sequence.

- Unit I: The use of Nouns
- Unit II: The use of Personal Pronouns
- Unit III: The use of Present Tense
- Unit IV: The use of Past Tense
- Unit V: The use of future Tense.

The experimenter is the model. The children are to watch the performance of the model very closely, noting the different steps taken by the model and the order in which the steps were taken because they would afterwards be asked to do exactly what the model had done. The model will start with the first

step, demonstrating what should be done. He will comment along as he passes from step to step: e.g. "First thing to do is this "(he performs)" then the next is this "(he performs)", and so on. The model will demonstrate number of time, say three times before asking the children to perform.

Each session has been divided into:

- (1) Behavioural Objective:- Where the aim for the session is stated.
- (2) Teaching Aid: The aids to be used during the session are listed.
- (3) Exposure to Model:- Period when the model demonstrates and the subjects observe.
- (4) Acquisition:- When subjects imitate and perform.
- (5) Reinforcement:- Reinforcement strategy to be used.
- (6) Performance:- Evaluation strategy used.

Teaching deaf children could sometimes be slow because of communication problem. Do not try to go too fast. Each Unit apart from Unit I and V has been divided into two sessions lasting 30 minutes a session. Complete the units. If you do not complete the unit, you cannot expect to achieve the full benefit of the material.

MODELLING TRAINING PROGRAMME (MTP): SESSION BY SESSION
ORDER OF PROGRAMME

SESSION ONE

Behavioural Objective:-

At the end of this session, the children will be able to identify nouns in a sentence and correctly use such nouns.

Teaching Aids:- Flash cards, pupils, pictures.

Exposure To Model:-

The experimenter is the model. The class teacher assist while the children observe.

Step I: The experimenter signs to the children - "there are three kinds of nouns.

Step II: Esperimenter writes on the board in table form thus:

<u>Common Nouns</u>	<u>Proper Nouns</u>	<u>Abstract Nouns</u>
<u>Names of Object</u>	<u>Names of Person/Place</u>	<u>Names of ideas in our mind</u>

Step III: Experimenter now shows some examples of each of the group.

<u>Common Nouns</u>	<u>Proper Nouns</u>		<u>Abstract Nouns</u>
<u>Objects</u>	<u>names of Persons/Places</u>		<u>names of ideas</u>
bicycle	Dele	Ibadan	Beauty
aeroplane	Taiwo	Akure	honesty
boy	John	Oyo	
girl	Tunde		
radio	Oluchi		
desk			
table			

Acquisition:- Experimenter calls the children one after the other to imitate him by writing on the board under appropriate column: example of the various types of Nouns e.g. "book", "ruler" under Common Nouns. Ogbomosho, Dele, Tunde, Peter etc. under proper Nouns; movement, honesty, pride etc. under Abstract Nouns.

Reinforcement:- Reinforce good performance with praises like - "very good" clapping of hands; sweets should be given to the best performers.

Performance: The children are given take home assignment.

SESSION TWO

Behavioural Objective:

At the end of this session the children will be able to identify the following personal pronouns (I, you, he, she) in a sentence

(ii) Correctly use such pronouns

(iii) Associate the pronouns with appropriate nouns.

Teaching Aid:

Concrete objects, Flash cards, children themselves, class teachers, sign language.

Exposure to Model:

The experimenter is the model. The class teacher assists while the children observe. The class teacher stands some

yards away from the experimenter.

Step I: The experimenter signs "I". Children watch. Experimenter emphasizes the sign. Children watch closely to see the shape of the fingers. "I" is written on the board.

Step II: Experimenter points to the class teacher and says "You". Children are encouraged to watch the shape of the mouth of the experimenter. Experimenter points to a member of the class and says "You". This is to avoid the children thinking that "You" refers only to the teacher. "You" is now written on the board.

Step III: The experimenter exhibits pictures of a girl and a boy on the board. Children watch. Experimenter points to one of the girls in the class and says "She". "She" is written on the board. Experimenter points to the picture of the boy and says "He". Experimenter points to one of the boys in the class and says "He". ("He" and "She") are written under relevant picture on the board.

Acquisition:

The experimenter calls out two children at a time. One acting as the experimenter and the other - the class teacher. The children will now imitate all that the experimenter had demonstrate ("I", "You", "She" and "He"). Theirs exchange positions to make sure each pupil acted as the experimenter.

Reinforcement: Praises and clapping of hands are used to reinforce those who did well.

Performance: The subjects are given take-home assignment.

SESSION THREE

Behavioural Objective:

At the end of this session, the children will be able to identify the following pronouns ('they', 'it', 'we') in a sentence.

(ii) Correctly use such pronouns

(iii) Associate the pronouns with appropriate nouns.

Teaching Aid: Picture of an animal, picture of children at play, the teacher, sign language.

Exposure to Model:

The experimenter is the model. The class teacher assists while the children observe.

Step I: The experimenter exhibits a picture of group of children at play on the board and says "they" ("They" written under the picture). Experimenter calls the attention of the class teacher pointing at the children says "They". Children are strongly advised to watch the shape of the experimenter's mouth.

Step II: Experimenter exhibits a picture of a dog or any other animal on the board, pointing to it and says "it". Write "It" on the board under the picture.

Step III: Experimenter and the class teacher sit with the children. The experimenter pointing at everybody including himself says "We".

Acquisition:

The experimenter calls the children individually to imitate the experimenter.

Reinforcement: Praises like "good" "well done" are used to reinforce children who did well.

Performance: The subjects submit the previous assignment to the experimenter and are given a take-home assignment II.

SESSION FOUR

Behavioural Objectives:

At the end of the session, the subjects will be able to make and identify sentence in present tense using the following pronouns ("I", "You", "He", 'She').

Teaching Aid: The children, Flash cards, class teacher, pictures.

Exposure To Model: The experimenter demonstrates with the help of class teacher each action verb.

Step I: Experimenter tells the teacher "jump". As the teacher jumps, the experimenter says to him "You jump". The experimenter writes this on the board. (Vary the activities with action verbs like (kick, throw, play)).

Step II: Experimenter calls out one of the girls and tells her "jumps", as she jumps, the experimenter says to the class pointing at the girl "she jumps". Write this on the blackboard.

Step III: Experimenter calls out one of the boys and tells him to "jump". The experimenter says to the class "he jumps". Write "He jumps on the board.

Step IV: The experimenter jumps himself and says "I jump". This is written on the board.

Acquisition: The experimenter now invites the children one after the other to do exactly what he had demonstrated ("I jump", "She jumps", "You jump").

Reinforcement: The children are appropriately reinforced with praises. The names of those who did very well in the last assignment are displayed on the blackboard.

Performance: The subjects submit the previous assignment to the experimenter and are given take-home assignment III.

SESSION FIVE

Behavioural Objective:

At the end of the session, the subjects will be able to make and identify sentences in present tense using the following pronouns (They, We, It).

Teaching Aid: Pictures, Flash cards, class teacher, Experimenter, blackboard.

Exposure To Model: The experimenter demonstrates with the help of the class teacher. Children observe.

Step I: The experimenter tells the whole class to stand and jump. As they jump, he tells the class teacher pointing at the children "They jump". Write "they jump" on the board. Display a picture of children at play on the board. The experimenter points at the picture and says to the children "They play". Vary activities - Play, run, rock, laugh etc.

Step II: Experimenter displays a picture of an animal jumping and says "It jumps". Write on the board "It jumps".

Step III: The experimenter joins the class with the class teacher. They all jump together. The experimenter says to the children "We jump". "We jump" is written on the board. Sign language for "We" is well demonstrated.

Step IV: Experimenter calls the attention of subjects to the fact that in the present tense, when pronouns like "He", "She", "It" are used, "s" is added at the end of the verb.

Acquisition: The experimenter now calls out the children individually to imitate the model. Other appropriate action verbs are used e.g. clean, wash, sleep, run etc. The experimenter gives command.

Reinforcement: Children who did well are appropriately reinforced with praises and clapping of hands.

Performance: The subjects submit the previous assignment to the experimenter and are given take home assignment IV. The marked scripts are also given back to the subjects.

SESSION SIX

Behavioural Objective:

At the end of the session, the subjects will be able to identify and make sentences in the past tense using some of the pronouns previously learnt.

Teaching Aid: Pictures, Flash cards, ball, sign language.

Exposure To Model: The Experimenter demonstrates to the subjects to imitate.

Step I: The experimenter shows a ball to the subjects.

He plays it a while and returns to a corner. The experimenter says to the subjects: "I played the ball" a few minutes ago. The experimenter writes on the board.

Step II: The experimenter tells the class teacher to take the ball and play for a while. The experimenter stops him tells him to return the ball. Looking at the teacher, the experimenter says: "You played the ball" a while ago. This is written on the board.

Step III: The experimenter calls a girl out and says to her "jump" after jumping for a while he stops her and tells her to go and sit down. Pointing at the girl, the experimenter tells the rest of class "she jumped a while ago. (vary the activities e.g. kicked, laughed). Write "she jumped" on the board.

Step IV: The experimenter calls out a boy and asks him to kick the ball. The boy kicks the ball. The boy returns to his seat. The experimenter now says to class "The boy kicked ball". This is written on the board.

Acquisition: The experimenter gives the children games activities like jumping, throwing, catching, bouncing. They are to imitate the experimenter using pronouns in making relevant sentences in the past tense, e.g. "I jumped", "He bounced" etc.

Reinforcement: Good performance is reinforced with praises like "good", "clap for him", Excellent performance could be given tokens like pencil, erasers. Poor performance are encouraged to do better next time.

Performance: The subjects submit assignment IV to the experimenter. The marked scripts are returned to the subjects. The take-home assignment V is given to the subjects.

SESSION SEVEN

Behavioural Objective:

At the end of session, the subjects will be able to identify and make sentences in the future tense.

Teaching Aid: Class teacher, pupils, Flash cards.

Exposure to Model: The experimenter is the model. He demonstrates. The children observe. The teacher assists.

Step I: The Experimenter asks the class teacher "what will you do when the school closes?"

Teacher: "I will go home". The experimenter writes "I will go home" on the board. The experimenter says to the teacher "You will go home!" Experimenter writes "You will go home" on the board. Experimenter asks one of the girls "What will you do after school?" The girl says "I will go home after school". Pointing at the girl, the experimenter tells the rest of the class - "She will

go home after school". Write this on the board.

Step II: Using "Tomorrow" as a marker, the experimenter asks

the class teacher "where will your pupils go tomorrow?"

Teacher: "Tomorrow, they will come to school". This is written on the board.

Acquisition: The experimenter now calls out the children in

pairs and encourage them to imitate the model. Use

questions and answers method, e.g. "where will you go

after school?" Will she come to school tomorrow?"

Reinforcement: List the subjects names on the board and

star names of good performers. Subjects with the highest number of stars will get ice-cream.

Performance: The subjects are given the marked scripts, the

subjects submit finished assignment to the experimenter.

They are given take-home assignment.

SESSION EIGHT

Behavioural Objectives:

To drill the children on English sentence making involving

Past tense, Present tense, and future tense so that at

the end of the session the children will be able to

generate English sentence.

Teaching Aid: Flash cards, pictures, class teacher, pupils themselves, the blackboard.

Exposure to Model: The experimenter is the model, the class teacher assists while the children observe.

Step I: Experimenter draws a table on the board providing for different tenses that have been taught.

<u>Present Tense</u>	<u>Past Tense</u>	<u>Future Tense</u>

Step II: Using some of the events that the children know that happened before and that will happen, the experimenter fill the blank spaces. Experimenter cleans the board and says "I clean the board now". "Yesterday, Tunde cleaned the board" pointing at Tunde who must have cleaned the board yesterday. "Tomorrow your teacher will clean the board".

<u>Present Tense</u>	<u>Past Tense</u>	<u>Future Tense</u>
Now I clean the board	Tunde cleaned the board yesterday	The teacher will clean the board tomorrow.

Step III: Experimenter writes out sentences on the board leaving blank spaces. The experimenter completes the blank spaces.

- (i) Tomorrow the rain _____ fall
- (ii) Yesterday the football team _____ a match
- (iii) Baby Eagles _____ Football in China
- (iv) Our teacher _____ his shirt now but tomorrow he _____.

Acquisition: The experimenter calls out the children one after the other to imitate him by filling the blank spaces using verbs different from the ones used by the experimenter.

Reinforcement: Good performers are given additional stars on their names. The person with the highest stars gets exercise book.

Performance: The subjects are given their marked scripts. They also submit previous assignment to the experimenter for marking.

SESSION NINE

Session 9 is the termination session for the modelling training programme. It is expected that subjects would have attained mastery of the programme by the end of this session. The experimenter will administer Post-Test at this session.

APPENDIX 2

SHAPING TRAINING PROGRAMME

Introduction

Language is an auditory based symbol by which we understand things and express our understanding to other people. Infact we need language for communication, self expression, learning and pleasure.

The shaping programme is aimed at helping children acquire and improve on the important skills of generating English sentences that they would need as individuals. Under shaping, the task to be learnt is divided into components and arranged in proper sequence.

- Unit I: The use of Nouns
- Unit II: The use of Personal Pronouns
- Unit III: The use of present tense
- Unit IV: The use of past tense
- Unit V: The use of Future Tense.

The experimenter uses cues, prompts and instruction to initiate the children into performing the first-step behaviour. Approximations to the behaviour are continuously, consistently and contingently reinforced until the experimenter is satisfied that the behaviour has been considerably mastered. With further cues and instructions serving as discriminative stimuli, the

subjects are led into attempting the second step behaviour. Each time, approximations to the expectant behaviour is reinforced. In this way, progress is successfully made towards the target behaviour. As each level of performance, the experimenter goes round the class to see the individual performances of the subjects. Poor performances are not reinforced rather the subjects are encouraged and prompted to perform the desired behaviour.

The programme consists of nine sessions. Each session apart from session nine has been divided into:

- (1) Behavioural objective: where the aim for the session is stated.
- (2) Teaching Aid: The aids to be used during the session are listed.
- (3) Exposure to shaping: Period when experimenter uses cues, prompts, and instruction to initiate the children into performing the desired behaviour.
- (4) Acquisition: When subjects perform the desired behaviour without cues and prompts.
- (5) Reinforcement: Reinforcement strategy to be used.
- (6) Performance: Evaluation strategy used.

Teaching deaf children could sometime be slow because of communication problem. Do not try to go too fast or teach

too much at a time. Each unit apart from unit I and V has been divided into two sessions lasting 30 minutes a session. Complete the units. If you do not complete the unit, you cannot expect to achieve the full benefit of the programme.

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SHAPING TRAINING PROGRAMME (STP)
SESSION BY SESSION ORDER OF PROGRAMME

SESSION ONE

Behavioural Objective:

At the end of this session the children will be able to identify nouns in a sentence and correctly use such nouns.

Teaching Aids: Flash cards, Pupils, Pictures.

Exposure To Shaping: The experimenter explains that nouns are names of objects, persons, places and ideas.

Step I: Experimenter asks children to mention names of objects, persons, places, and ideas. Children must take the question in turn.

Step II: Experimenter lists all the children responses on the blackboard.

Step III: Experimenter explains to the children that nouns could be grouped into three. Experimenter draws the table on the board, thus:

Common Nouns	Proper Nouns	Abstract Nouns
Names of objects	Names of persons	Names of ideas in our mind.

Step IV: Experimenter calls the children one after the other to choose from list of words already on the board - one common Noun, one proper Noun and one abstract Noun and place in appropriate column on the board. All attempts are reinforced with - 'good', 'well done', clapping of hand. Where a child confuses the nouns, the experimenter says 'Not quite right', 'Let another child help you'.

Acquisition: Experimenter calls children one after the other to think of noun and write it on the appropriate column. The noun must not be one of those already on the board. All attempts are reinforced with - 'well done', 'good', 'clap for him/her', 'Oh - not quite but good attempt'.

Reinforcement: All good attempts are immediately reinforced with praises and a child who has been consistent in getting correct answers could be reinforced with sweet, ruler, biro.

Performance: The children are given take-home assignment.

SESSION TWO

Behavioural Objective: At the end of this session, the children will be able to identify the following personal pronouns (I, you, he, she) in a sentence (ii) correctly use such personal pronouns (iii) associate the pronouns with appropriate nouns.

Teaching Aid: Pictures, Flash cards.

Exposure to Shaping: The experimenter explains that pronouns are words which can be used in place of nouns e.g. They, he, it

Step I: Experimenter displays the following pictures on the blackboard.

- | | |
|--------------------|-------------------------------|
| (1) A boy jumping | (3) The experimenter standing |
| (2) A girl playing | (4) One of the pupils |

Step II: Experimenter asks a pupil pointing at picture (1):

"Is the person in the picture a boy or a girl?"

If the child says "He is a boy", reinforce by saying

'very good' but if the child says 'the person is a boy'

Experimenter says 'yes' 'but which other way can we

say it?' Continue until a child has used 'He'. Experi-

menter explains that a 'boy' is a Noun as previously

learnt in session one but when we do not want to use

the Noun 'boy' we can use pronoun 'He' in its place.

Step III: Experimenter asks children to make sentences using

'He' instead of boy:

- | | |
|-------------------|------------------------|
| (a) He is jumping | (b) He is playing etc. |
|-------------------|------------------------|

Step IV: Experimenter repeats the same process for the girl using 'She' instead of 'He'.

Step V: Experimenter points to the picture of himself and asks a pupil "who is this?" If the pupil says "you" He is reinforced with "very good" but if he says "teacher", the experimenter says 'yes', 'but you can say it in another way'. Continue until a pupil says 'you'.

Step VI: Experimenter asks children to make sentences describing his activities, e.g.

(a) You are laughing

(b) You are writing

(c) You are sitting.

Step VII: Experimenter says to one of the pupils: "Dele tell us the game you like to play" If Dele says "I like football". He is reinforced with "well done". But if he says something else not using "I" continue until a pupil starts the sentence with "I". All the pupils must be given the opportunity to contribute to the exercise.

Acquisition: Experimenter calls children one after the other to give example of personal pronoun. All attempts are reinforced with "well done", "very good", "Clap for him/her"

Reinforcement: All good attempts are immediately with praises and a child who has shown consistency in getting correct answers should be reinforced with sweet, ruler, exercise book.

Performance: The children are given take home assignment II while assignment one is returned to the experimenter for marking.

SESSION THREE

Behavioural Objective:

At the end of this session, the children will be able to identify the following personal pronouns (they, we, it) in a sentence.

(ii) Correctly use such personal pronouns

(iii) Associate the pronouns with appropriate nouns.

Teaching Aid: Pictures, Flash cards, pupils themselves.

Exposure to shaping: The experimenter explains that pronouns are words which can be used in place of nouns.

Step I: Experimenter displays the following pictures on the blackboard.

(1) Group of children playing

(2) Dog eating

(3) The pupils playing.

Step II: Experimenter asks a pupil pointing at picture (1)

"What are the children in the picture doing?"

If the pupil says "They are playing" Reinforce "very good" but if the child says "The children are playing" Experimenter says 'yes' but which other way can we say it? Continue until a child has used "They". Experimenter explains that 'children' is a collective noun as previously learnt in session one but when we do not want to use the noun 'children' or 'group of people', we can use pronoun 'they' in its place.

Step III: Experimenter asks the pupils to make sentences

using "They" instead of "the children".

(a) They are playing

(b) They are singing.

Step IV: Experimenter points to the second picture and asks

"what is this?" if a child says "Dog", experimenter says 'good' what is the dog doing? If child says the dog is looking; continue until a child says "it is looking". Reinforce the nearer the answer with praises like "very good", "clap for him/her".

Step V: Experimenter asks children to make sentences using

'it' instead of animal or dog.

Step VI: Experimenter points to the third picture. A picture of the class children and asks who are those? A pupil says "we" Reinforce immediately with praises like "well done" but if he says something else, continue to prompt until the child says "we". Experimenter explains that "we" is used when one is involved in an action.

Step VII: Experimenter asks children to make sentences using 'we'.

(a) We run

(b) We play.

Acquisition: Experimenter calls children one after the other to think of a personal pronoun and use it in making sentences. All attempts and nearer attempts are reinforced with displays of names on the board, winning of extra star which would be exchanged for a tangible reward.

Reinforcement: All good attempts are immediately reinforced with praises and outstanding performances are rewarded with exercise books, pencils and biro.

Performance: The children are given taken home assignment III, children submit assignment II to experimenter for marking. Experimenter gives marked assignment one to the pupils. This is also reinforcing.

SESSION FOUR

Behavioural Objective:

At the end of this session, the children will be able to identify and make sentences in the present tense using the pronouns (I, you, he, she).

Teaching Aid: Flash cards, pictures, pupils.

Exposure to Shaping:

"Experimenter explains that present tense means 'now'.

Step I: Experimenter asks one of the pupils to jump.

"What are you doing"? The pupil says "I jump". The pupil is immediately reinforced with praises like "very good" but if the child says something else, continue to prompt until a child says the correct thing.

Step II: Experimenter calls out a boy and asks him to jump.

Experimenter asks another pupil "what is he doing?" or what other way can "He is jumping" 'Yes' But which other way can you say it? "He jumps" Reinforce as soon as a child says "He jumps".

Step III: Experimenter repeats step II for a girl. This time 'she' is used for girl.

Step IV: Experimenter jumps and asks a pupil "What am I doing?"

The pupil says "you jump". All attempts are reinforced with "good" "but not quite". Correct answers are well reinforced with clapping of hands.

Acquisition: Experimenter calls children one after the other to make sentences in present tense using 'I', 'you' 'she' and 'He'. All attempts or near attempts are reinforced with appointment as class leader, winning of price like pencil, erazer etc.

Reinforcement: All good attempts are immediately reinforced with praises and outstanding performances are rewarded with sweets, exercise book.

Performance: The children are given take-home assignment IV. Children submit assignment III to experimenter for marking. Experimenter gives marked assignment two to the pupils. This is also reinforcing.

SESSION FIVE

Behavioural Objective:

At the end of this session, the children will be able to identify and make sentences, in the present tense using the pronouns 'they', 'we', 'it').

Teaching Aids: Flash cards, pictures, pupils.

Exposure to Shaping:

Experimenter explains that present tense means 'now' as done in session four.

Step I: Experimenter asks three members of the class come out and jump. Experimenter asks another member of the class "What do they do?" "They jump". The pupil is reinforced immediately with praise "very good". But if the child says something else, continue to guide the child until the right thing is said.

Step II: Experimenter calls and asks three members of the class to jump. Experimenter asks them "what do you do?" The children respond "we jump", if the children say "we are jumping" continue to prompt until a child says "we jump".

Step III: Experimenter displays a picture of an animal e.g. dog sitting. Experimenter asks "whose picture is this pointing at the picture". "It is a dog". What does it do?" The pupil says "It sits", if the child says something else, continue until the child says the right thing. Every attempt is reinforced with 'good attempt'.

Acquisition: Experimenter calls children one after the other to make sentences in present tense using, 'they' 'we' and 'it'. All attempts are reinforced with praises but good performances are reinforced with gifts.

Reinforcement: Praises are used - 'well done', 'good' during acquisition period but gifts are used for outstanding performances.

Performances: The subjects are given take-home assignment V. Children submit assignment IV to experimenter for marking. Experimenter gives marked assignment III to the pupils.

SESSION SIX

Behavioural Objective:

At the end of the session, the subjects will be able to identify and make sentences in the past tense using some of the personal pronouns previously learnt.

Teaching Aid: Pictures, flash cards, ball, sign language.

Exposure To Shaping:

Experimenter explains that past tense means "Before".

Step I: Experimenter gives two subjects ball to play and after a while asked them to stop.

Step II: Experimenter asks one of the subjects who played a while ago, "what did you do a while ago?" "I played a ball", or "we played a ball".

Step III: Experimenter asks one of the subjects who observed, pointing at one of girls who played. Do the same for

the girl. Continue until the right thing is given.

Subjects are reinforced at any point in time with

either praises or gifts.

Step IV: Experimenter calls out a child and asks "How did you get the shirt you are wearing? The child answers "My mother bought it". The experimenter writes on appropriate space on the board.

Acquisition: Experimenter calls subjects one after the other to make sentences in past tense using some of the personal pronouns. All good attempts must be reinforced with some sweets, exercise book.

Reinforcement: Praises are used to motivate the children into more positive action.

Performance: The subjects are given take-home assignment VI. Children submit assignment V to experimenter for marking. Experimenter gives marked assignment IV to the subjects.

SESSION SEVEN

Behavioural Objective:

At the end of the session, the subjects will be able to identify and make sentences in the future tense.

Teaching Aid: subjects, flash cards.

Exposure to Shaping:

Experimenter explains that future tense means "After".

- Step I: Experimenter asks a subject: "What will you do when the school closes today?" "I will go home". But if the child says something else, say "not quite". Repeat the question for another child. Continue until a child gets "I will go home". Write this on the blackboard.
- Step II: Experimenter asks another child pointing at the boy/girl who answered the question: "what did he/she say she/he will do after school?" "He/she will go home after school". Continue prompting and reinforcing with praises until the correct answer is given.
- Step III: Experimenter calls out two subjects and asks them: "what will two of you do when the school closes today?" "We will go home". Continue until the right answer is obtained. Each time reinforcing good attempts.
- Step IV: Experimenter asks another child: "what did those two people say they will do when school closes?" "They will go home" if the child says something else, continue until the right answer is obtained. Reinforce each attempt with "good""not quite."

Acquisition: Experimenter calls children one after the other to make sentences in future tense using "they", "you", "we", "you", "he", "she", "it". All attempts are reinforced with praises like clapping of hands but good performances are reinforced with gifts like biro, pencil, ruler.

Reinforcement: Praises are used - "well done", "good", clap for him/her, during acquisition period but gifts are used for outstanding performances.

Performances: The subjects are given take-home assignment VII. Children submit assignment VI to experimenter for marking. Experimenter gives marked assignment V to the subjects.

SESSION EIGHT

Behavioural Objective:

To drill the children on English sentences making involving, Past tense, present tense and future tense so that at the end of the session the children will be able to generate English sentences.

Teaching Aid: Flash cards, pictures.

Exposure to shaping:

Experimenter explains to the subjects that they are expected to make three sentences each. (1) Event

happening now (2) Event that happened before

(3) Event that will happen after.

Step I: Experimenter draws a table on the board providing for the different tenses that have been taught.

Present Tense	Past Tense	Future Tense
---------------	------------	--------------

Step II: Experimenter now calls out the children one after the other to write in appropriate columns sentences. Children are guided in order to make good sentences. Subjects are encouraged to use "markers" "Now" "I clean the board". Yesterday, I cleaned the board", Tomorrow I will clean the board".

Acquisition: Exercise could now be changed into a game. The first child writes "I play now" under present tense. Experimenter asks another child "what did Dele do?" "Dele played". Experimenter asks another child: "What will Dele do tomorrow?" "Dele will play". Continue until all the children have had their turn.

Reinforcement: Children are consistently reinforced with praises and gifts.

Performance: The subjects are given their marked scripts. They also submit previous assignment to the experimenter for marking.

SESSION NINE

Session 9 is the termination session for the shaping training programme. It is expected that subject would have attained mastery of the programme by the end of this session. The experimenter will administer Post-Test at this session.

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APPENDIX 3

TEST ON ENGLISH

Read the Passage Carefully and Answer the Questions below:

1. Many years ago there was a fisherman called Ali. He had a wife. The name of his wife was Siata. They were poor. They lived near a river not far from a village called Aka.

One day Ali went to fish. He fished with his hook. His hook caught a fish it was a magic fish. When a Siata saw the fish, she was happy. Ali said to Siata. "Come, we must go home". Siata said to Ali, "you must catch one more fish before we go home. Ali said, "I will drop my 'hook again'". His hook caught a fish with one eye. It was a magic fish. The fish begged Ali to let him go. Ali told the fish that he was a poor man. The fish promised to make Ali rich. Ali became rich.

Questions

Underline all the personal pronouns in the passage.

- (1) Who was Ali? (a) A farmer (b) A fisherman.
- (2) Ali's wife was? (a) Dele (b) Siata
- (3) What caught the fish? (a) Hook (b) Net
- (4) Was Ali Rich? (a) No (b) Yes.

- (5) What kind of fish did Ali catch? (a) Gold fish (b) Magic fish
- (6) Who made Ali rich? (a) Dele (b) Magic fish
- (7) The fish had (a) Two eyes (b) One eye.
- (8) Ali lived near a village called (a) Ibadan (b) Aka.

(20 marks).

2. From each of the following sentences, underline a noun, say whether it is common, proper or abstract.

- (a) He met that man yesterday.
- (b) Did Charles speak to them?
- (c) This desk is mine.
- (d) Fear made her tremble.
- (e) Buy the apples which are red.
- (f) Where did John find it?
- (g) She has a few friends.
- (h) They will admire his courage.
- (i) Joe does not know her.
- (j) Find the boy who whistled.

(20 marks).

3. Complete the table below:

Present	Past	Future
They play	They	They will play
You	you saw	you will see
We .....	.....	we will run
He washes	.....	.....
she	she called	.....
it	it jumped	.....
I sleep	.....	.....
He buys	.....	.....

(20 marks)

Use the following nouns to complete the work below:

4. John; book; work; flowers; school; beauty; yellow;
bucket; house; mother.

1. My name is
2. I planted in my garden.
3. The boy has gone to his
4. My father built this
5. Your is cooking in the kitchen
6. Carry your to the river
7. The girl has a
8. She is reading a
9. I am going to do my
10. The flower is in colour.

(20 marks)

5. From each of the following sentences, underline verbs in the past tense.

- (a) James suddenly began to whistle
- (b) Up the road strolled a stranger
- (c) Sitting down, I opened the letters
- (d) What happened to John
- (e) Frightened by the noise, James fainted.
- (f) Around the lawn ran a path
- (g) Who came to meet you?
- (h) How untidy they are!
- (i) Open that window
- (j) Tunde likes collecting stamps.

(20 marks)

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APPENDIX 4

COGNITIVE ATTITUDE TOWARD
ENGLISH SCALE (CATES)

Please read each of the following statements carefully.

Circle the number on the alternative that describes your belief.

- 1. = STRONGLY DISAGREE
- 2. = DISAGREE
- 3. = UNDECIDED
- 4. = AGREE
- 5. = STRONGLY AGREE

- 1. I believe that teachers secretly enjoy giving their students a "hard time" in English exercise. 1 2 3 4 5
- 2. No matter what happens, I believe in English and it comes first in my choice of subjects. 1 2 3 4 5
- 3. English develops good reasoning ability but can also run a person mental 1 2 3 4 5
- 4. English is profitable to everybody who takes it 1 2 3 4 5
- 5. I always memorize English rules and apply them directly to solve problems. 1 2 3 4 5
- 6. English is universally accepted as a useful subject but I believe it is too difficult to understand. 1 2 3 4 5

7. I believe that having a good time and getting one's full share of fun out of life is more important than engaging fruitlessly in solving English problems. 1 2 3 4 5
8. I believe that English is not receiving its due weight in the Nigerian School system 1 2 3 4 5
9. I think I seem to accomplish very little in relation to the amount of time I spend on solving English problems 1 2 3 4 5
10. I can concentrate on solving English problems only for a short while before comprehension scare enthusiasm out of me 1 2 3 4 5
11. After learning some English laws, I believe I am wrong each time I attempted to solve a problem 1 2 3 4 5
12. When solving a long difficult problems, I periodically stop to review my English construction. 1 2 3 4 5
13. I believe I am always careless in solving problems 1 2 3 4 5
14. English teaches me to be imaginative and accurate in analytical procedures. 1 2 3 4 5
15. English is a mental exercise that yields no good fruit but only weakens the brain. 1 2 3 4 5

APPENDIX 5

SELF-CONCEPT SCALE

(ADOLESCENT PERSONAL DATA INVENTORY APDI)

DATE:

AGE:

SEX:

NATIONALITY:

RELIGION:

STATE:

TOWN OR VILLAGE:

DIRECTIONS:

Please use the ten-point scale below to rate yourself on each of the following items. Rate the items most descriptive of yourself at the high end, those least descriptive of you at the low end, and those about which you are not sure or undecided at the middle. For each item record the number which represents your response on the blank space on the right side of the items.

14. I can face any difficulty in life
15. I am ambitious over attaining mastery of things
16. I am unreliable
17. I may lie in certain situations
18. I fear I would fail on anything I plan to do
19. I am self-centred
20. I always agree with my mates on all issues
21. I am dependably reliable
22. I often feel lonely
23. I am original in all ways
24. I am lazy
25. I am shy
26. I am always methodical
27. I like to generate new ideas all the time
28. I am always thirsty for knowledge
29. Life is meaningless
30. I like to be myself always

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