Chapter 5 at a glance

- Conclusions
  - Quantitative analysis using observation checklist of responses of the students
  - Qualitative analysis using test
  - Data analysis
  - Design of research
  - Development of problem
  - Deprived students
  - 1st standard
  - Review of related researches
  - Brain-based principles
  - Got insight of the problem

Summary and conclusions

Defininition of the problem

Development of oral communication skills

Brain-based program for enrichment of oral communication of 1st standard deprived students

Language development of deprived students

Oral communication test

Dependent

Independent

Design of research

Experimental study

Pretest posttest control group

Development and implementation of oral communication test

Development and implementation of brain-based program

Development of oral communication skills

Brain-based principles

Got insight of the problem

Language development of deprived students

Conclusions

Summary and conclusions

Defininition of the problem

Development of oral communication skills

Brain-based principles

Got insight of the problem

Language development of deprived students
CHAPTER V
SUMMARY AND CONCLUSIONS

5.0 Introductory

Language is a tool of thinking. Natural sequence of development of language skills is listening oral communication, speaking informally and then step by step development of formal reading, writing through school education. Socially deprived students do not get early education and hence find it difficult to express themselves through oral communication. According to brain research, first ten years from birth are important for language education. As deprived students lack rich experiences regarding language acquisition, quality learning experiences catering to special individual needs regarding oral communication are essential in first standard.

The present study was designed to apply principles for brain based research for enrichment of oral communication of 1st standard deprived students.

Chapter 1 of this report provided need of the study, objectives, hypotheses and operational definitions of the terms used.

5.1 Social deprivation and oral communication

Due to economic deprivation families send their children to government school for free education after age 6. So they do not get exposure to standard language and opportunity to interact and express orally till age 6, leading to low progress in all aspects of education and life in general.

According to Crow and Crow, "It is generally agreed that children reared in homes reflecting a favorable socio-economic status are superior in language ability to children who come from homes of lower status. Some psychologists claim that there may be as much as eight months' difference in the rate of development.

(Crow & Crow, 2007, p-48)
Eight months’ difference in school entrants affects language skills of deprived students.

When these students come to school, they are introduced to all language in the formal atmosphere through the textbooks. The standard language is new for them, sometimes just like foreign language, because children speak in different dialects in their homes. They use different vocabulary, though they are from Marathi-speaking families. For this reason, they cannot grasp the teaching in formal Marathi in school. Sometimes their pronunciations are far different from standard language. For this reason, the inferiority complex may arise in their minds. There are no special efforts taken in schools to make the language familiar taking into consideration the special language needs of every child. Children from deprived sections find it difficult to cope with formal language learning also lose confidence and interest in communication and consequently learning.

Oral communication is our basic need. It is the base of all types of learning. But, in our education system, less importance is given to oral communication as compared to written communication. The social deprivation badly affects the oral communication skills. Hence, in the present study, development of oral communication skills of deprived students was thought appropriate area of research.

5.1.2 Brain development and language development

Brain development and language development are closely associated. The findings of researches on brain learning show that language construction is a combined activity of different parts of brain. Such as, Broca’s area is involved in production of spoken language. Wernicke’s area is involved in the association of spoken and seen words. Left brain excels in the test of the content, whereas the right brain is involved in meaning making. According to brain research, first ten years are very much important for education – especially language education.

According to David Hubel and Torsten Wiesel, “Windows of opportunity are times when a child can best learn or refine abilities. After that time it becomes much more difficult to learn.”

(Maies, 2006, P-1)
As deprived students lack rich experiences regarding language acquisition, it is essential to provide them same through systematic efforts based on findings of brain research right from the beginning of formal education, that is from first standard.

Present study intended to implement the findings of brain researches in the Indian context, while developing the oral communicational skills.

5.1.3 Need of the study

Oral communication is the basic need of language development and language is a foundation of education. In our education system, there are no special efforts taken in schools to enrich the oral communication skills. Actually, oral communication is a major linguistic skill. But it is not given prime importance in the schools. Though evaluation pattern has been changed and is supposed to become more child-centered, enrichment of oral communication is not prominent, especially in the schools for deprived students. It is often seen, that the students have no voice in the classrooms. There is no scope for interactions with teachers and peers. No opportunity for their thinking and opinions, as well as their emotions. Deprived children have much capacity to do better studies and make progress, but lack of communication skills and lack of opportunity to express own thoughts, their intelligence remains hidden. This study intended to make efforts to enrich their communication skills. This study underlines the need of students’ expression of thinking and oral communication.

The present study aimed to give various opportunities to listening and speaking. The age of six years is significant for this purpose. According to brain research, first ten years are very much important for acquiring language education. Because of rich sensory inputs dendrites grow, change shapes; which is useful for overall education.

The researches were reviewed to find whether there are researches on enrichment of oral communication of 1st standard deprived students. The study of Suja koshy
(2008) was to enhance the reading skills of advantaged and disadvantaged children of standard 1. Her study supported for the use of children’s literature for enhancing language skills in advantaged and disadvantaged children.

The researches by Devi (2001), Reddy (1988) highlighted the clear relation between socio-economic deprivation of children and its effect on their language development. They found that children from less advantaged homes talk less as compared to children from advantaged homes.

These researches underlined that socio-economic deprivation played a significant role in language development of children. After considering these factors, researcher decided to apply brain based principals for enriching the language ability of deprived students.

Prof. Duman (2006) studied the effect of brain-based instruction to improve 6th grade students’ academic achievement in social studies instruction. His study was effective and showed significant difference in the achievement of experimental group as compared to those of control group by using brain based principles. The teacher–student talk in active learning class was studied by Martlew; Joan, Ellis; Sue, Stephen; Christine, and Ellis; Jennifer. The conclusions of the study showed that active learning increased the amount of talk in children of less advantaged homes. The study of Abdallah M aham ud M ohmac syed concluded that, by using multiple intelligences based training program, the first year students’ English oral communication skills were more developed.

These studies brought out the conclusions that,

1. Deprived students have difficulties in oral communication skills.
2. Their vocabulary is not sufficient for formal education
3. There is no brain-based program for socio-economic deprived students to enrich their oral communication skills.

Considering the conclusions need was felt to find answers to some questions such as, can brain based learning be effectively used to develop communication skills
of deprived students? Is it possible to develop communication skills of 1¥ standard students through systematic inputs? In order to find answers to these questions through systematically obtained empirical evidence present study was undertaken.

5.1.4 Significance of the study

The present study intended to develop the program to enrich the oral communication of 1¥ standard deprived students. It is based on findings of brain researches. The study will prove useful to the teacher educators, teachers, researchers and curriculum planners. The oral communication test and program will help teachers and parents also. It will also be helpful for teachers, administrators and persons related to the field of education. The conclusions will be useful for the scholars of linguistics, educational planners and trainers of communication programs for children.

• Brain based language learning theories are the basic support for present study. Till now, these studies and researches are held in western countries. It needs to apply in our Indian context and study the effectivenes. Present study has done such attempt and hence will be useful for further researches.

• The brain based principles are included in the syllabus of teacher education courses only in some universities. The present study will be useful for the pre-service teachers as well as in service teachers, to get more insight into application of principles derived from brain research into day to day transaction of curriculum.

• Systematic implementation of a special program based on findings of brain research for enrichment of oral communication skills of deprived will be useful for all rural, tribal and urban children in Maharashtra, as well as in India.

• The program will serve as a guideline for developing oral communication of 1¥ std. students of other languages.

• The brain based program of oral communication is helpful for students in grasping and expressing themselves in education and also in real life. Therefore, such studies for enriching oral communication might be useful for their personality as a student and as a person, too.
• The oral communication test and program will be useful for parents to enrich the oral communication skills of their children.

• While developing the curriculum of mother tongue the program of this study will be useful for enrichment of oral communication.

5.1.5 Title of the study

Development of brain-based program for enrichment of oral communication of 1st standard deprived student.

5.1.6 Objectives of the study

1. To develop brain-based oral communication program.
2. To study the effectiveness of the program.

5.1.7 Definitions of the terms used in program

• Brain based program

A program of providing learning experiences, developed by researcher based on findings of brain researches regarding language learning in general and oral communication in particular.

• Enrichment of oral communication skills

Enrichment of semantic and syntactic structures of oral communication through providing opportunities of listening and speaking, and through direct interactions as well as support program considering the individual needs of the students.

• Deprived students

Students deprived from educationally conducive environment due to poor economical, social and cultural background. (The present study included students from corporation school, which includes mostly such deprived students.)
• Effectiveness

Increase in scores of 1st standard deprived students on test of oral communication (testing semantic and syntactic structures used) prepared by the researcher.

5.1.8 Hypotheses

• There will be significant difference between the mean scores of pretest and posttest of students from experimental group on oral communication test prepared by researcher after implementation of the brain based program.

• There will be significant difference between the mean scores of post test of experimental group as compared to those of control group on oral communication test prepared by researcher after in plen entation of the brain based program.

5.1.9 Scope

i) The researcher prepared the brain based program for enrichment of oral communication in Marathi for 1st standard deprived students.

ii) Present program was implemented on first standard students of Marathi medium.

iii) The study involved 82 girl students of 1st std Marathi medium from two corporation schools located in Pune city.

iv) The program was implemented for 116 hours through direct interactions between researcher and students. Besides this, support programs such as, games, cards, study material of group work etc. were provided.

5.1.10 Limitations

I) The sample was incidental.

II) The classes in corporation schools selected included only girl students, though it was not in plan of research.
III) There was no standardized test available, for measurement of oral communication skills of first standard. Therefore, the test prepared by researcher was used, which was not standardized test.

Considering these limitations the findings of the study will be limited to sample under consideration. For wider generalization, more replica studies on representative samples are essential.

5.2 Review of related literature and researches
5.2.1 Review of related literature

The present study is related to findings of brain based researches. These researches were mostly done in the countries like America and England. Websites of the researchers and articles in journals are the main sources of literature.

According to various researches on brain-based learning, environment, diet, amount of sleep, music, color, oxygen, movement, exercise, water intake all affect on our brain responses and learning. For better learning, positive emotions, scope to imagination and creativity, learning involving music, thought of whole brain learning are essential.

Following principles were used in the present study.
1. Enriched and joyful environment
2. Emotions
3. Consideration of whole brain learning
4. Cognition
5. Imagination
6. Creativity
7. Music
8. Movement

The theory of multiple intelligences was also considered for the program.

1. Linguistic Intelligence
2. Mathematical/Logical Intelligence
3. Naturalistic Intelligence
4. Musical Intelligence
5. Intra personal Intelligence
6. Interpersonal Intelligence
7. Bodily/Kinaesthetic Intelligence
8. Visual/Spatial Intelligence

The activities included in the program were based on the brain based principles and multiple intelligences.
5.2.2 Review of related researches

As per the objectives of the present study, several researches were reviewed. The researches on following areas, such as - brain based principles, language development in general, but specifically on oral communication, deprived students of 1st standard, were studied.

The reviewed researches were classified in two major headings. Researches related to brain based principles are classified in three categories.

1. Fundamental
2. Applied
3. Literature survey

Language development in deprived students is classified in two major categories.

1. Experimental
2. Descriptive

Out of total 24 studies, 12 studies were related to brain based principles. 12 studies were related Language development in deprived students. The brief summary of selected and most relevant studies is given below in the table form.
Researches related to brain based principles -

Fundamental studies

Table 5.1 Researches related to brain based principles - Fundamental studies

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the researcher</th>
<th>Title</th>
<th>Method/Sample</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pare-Blagoev, Elizabeth Juliana (2006)</td>
<td>Connecting neuroscience and education: The neural correlates of phonemic awareness in normal reading children</td>
<td>Descriptive</td>
<td>1) Children’s reaction time is longer than adults. 2) Phonemic processing is more effortful, less automatized for children than adults</td>
</tr>
<tr>
<td>2.</td>
<td>Videcott, Gerda, Hemberger Barbel, Hoenig Klaus, Schilly Edgar, Grothe Jo, Winter Werner, Spitzer Manfred, Kiefer Markus (2010)</td>
<td>Speaking in multiple languages: Neural correlates of language proficiency in multilingual word production</td>
<td>Descriptive</td>
<td>The results demonstrate the significance of right prefrontal areas for language proficiency. Right prefrontal cortex supports language proficiency by effectively supervising word retrieval</td>
</tr>
</tbody>
</table>
### Applied studies

Table 5.2: Researches related to brain based principles - Applied studies

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the researcher</th>
<th>Title</th>
<th>Method/sample</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Duman Bilal (2006)</td>
<td>The effect of brain-based instruction to improve on students’ academic achievement in social studies instruction</td>
<td>Experimental study / 113 students</td>
<td>There was a significant difference between achievement of experimental group who studied with brain-based learning and the achievement of control group.</td>
</tr>
<tr>
<td>2.</td>
<td>Martlew, Joan, Ellis, Sue, Stephen, Christine Ellis, Jeniffer (2010)</td>
<td>Teacher and child talk in active learning class and whole-class contexts: some implications for children from economically less advantaged homes backgrounds</td>
<td>Experimental study / 150 teachers and 6 primary teachers</td>
<td>Active learning increased the amount of talk between children. Those from socio-economically advantaged homes talked more than those from less advantaged homes.</td>
</tr>
</tbody>
</table>
**Table 5.3 Researches related to brain based principles—Literature review**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the researcher</th>
<th>Title</th>
<th>Method/Sample</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Connel J. dianne</td>
<td>The global aspect of brain based learning</td>
<td>Literature survey</td>
<td>BBL research and strategies provide a foundation for educators to create successful Learning based upon two principles: (1) creating a learning atmosphere that intentionally welcomes and accepts all learners and (2) using effective, research-based academic BBL strategies to enhance student learning</td>
</tr>
<tr>
<td>2.</td>
<td>Bonnema Ted R.</td>
<td>Enhancing student learning with brain based research</td>
<td>Survey</td>
<td>In order to maximize their teaching efficacy, educators should have a basic understanding of key memory functions in the brain, and how these functions relate to student learning</td>
</tr>
</tbody>
</table>
### Table 5.4 - Language development in deprived students—Experimental studies

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the researcher</th>
<th>Title</th>
<th>Method/Sample</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reddy Govinda (1988)</td>
<td>Language development in socially disadvantaged and socially non-disadvantaged children</td>
<td>720 children</td>
<td>Urban children, socially advantage children and those from higher grades performed better than rural children, socially disadvantaged children and those from lower grades, respectively.</td>
</tr>
<tr>
<td>2</td>
<td>Devi C B (2001)</td>
<td>An investigation into the relationship between language ability, ordinal position, habitation and parental income among deprived primary school children</td>
<td>Experimental study/203 students</td>
<td>1) The ordinal position affected the language ability of the children among the deprived families. 2) Parental income played a significant role in language development.</td>
</tr>
<tr>
<td>3</td>
<td>Suj a Koshy (2008)</td>
<td>Enhancing the reading skills of advantaged and disadvantaged children of std 1 through systematic reading of children’s literature.</td>
<td>Experimental study/120 children</td>
<td>1) Use of children’s literature is helpful for enhancing reading and listening skills of children. 2) Schools can make important contributions to the emergence of early language and reading skills.</td>
</tr>
</tbody>
</table>
### Descriptive studies

**Table 5.5 - Language Development in deprived students - Descriptive**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the researcher</th>
<th>Title</th>
<th>Method/ Sample</th>
<th>Conclusions</th>
</tr>
</thead>
</table>
| 1   | Deshpande Shashi kal a (1985) | A critical study of the effect of the deprivation on the language ability of children studying in a municipal corporation school in standard 1st. A comparison with children in a private school and a village school. | Survey / 90 students | 1. Those who are seriously deprived are found to be affected more in all aspects of language ability.  
2. Socio-cultural deprivation of the child also hampers comprehension ability.  
3. Economic deprivation affects comprehension ability. |
2) The stimulating atmosphere is available more to higher middle class. They are followed by lower middle class children. The slum area children are the third and the corporation children are the fourth. |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1) At-risk students placed in first-grade classrooms offering strong instructional and emotional support had achievement scores and student-teacher relationships commensurate with their low-risk peers. 2) At-risk students placed in less supportive classrooms had lower achievement and more conflict with teachers.</td>
<td></td>
</tr>
</tbody>
</table>
Special features of present study as compared to related studies

Prof. Duman (2006) studied the effect of brain-based instruction to improve 6th grade students’ academic achievement in social studies instruction. But the present study was on 1st standard deprived students. The teacher–student talk in active learning class was studied by Martlew; Joan, Ellis; Sue, Stephen; Christine, Ellis; Jennifer. These studies were done in western countries whereas the present study is conducted on 1st standard Maharashtrian students.

Suja koshy (2008) tried to enhance the reading skills of advantaged and disadvantaged children of std 1. This study is related to linguistic skills in students. But the present study was intended to develop oral communication skills.

Researches by Devi (2001), Reddy (1988) highlighted the clear relation between socio-economic deprivation of children and its effect on their language development. All these studies were descriptive in nature. While, the present study was experimental, aiming at application of brain-based principles for development of oral communication skills.

While going through all these researches, the researcher gained the additional knowledge about the area of present research. The researcher also got insight about use of brain-based principles in language development, from all the above discussion it can be concluded that the problem chosen by the present chapter is completely new and not a replica of any other research work, done in India and abroad.

Special features of the present study
1. The present study is designed for enrichment of oral communication of 1st standard deprived students. For giving the various opportunities of oral communication the special program is developed using brain-based principles.
2. For planning of the oral communication activities, the theory of multiple intelligences is used.

3. The oral communication test for 1st standard deprived students is developed.

5.3 Method of research

Considering the objectives of the study experimental method was selected.

Pre-test post-test control group design was selected for the study. Graphical presentation is given below:
5.3.1 Variables

- Independent variable

Brain based program for enrichment of oral communication for 1st standard deprived students.
• Dependent variable

Oral communication of first standard students. This was measured in terms of scores on oral communication test prepared by researcher.

• Control of extraneous variables

1) Pretest on oral communication of first standard deprived students was same for experimental and control groups.

2) Post-test on oral communication of first standard deprived students was same for experimental and control groups.

3) Tests were administered and scored by the researcher to both the groups using uniform procedure.

4) Both the groups were selected from corporation schools located in same area. Hence, there was similarity in school syllabus, facilities and other education environment in the schools.

5.3.2 Sample

Two corporation schools namely, Kam. Harun Antao Jagtap Vidyalay and Kam. B.G. Jagtap Vidyalay from Pune city (Marathi medium) selected through incidental sampling. These schools were randomly assigned to controlled and experimental groups. All the 41 students in one division from morning shift of every school, of first standard (total 82) were involved as sample. All the 82 students were girl students.

5.3.3 Tools used for measurement
i) Pretest measuring oral communication skills (including semantic and syntactic structures used) of 1st std prepared by the researcher.

ii) A parallel post test measuring oral communication skills, (including semantic and syntactic structure used), of 1st std prepared by researcher.
Observation checklist prepared by researcher to note responses of oral communication skills of the students.

5.3.4 Development of test

As no oral communication test for first standard Marathi medium deprived students was available, researcher prepared parallel forms of pretest as well as post-test measuring oral communication skills.

Oral communication skills were analyzed into three major components:-
1) Learning skills 2) Conversational skills and 3) Knowledge of language.

Test items were developed considering these components. As the students were from 1st std., support material and visuals were used to facilitate the children to answer questions. The marking scheme and the evaluation rubric were prepared. Experts from the field of education were consulted to assure content validity of the test.

5.3.5 Try out

Actual try out of the test was done to test practicability. The try-out was conducted in two corporation schools.

Table 5.6 - Time table of Try-out

<table>
<thead>
<tr>
<th>Name of the school and No.</th>
<th>Date</th>
<th>Timings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. kai. H.anum antrao Jagtap school, Hingane Khuri, Pune</td>
<td>1 to 15 January 2009</td>
<td>8 to 8.45am</td>
</tr>
<tr>
<td>2. kai. B G. Jagtap vidyalay, Dattawadi, Pune</td>
<td>1 to 15 January 2009</td>
<td>9 to 9.45am</td>
</tr>
</tbody>
</table>
The tests were finalized after considering the suggestions of the experts and experiences of the try out.

5.3.6 Development of the program

The brain based program was prepared by researcher. The activities were decided on the basis of components of oral communication, the brain-based principles and the theory of multiple intelligences.

Functions of various parts and processes of brain were taken into consideration while developing the program. Some examples are given in the table below.

Table 5.7 – Specific organs and related activities

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the organ</th>
<th>General functions</th>
<th>Relation with oral communication</th>
<th>Related activities in present study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Neuron cells</td>
<td>Neurons communicate with one another and form networks by means of electrical and chemical signals</td>
<td>Dendrites receive any type of information from other cells. The main job of the axon is to send information to other cells.</td>
<td>The study gives the students opportunity to listen, think, sing, discuss, draw pictures etc.</td>
</tr>
<tr>
<td>2</td>
<td>Amygdala</td>
<td>The thalamus is sending information to the cortex; it involves in processing emotion.</td>
<td>Conversation about their homes. Opportunity to</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Hippocampus</td>
<td>It memorizes the listened words.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Listen the story or poem and question the answers. Listen the story / poem and ask the questions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Temporal lobe</td>
<td>It allows us to comprehend or interpret speech and to put words together in correct syntax when speaking.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>In every activity, the present study gives the students opportunity to listen, think, talk, communicate, ask questions etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Frontal lobe</td>
<td>Nearly all neural activity directing muscular movement originates in Broca’s area. This area is connected to Wernicke’s area in the temporal lobe. Before any speech</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>This whole study is designed to enhance the listening skills, thinking</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
the brain’s motor cortex in the frontal lobe. can be uttered, its form and the appropriate words must first be assembled in Wernicke’s area and then relayed to Broca’s area to be translated into the proper sounds. This information is then passed to the motor cortex for vocal production.

2) The prefrontal cortex plans for a better future, love, hate, thinking, feeling, etc.

| 6 | Left and right hemispheres | The left side of the brain controls the right side of the body and vice versa. The left hemisphere is much concerned with language. The right side is concerned with spatial matters, recognition of faces and many visual patterns and music. | Nearly all the activities are planned for giving the opportunities for two halves. Such as, ‘The organ’ is one of the categories in the present study. Observation, communication skills. |
In this way, activities were designed for the study.

The general brain based principles considered were,

The special training program included following seven categories very relevant to the age group of the students for giving exposure of oral communication through interactions with teacher as well as peers.


Considering the age group large amount of support material was used including pictures, picture books, story books, photographs. Five experts from the field of education and child psychology were consulted to assure content validity of the program before finalizing the program.

5.3.7 Implementation of program
The brain based oral communication program was implemented on the experimental group, between the school timings, i.e. 7 am to 12 noon every
day, except their period of examinations and vacations throughout the academic year.

Table 5.8 - Schedule of implementation of program

<table>
<thead>
<tr>
<th>Months</th>
<th>Program</th>
<th>Total school hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2009</td>
<td>Pretest (15 days)</td>
<td>15</td>
</tr>
<tr>
<td>August</td>
<td>Pretest (4 days), Category - My name (8 hours)</td>
<td>12</td>
</tr>
<tr>
<td>September</td>
<td>My surroundings - sky (14 hours), My home (6 hours)</td>
<td>20</td>
</tr>
<tr>
<td>October</td>
<td>My home (7 hours), My organs (7 hours)</td>
<td>14</td>
</tr>
<tr>
<td>November</td>
<td>My organs (6 hours), My school (6 hours)</td>
<td>12</td>
</tr>
<tr>
<td>December</td>
<td>My surroundings - road (12 hours), My surroundings - shops (4 hours)</td>
<td>16</td>
</tr>
<tr>
<td>January 2010</td>
<td>My surroundings - shops (5 hours), Post-test (12)</td>
<td>17</td>
</tr>
<tr>
<td>February</td>
<td>Post-test (10)</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>116</td>
</tr>
</tbody>
</table>

5.3.8 Tools used for statistical analysis.

i) For comparing mean scores of pretest and post-test of experimental group, ‘t’ test was used.

ii) For comparing mean scores of pretest and post-test of control and experimental groups, ‘t’ test was used.

iii) Qualitative analysis was done of the students’ oral communication done by researcher.
5.4 Analysis and interpretation of the data

5.4.1 Presentation of data

The mean scores of both the groups on pre and post test of oral communication are presented in table below.

Table: 5.9 - Mean scores of control group and experimental group on oral communication test

<table>
<thead>
<tr>
<th>Details</th>
<th>Pretest</th>
<th>Post test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group (N=41)</td>
<td>35.66</td>
<td>36.34</td>
</tr>
<tr>
<td>Experimental group (N=41)</td>
<td>36.34</td>
<td>37.98</td>
</tr>
<tr>
<td>Mean</td>
<td>35.66</td>
<td>36.34</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>3.87</td>
<td>3.41</td>
</tr>
</tbody>
</table>

The table shows that mean scores of control group and experimental groups on pre test are equivalent. It can be observed that increase in mean scores of experimental group from pretest to posttest is more as compared to that of control group. In order to observe at a glance the difference between the mean scores of experimental and control group, the scores are represented graphically in figure No.5.2.
Figure 5.2 Mean scores of pre test and post test of both the groups
5.4.2 Testing of hypotheses

Testing hypothesis no. 1

Research hypothesis no. 1: There will be significant difference between the mean scores of pretest and posttest of students from experimental group on oral communication test prepared by researcher after implementation of the brain based program.

For testing statistical significance directional hypothesis was converted into null form.

Null hypothesis: There will be no significant difference between the mean scores of pretest and posttest of students from experimental group on oral communication test prepared by researcher after implementation of the brain based program.

Mean scores of experimental group on pretest and posttest were analyzed with 't' test. The result is given in table 5.10 below.

Table 5.10: Results of ‘t’ test of mean scores on pretest and posttest of oral communication of experimental group.

<table>
<thead>
<tr>
<th>Test</th>
<th>Mean</th>
<th>N</th>
<th>S.D.</th>
<th>r</th>
<th>Degrees of freedom</th>
<th>t  value</th>
<th>significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>36.34</td>
<td>41</td>
<td>3.41</td>
<td>0.9</td>
<td>40</td>
<td>34.4</td>
<td>Significant at 0.01 level</td>
</tr>
<tr>
<td>Post test</td>
<td>44.61</td>
<td>41</td>
<td>2.83</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.10 shows that the obtained ‘t’ value is 34.4. The table ‘t’ value for df 40, is 2.42 at the 0.01 level of significance for one tailed test. The obtained t-value 34.4 is far greater than value 2.42, which is significant at 0.01 level of significance. Therefore, the null hypothesis is rejected and directional hypothesis is accepted. The increase obtained in the posttest scores of experimental group can be attributed to the implementation of brain based program on oral communication. It can be said that the brain program
prepared and implemented by researcher was effective to enrich the oral communication skills of 1st standard deprived students.

Testing equivalence of the group

To measure the equivalence of experimental and control group, ‘t’ test was used. In the table below, obtained coefficient of correlation has shown, along with obtained t value.

Table 5.11: Results of t test of mean scores of pre test scores on oral communication of control and experimental group.

<table>
<thead>
<tr>
<th>Pre test Scores</th>
<th>Mean</th>
<th>No</th>
<th>S.D.</th>
<th>r</th>
<th>Degrees of freedom</th>
<th>t value</th>
<th>significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>35.66</td>
<td>41</td>
<td>3.87</td>
<td>0.9</td>
<td>40</td>
<td>0.32</td>
<td>Non significant at 0.05 level</td>
</tr>
<tr>
<td>Experimental group</td>
<td>36.34</td>
<td>41</td>
<td>3.41</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.11 shows that the obtained t value is 0.32 for the degrees of freedom 40. The ‘t’ value in the table for df 40, is 2.70 at the 0.01 level of significance and 2.02 for 0.05 level of significance. The obtained ‘t’ value 0.32 is far less than value 2.70, and is non - significant at 0.05 level of significance. Therefore, null hypothesis is accepted. Both the groups do not differ on oral communication test. They are equivalent with respect to oral communication skills before experiment.

As both the groups are equivalent on pre test scores, only post test scores of both the groups were compared to study the effectiveness of the program.
Testing hypothesis no. 2

Research hypothesis no. 2: There will be significant difference between the post test scores of experimental group as compared to those of control group on oral communication test prepared by researcher after implementation of the brain based program.

For testing the statistical significance, directional hypothesis was converted into null form.

Null hypothesis: There will be no significant difference between the post test scores of experimental group as compared to those of control group on oral communication test prepared by the researcher after implementation of the brain based program.

Table 5.12: Result of ‘t’ test of post tests of control and experimental group on oral communication.

<table>
<thead>
<tr>
<th>Post test mean scores</th>
<th>Mean</th>
<th>N</th>
<th>S.D.</th>
<th>r</th>
<th>Degrees of freedom</th>
<th>t value</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>37.98</td>
<td>41</td>
<td>4.84</td>
<td>0.9</td>
<td>40</td>
<td>39</td>
<td>Significant of 0.01 level</td>
</tr>
<tr>
<td>Experimental group</td>
<td>44.61</td>
<td>41</td>
<td>2.83</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.12 shows that the obtained ‘t’ value 39 is for the degrees of freedom 40. The ‘t’ value in the table D for df 40, is 2.42 at the 0.01 level of significance for one tailed test. The obtained ‘t’ value 39 is far greater than value 2.42, and is significant at 0.01 level of significance. Therefore, the null hypothesis is rejected and directional research hypothesis is accepted. The increase obtained in the post test scores can be attributed to the implementation of brain based program on oral communication. It can be said that the program prepared and implemented by the researcher was effective to enrich the oral communication skills of 1st standard deprived students.
5.4.3 Results of qualitative analysis

The analysis of the numerical data proved the effectiveness of the brain-based program for enrichment of oral communication of deprived students. The main purpose here was to study the responses with a view to judge the quality of the responses and get insight into the conclusions drawn from the quantitative analysis.

All the students were minutely observed throughout the implementation of the program on the basis of five criteria given below.


1. Attention: Attention is a major aspect in communication. If any student did not like any activity, she used to refuse to take part and would not pay attention. But, after some days, while repeating the activity individually, she paid attention. In this way, initially 5 to 8% students did not pay attention in the beginning. But with repeated efforts 100% students paid attention towards the activity.

2. Eagerness towards activity: If the student shows eagerness towards activity, it reflects in her answers. Without eagerness, taking part in activity is mechanical. It is observed that 98% students showed eagerness towards activity.

3. Cognition: Without cognition, student is not able to give answers. It is observed that all the students understood all the activities. Only two activities were not understood by any of them. First was “Coin: new, creative name for any object.” And second was “Imagining: The organs are talking with each other.” Students enjoyed the conversation between two organs. But they were not able to imagine themselves as an organ.

4. Readiness for oral response: For communication, it is necessary to converse. 90% of students showed readiness for giving oral responses. 10% of students
were giving their responses after some efforts. All the students showed readiness for oral response while interacting individually with researcher. But, only 5% students performed in front of the class.

5. Enthusiasm shown while giving answers: This is a most important aspect in good communication. Only 5% students were ready and were showing great enthusiasm in each and every activity.
Table 5.13 - Analysis of the observations done by researcher during activities

<table>
<thead>
<tr>
<th>Category</th>
<th>Activity</th>
<th>Attention</th>
<th>Eagerness towards activity</th>
<th>Cognition</th>
<th>Readiness for oral response</th>
<th>Enthusiasm shown while giving answers</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My name</td>
<td>Tell your name.</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>One of the activity, they enjoyed most. A gain and again they were recalling the meaning.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Discussion</td>
<td>100%</td>
<td>100%</td>
<td>1.100%</td>
<td>1.100%</td>
<td>1.90%</td>
<td>Students told</td>
<td></td>
</tr>
</tbody>
</table>

**Percentage of students**
2. **Coin**: new, creative name for any object.

<table>
<thead>
<tr>
<th>My Home</th>
<th>Discussion of festival celebrations</th>
<th>100%</th>
<th>100%</th>
<th>100%</th>
<th>100%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Make the act: mother, father, infant etc</td>
<td>100%</td>
<td>5%</td>
<td>100%</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Various names of the objects, but no one could coin new, creative name for any object.

This was a favorite topic. So, they talked a lot about new dresses, food etc.

Some students enacted mother, grand father, or a baby. But some students felt shy, hence they didn’t respond in spite of
encouragement from researcher.

| 3. My organs | Imagine and tell: The organs are talking with each other. As, hands and teeth, tongue and stomach. | 100% | 100% | 0% | 0% | 0% | They enjoyed the conversation between two organs. But they were not able to imagine themselves as an organ and communicate. |
| 4. My school | Role play-school | 100% | 5% | 5% | 5% | 5% | Very few students played this game. But most of the students didn’t take part. |
| 5 a. My surrounding - Road | See the picture of a village and ask the questions about | 100% | 100% | 100% | 98% | 10% | The students described the objects minutely. They provided |
| 5b. My surroundings - shop | Imagine: If I am a road, if I am a shop | 100% | 100% | 100% | 0% | 0% | Some students could imagine, but most of the students could not imagine and go into the role. |
| 5c. My surroundings - The sky | Conversation about the sky in the night | 100% | 100% | 100% | 90% | 0% | All of the students talked about darkness of the night, moon, full moon, stars. Some students observed the night sky and described it another day with some more details. |
5.5 Conclusions

On the basis of statistical analysis of data, the following conclusions could be drawn. (Limited to the sample under consideration)

1. There was significant increase in post test scores as compared to pretest scores of experimental group on oral communication after implementation of brain based program. Hence, it can be concluded that the brain based program prepared and implemented by researcher proved to be effective to enrich oral communication of the deprived students of 1st std.

2. There was significant difference between the post test scores of experimental group as compared to control group. Hence, it can be concluded that the brain based program prepared and implemented by researcher proved to be effective to enrich oral communication of the deprived students of 1st std. as compared to regular day by day teaching in corporation schools.

Qualitative analysis shows that,

3. Students communicate more effectively when brain based principles such as, joyful atmosphere, cognition, emotions, sensory inputs, whole brain learning, music, movement, imagination, creativity are used.

5.6 Suggested topics for further study

- The application of brain based learning in co-educational classroom and find its effectiveness.

- The brain based program for enrichment of oral communication on 2nd, 3rd or 4th standard students.

- The comparison of achievement of deprived and non - deprived class after implementing brain based learning program.
• Development of brain based program on other linguistic skills, such as - listening skills, reading skills, writing skills and study effectiveness.

• Training teachers about brain based learning and study effects on performance.

5.7 Recommendations

Recommendations for teachers

• As per brain based findings, positive emotions play important part in learning. Teachers should create joyful environment in classroom. The classroom should be totally stress-free. Such environment will enhance their learning, in general and oral communication in particular.

• Students like to interact with teachers about their personal life. Teachers should listen to them. It will be useful for good student-teacher relationship. It will encourage students for their enrichment of oral communication.

• Teachers should involve variety of activities in curriculum transaction. It will stimulate the left and right brain. It will also help for cognition and memory.

• Teachers should involve varied activities and learning experiences to cater for multiple intelligences.

Recommendations for schools

• Brain stimulates while listening to music. School administration should allow and encourage teachers to use music in classroom teaching.

• Field trips are effective for better learning and provide opportunity for interactions in stress free atmosphere. School administration should arrange field trips.

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Recommendation for textbook bureau

- Most of the students in our state do not get books, other than text books. Therefore text books should be more enjoyable and child-friendly. It should include more pictures, stories, poems, activities and games.

Recommendations for teacher educators

- Teacher educators should plan the curriculum for D.Ed. and B.Ed. colleges based on brain based learning. It will help students for joyful learning.

Recommendation for the institutions of children.

- The institutions such as, different type of schools, day care centers, activity centers should pay attention to enrich oral communication skills of the children.