

Full Length Research Paper

Impact of intervention on learning abilities of institutional children

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Accepted 12 October, 2010

The present study was under taken during 2003 - 2005 with the objectives to study the level of learning abilities and study the impact of intervention on learning abilities among children residing in juvenile institutions of Dharwad division in Karanataka. Level of scholastic ability and scholastic problems of children was assessed before intervention. School based intervention program focused on improving reading, writing and arithmetic abilities of children. Results indicated that nearly 50% of institutional children were poor in reading and arithmetic abilities and nearly one third (23%) were poor in writing. Further school based intervention had significant effect in reducing reading, and writing difficulties and improved their ability to solve arithmetic sums except graded multiplication and division sums.

Key words: Learning abilities, intervention, institutional children, school.

INTRODUCTION

Academic skills such as reading, writing and arithmetic/numeric are critical to a child's success in school and later in life. These skills are highly valued and are important for social and economic advancement (Snow et al., 1998). However, learning these skills is difficult for many children and experience significant delays in one or more academic areas. These difficulties of children seriously affect their academic and personal performance and achievement (Rozario, 1991).

The problems may be wholly or partly due to factors in the child such as sensory motor handicaps, temperamental traits, psychological problems which are associated to learning difficulties or environmental factors such as psycho social stressors like parental deprivation, neglect and abuse in the context of the family and poor educational system contribute to learning difficulties.

The experience of physical or psychological abuse during childhood has a long lasting and deleterious effect on the child's wellbeing. There are substantial evidences that both neglected and abused children lack perseverance, enthusiasm, interest, creativity and become inattentive, uninvolved and find difficulty in

comprehending the subject matter particularly in the areas of language and mathematics leading to scholastic backwardness (Trickett and McBride-Chang, 1995; Wodarski et al., 1990). In the long run these problems often precipitate leading to serious consequences such as runaways from home and become juvenile delinquents. The childhood history of institutional children indicated that substantial proportion (Segal and Ashtekar, 1994; Deviprasad, 2001) were neglected and physically abused by their parents and others responsible for their care. These children are left helpless, abandoned, neglected by their parents\caregivers due to social, economic, and personal reasons and they are deprived of one or more necessities of life. Early separation from parental care, love, affection, warmth, security, acceptance during childhood disrupts their normal development leading to adaptational failure. If these difficulties of children are neglected which can seriously affect their academic and personal performance and achievement (Rozario et al., 1994). On the other hand, children whose problems are diagnosed early and treated appropriately can overcome or learn and eliminate their disabilities (Royer, 2004). Intervention programmes are the key for preventing or minimizing the learning difficulties in majority of school going children regardless of the underlying causes learning problems and enhance

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the academic functioning of a child (Annon, 2004). Therefore it is necessary to restore their normal functioning and create interest in the academic field.

Objective of study

1. To understand the family background of institutional children.
2. To assess the level of learning abilities.
3. To study the impact of intervention on learning abilities among institutional children.

METHODS

Sample

The population for the study comprised children residing in juvenile institutions in Belgaum division of Karnataka state. Among the 9 institutions in the division 4 juvenile institutions that is, 2 for boys (Gadag and Khanapur) and 2 for girls (Hubli and Saundatti) were selected for the study. 255 children in these institutions Hubli (144), Saundatti (33), Gadag (52) and Khanapur (26) who were neglected, physically and multiply abused by their parents/caregivers. Hubli Juvenile institution was purposively selected for providing school based intervention program to study the improvement if any regarding learning difficulties of institutional children as they were more number of children compared to other institutions Children attending classes in the premises of juvenile institution was the major criteria considered while selecting children for intervention. In total there were 76 children studying in standard 1 - 7 and based on their pre-assessment of learning abilities, 19 children studying in standard 6 were selected for the intervention as there was more number of children rated poor and very poor in learning abilities.

Tools

Self structured questionnaire

Pre-tested questionnaire formed the broad frame work for eliciting required information for the study. The questionnaire consisted of two-parts. The first part had items to collect information about the institution (name of the juvenile home, strength of children), children (age, gender, caste, locality, place where they found, and mode of admission) and their family background (family structure, size of family, educational and occupational status of parents and vices of the father). The second part of the questionnaire consisted statements to identify four types of neglect (physical, medical, educational and emotional) and eight types of physical abuse such as

pushing, screwing ear or thigh, throwing something, hitting, beating, slapping, kicking, burning/scalding were studied. These statements were prepared with the help of the literature related to child abuse.

Academic competence scale: A sub scale

Level of scholastic skills of the children was measured using academic competence scale developed by Gresham and Elliot (1990). The scale had 6 items. In the present study, four related items were selected to measure reading, writing, arithmetic abilities as well as overall academic performance of the children. Each item of the scale was independent in explaining academic skill. The items were rated on five point scale as very poor, poor, fair, good, very good with a score of 1 - 5, respectively.

Raven's progressive matrices

Raven's progressive matrices test (1971) is a tool designed to measure intellectual capacity of children. The test consisted of 60 problems divided into 5 sets A, B, C, D and E with 12 problems in each set and each set begins with easy problems and ends with difficult ones. A score of one was given for correct answer and the total score a child could obtain was 60 and minimum being zero. Thus, child's total score provides an index of intellectual capacity. On the basis of raw score, children were categorized into 5 groups ranging from 5th percentile (intellectual defective) to 95th percentile (intellectual superior), children's whose score lies between 25 and 50th percentile were considered as intellectually average.

National institute of mental health and neuroscience (NIMHANS) index level – II

Scholastic problems of children were assessed using NIMHANS Index level II developed by Kapur et al. (1991). Index consists of reading, writing and arithmetic tests:

(i) Test of reading

The test had two passages for testing reading ability. One corresponding to the current class the child is studying, the second one year below the current class. The check list of reading difficulties was used to assess the errors made by children. It measured the frequency of seven types of errors such as reading word by word, repeating words, ignoring punctuations, adding words, omitting words, difficulty in phonic cues and reversing words.

(ii) Hand writing test

To test the writing ability a passage pertaining to the current class the child was studying in was given for copying. NIMHANS checklist of handwriting difficulties (Kapur et al., 1991) was used to analyze the errors made by the child. It measures the frequency of six types of errors such as no space between words, missing a letter, substituting a letter, reversing a letter, adding a letter and wrong capitals.

(iii) Test of arithmetic

NIMHANS Diagnostic Arithmetic test (Kapur et al., 1991) was used to test the arithmetic ability of the children. The test had 44 sums consisting 4 mathematical operations each carrying 5 simple digit addition, simple digit subtraction, simple division, multiplication, graded addition, graded subtraction, graded multiplication, graded division and 4- miscellaneous. To a correct sum score '1' was given and wrong sum carried '0'. The maximum score a child could obtain was 24 and minimum of 0.

Educational package

The educational package for remedial teaching was developed by the investigator to improve the academic abilities of children in the areas of arithmetic and language (reading and writing). The package was developed on similar lines as that of Rozario (1991) who has developed intervention strategies for scholastic backward children of 5th standard. The package consisted of three exercises to improve reading, writing and arithmetic abilities of children:

(i) Reading exercises

The package consisted of reading exercises to teach common words being repeated often in the textbook (sight words) and pronunciation (phonic skills). A list of 58 common words was prepared with help of 6th standard English textbook.

Rosner's decoding exercises and English alphabet chart (translated from Kannada vowels) were used to teach phonic skills. Rosner's decoding exercise has 108 units with each unit consisting of a set of words organized into 4 levels (A, B, C and D) of increasing difficulty. The words in level-A of each decoding unit are short-one syllable. The decoding unit occupied a major portion of the word and it is joined with a single consonant only (For example, 'an'- ban). The word in level – B, continues to be single syllable, but the decoding unit is joined with more than one consonant. Thus, the words are longer at this level than they are at level – A (For example, hand).

The words in level – C words are two syllables long, with the decoding unit appearing in one of the two syllables and the other syllable varying according to the word (For example, candle). Whereas words in level – D are three or more syllable long and the decoding unit occurs in one of the syllable and other syllables vary from word to word in random fashion (For example, manager). The exercises in the present package consisted words listed in level A and B in each decoding unit as they were more suitable to 6th standard level.

(ii) Handwriting exercise

Chart on pre writing skills was used to teach basic pre writing skills and to demonstrate correct way to writing alphabets in four, two and single line notebooks.

(iii) Mathematics exercise

The intervention package consisted exercises on four mathematical operations such as addition, subtraction, multiplication and division. These were prepared with the help of millennium mathematics series (1 - 4) prepared according to the New Educational Policy by Naidu (2002). Each chapter on mathematical operation includes brief introduction, illustrations, solved examples and drilling exercises.

MATERIALS AND METHODS

Data was collected with the help of structured schedule. Information regarding each institution such as total number of children in each institution and strength of children in each class was collected by interviewing respective institution teachers. Further information about children and their background information were collected by referring to case files of each child and interviewing probation officers. In depth interview was conducted with children to collect information about abuse and other information which was not available in their case files and also to verify information contained in their case files.

Simultaneously information about level of learning abilities of children was collected from the respective class teachers and academic performance of children was collected by referring to the school registers. Further Hubli Juvenile institution was purposively selected for intervention because of more number of children compared to other institutions. This was followed by selection of children for intervention study. Children attending classes in the premises of juvenile institution was the major criteria considered while selecting children. A total of 76 children were studying in 1 - 7th standard and based on their pre-assessment of learning abilities, 19 children studying in 6th standard were selected for the intervention as there was more number of children rated poor and very poor in learning abilities. Before intervention, intelligence quotient (IQ) of the children was assessed in order to have homogeneity in the intervention group. Raven's progressive matrices (RPM) scale was administered to each child and children who scored below 25th percentile were deleted (Appendix-III). Two children who scored below 25th percentile were deleted from the study. A total of 19 children were selected for the intervention study. Further pre-assessment regarding scholastic problems of children

was assessed by administering NIMHANS Index level II scale developed by Kapur et al. (1991) to individual child.

The school based intervention program for the children which was carried out by the investigator in the form of remedial education. The intervention focused on language (reading and writing) and arithmetic skills of the children. The intervention program consisted 72 sessions (nearly six months) which were completed by visiting the juvenile institution three days in week. The first day of the visit, children were taught reading skills, followed by writing skills and mathematics. Each intervention session consisted of 60 - 70 min duration.

Intervention on reading exercises focused on teaching sight words followed by phonic skills. Sight words were taught with the help of flash cards prepared for the purpose. During each session children were taught 4 to 5 new words. These words were written on flash cards which were read out first slowly one by one and simultaneously the words were written on the blackboard by the investigator. Then children were made to read aloud each word 5 times. Later they were made to write each word 10 times in their notebook. At the end of each session children were provided with feedback of all the words taught during the session.

After completion of these exercises, phonic skills were taught using Rosner's decoding exercises. First decoding unit-1 was taught as a.n/means/an. This was pronounced by the researcher and children were made to repeat it. Then children were taught to connect 'b' sound to /a/. After this exercise, words in unit-1 of level-A were taught one by one by reading slowly and writing them on the blackboard. Then children were made to read aloud all the words one by one along with the researcher. Then next set of words in level-B of the same unit were taught. Similarly, all the words in level A and B of the remaining units were taught using the same procedure in the following sessions.

Four basic mathematical operations such as addition, subtraction, multiplication and division along with place value system were taught with the help of prepared exercises. These were taught using concrete materials like pictures and abacus method. At abstract level, concepts were taught by encouraging children to do calculations mentally without any aids and simultaneously emphasized simple rules corresponding to each mathematical operation. After completion of each session, children were made to solve a set of sums during each remedial session and this was followed by a set of sums for home work.

Further, intervention sessions on improving handwriting were emphasized by copy writing. Children were made to write one paragraph from their textbook during each session. Further the effect of intervention was studied using NIMHAN's index level-II tool.

RESULTS

The background of characteristics 148 institutionalized children is presented in Table 1. It is evident that 52.03% of children were between 13 - 15 years and the remaining 47.97% were between the ages of 10 - 12 years. Gender wise distribution indicated that 35.81% were boys and 64.19% were girls. The family background information revealed that none of the children were from forward caste families. Relatively higher proportion (63.51%) of children was from other backward castes followed by schedule caste/schedule tribe (36.49%) and other backward (18.24%) castes. Furthermore, with regard to the family size, majority of them were from medium size family (82.43%) and less children were from small (11.49%) and large (6.08%) size families. The literacy

level of the parents indicated that 26.21% of fathers and 67.50% of mothers were illiterate, respectively. Whereas nearly three-fourth (73.79%) of fathers and one-third (32.50%) of mothers, respectively, had only primary education. The occupational level of parents indicated that 20.39% of fathers were unemployed, 26.21% were laborers, 42.72% were semi skilled workers and 10.68% were skilled workers. In case of mothers, more than half (54.17%) were unemployed, 27.50% were laborers and the remaining 18.33% were semi skilled workers. Data on parental existence revealed that about 21.62% of children had no parents, 7.43% of them had only mothers, 10.14% of them had only fathers, 47.97% of them had both parents and 12.84% of children had reconstituted family with step mother. Further 57.43% of fathers were alcoholic and 42.57% were non alcoholic.

The results of the study (Table 2) indicated that nearly 50% of institutionalized children were rated as poor in reading and arithmetic abilities while one-third of them were rated as poor in writing ability by the teachers.

The present study showed improvement in learning abilities of children by significantly reducing reading and writing difficulties (Table 3). Comparison of pre and post intervention scores in language abilities of children revealed statistically significant ($P < 0.01$) difference indicating that at post intervention children had significantly lower mean scores for reading difficulties such as pronouncing, adding words, omitting words, repeating words, ignoring punctuations and in writing difficulties such as proper space between lines, missing letters, ignoring punctuations, reversing letters and writing wrong capitals as compared to mean scores at pretest.

The results presented in Table 4 revealed the comparison of mean difference between pre-test and post-test scores of children in arithmetic operations. It could be seen that at post intervention children had significantly higher mean scores in simple, graded, fraction addition operations (4.38, 3.77 and 0.88, respectively), simple, graded, fraction subtraction operations (3.0, 2.38 and 0.95, respectively), simple and graded multiplication operations (2.55 and 0.66) and simple and graded division operations (2.94 and 1.77).

It is obvious from the finding that majority of institutional children are poorly equipped with scholastic skills which are necessary for achieving academic success. However, this study results proved that intervention provided through package was considerably effective in reducing scholastic problems of children. Greater gains were observed in the areas of reading, writing and arithmetic except fractions. This suggests that there is little doubt that abused children are under achievers and their apparent backwardness can be improved by intensive efforts. Academic lag continues to increase with time if no assistance is provided and there is a risk of the child not completing the school. Hence there is a need for enriched school program to create interest in academic field among students in all the juvenile institutions.

Table 1. Background characteristics of institutionalized children N=148.

| S/n | Characteristics | Category | Number | Percentage |
|---------------------------|---------------------------|-------------------------------------|--------|------------|
| 1 | Age | Younger (10-12 years) | 71 | 47.97 |
| | | Older (13-15 years) | 77 | 52.03 |
| 2 | Gender | Boys | 53 | 35.81 |
| | | Girls | 95 | 64.19 |
| 3 | Caste | Forward caste | - | - |
| | | Other backward caste | 94 | 63.51 |
| | | SC/ST | 54 | 36.49 |
| 4 | Family size | Small (<4) | 17 | 11.49 |
| | | Medium (5-7) | 122 | 82.43 |
| | | Large (>8) | 9 | 6.08 |
| Educational level | | | | |
| 5 | a) Father (N=103) | Illiterate | 27 | 26.21 |
| | | primary (up to 4 th std) | 76 | 73.79 |
| | b) Mother (N=120) | Illiterate | 81 | 67.50 |
| | | primary (up to 3 rd std) | 39 | 32.50 |
| Occupational level | | | | |
| 6 | a) Father (N=103) | Unemployed | 21 | 20.39 |
| | | Laborers | 27 | 26.21 |
| | | Semi skilled workers | 44 | 42.72 |
| | | Skilled workers | 11 | 10.68 |
| | b) Mother (N=120) | Unemployed | 65 | 54.17 |
| | | Laborers | 33 | 27.50 |
| | | Semi skilled workers | 22 | 18.33 |
| | | Skilled workers | - | - |
| 7 | Parental existence | No parents | 32 | 21.62 |
| | | Mother only | 11 | 7.43 |
| | | Father only | 15 | 10.14 |
| | | Both parents | 71 | 47.97 |
| | | Father and step mother | 19 | 12.84 |
| 8 | Alcoholic habit of father | Alcoholic | 85 | 57.43 |
| | | Non alcoholic | 63 | 42.57 |

DISCUSSION

The study indicated that nearly 50% of institutional children were poor in academic skills such as reading, writing and arithmetic skills (Table 2). The reason for poor learning abilities of children may be that almost all children studied were from culturally deprived background (Table 1) and are vulnerable to certain kinds of disadvantages. Several conditions such as parental deprivation, lack of stimulation and encouragement by

parents, lack of early school and prolonged discontinuation of school before institutionalization, several unpleasant childhood experiences such as neglect, physical abuse and exploitation by parents/caregivers might have limited their opportunity to learn scholastic/learning skills necessary for formal education. Ushashree and Pushpa (1980) found that socially disadvantaged children were inferior in scholastic achievement and academic adjustment.

The results regarding intervention present showed

Table 2. Level of learning abilities of children

| Learning abilities | Level | Institutions | | | | Total N=148 |
|--------------------|-----------|---------------|---------------|------------------|-------------------|----------------|
| | | Hubli n=36 | Gadag n=76 | Khanapur n=19 | Saundatti n=17 | |
| Reading | Good | 3 (8.33) | 4 (5.25) | - | 4(21.05) | 11(7.43) |
| | Average | 14 (38.89) | 20 (26.32) | 9 (52.94) | 6 (31.58) | 49 (33.11) |
| | Poor | 14 (38.89) | 34 (44.74) | 5 (29.41) | 5 (26.32) | 58 (39.19) |
| | Very poor | 5 (13.88) | 18 (23.68) | 3 (17.65) | 4 (21.05) | 30 (20.27) |
| Writing | Good | 7 (19.44) | 16 (21.05) | - | 3 (15.79) | 26 (17.57) |
| | Average | 20 (55.56) | 46 (60.52) | 12 (70.59) | 10 (52.63) | 88 (59.46) |
| | Poor | 7 (19.44) | 14 (18.92) | 5 (29.41) | 6 (31.57) | 32 (21.62) |
| | Very poor | 2 (5.56) | - | - | - | 2 (1.35) |
| Arithmetic | Good | 6 (16.67) | 5 (6.57) | - | 1 (5.26) | 12 (8.11) |
| | Average | 10 (27.78) | 15 (19.73) | 4 (23.52) | 4 (21.05) | 33 (22.30) |
| | Poor | 15 (41.67) | 39 (51.32) | 8 (47.05) | 7 (36.84) | 69 (46.62) |
| | Very poor | 5 (13.89) | 17 (22.36) | 5 (29.41) | 7 (36.84) | 34(22.97) |

Figures in parenthesis indicate per cent ages. NS – Non significant.

improvement in learning abilities of children by significantly reducing reading and writing difficulties (Table 3). This might be attributed to remedial approach which was used in teaching children. The remedial approach in the study was based on the diagnostic assessment of each child and children were taught in small group with emphasis on individual attention. To improve reading ability, importance was given to improve phonic skills and letter word combination. In addition, drilling exercises were given to teach basic sight words as many children had difficulty in reading simple words. With regard to writing, practice in pre-writing skills and copy writing of one paragraph everyday in single line notebook was emphasized. Children were involved in monitoring their involvement in the task. When students monitored their own activity they could quickly and easily change their writing performance. Similarly Castle et al. (1994) also observed significant effect of phonetic awareness instruction on spelling and reading performance of 5th standard children which was given to the children at school entry and Kannaiyam (2002) found higher achievement in post test group in prewriting skills when children were taught to draw straight lines by connecting dots, practicing various strokes that is lines, circles, curves in clockwise and anti clock wise direction and practice them among rural students studying in 1st standard of Thanjavoor district.

Further study also revealed significant improvement in the ability of children to do arithmetic operations such as simple addition, subtraction, multiplication, division as well as graded addition and subtraction (Table 4). This may be because during intervention children were first taught the concepts at the concrete level, then they were

taken to semi-concrete level and given adequate drilling exercises and finally children were encouraged to do the sums without any teaching aid which might have led to better understanding about the arithmetic concepts among children. The mean score for the group before intervention indicated that they were able to answer only 18 problems and after the intervention they were able to answer an average 25 problems, indicating that the package used for intervention purpose was effective. Thus, the school based remedial education facilitated better comprehension as well as retention of the subjects. Similar results were found in a study conducted on scholastic backward children (among 11 year old children studying in 4th standard) by Rozario (1991). The results of the study conducted by Mudalingammanavar (2004) on academic competence among children who were academically backward with behavioral problems revealed significant improvement in reading, writing, arithmetic and intellectual functioning. The planned activities such as attention enhancing activities among experimental children enhanced the skills of perceiving, discriminating the numbers, words and situations correctly and Valivambal (2002) noticed the use of graded, activity-based learning involving games, songs, individual and group activities considerably improved the competence of 2nd and 3rd standard students to do addition of 2 digit numbers. This might be attributed to remedial approach which was used in teaching children. The remedial approach in the study was based on the diagnostic assessment of each child and children were taught in small group with emphasis on individual attention. Similar results were reported by castle et al. (1994) and kanniyam (2002). Thus, intervention had

Table 3. Mean scores of children in language abilities before and after intervention.

| Language abilities | Difficulties | Mean scores | | 't' value |
|--------------------|------------------------|----------------------|----------------------|-----------|
| | | Pre-test | Post-test | |
| Reading | Pronouncing difficulty | 32.05 (± 7.61) | 27.61 (± 7.55) | 7.68 ** |
| | Add words | 8.56 (± 2.09) | 5.17 (± 1.61) | 18.49 ** |
| | Omits words | 8.44 (± 1.62) | 4.83 (± 1.58) | 21.95 ** |
| | Repeats words | 9.83 (± 2.59) | 5.72 (± 2.19) | 20.95 ** |
| | Ignore punctuation | 15.94 (± 3.82) | 11.77 (± 3.74) | 34.35 ** |
| Writing | Space between lines | 28.83 (± 2.66) | 18.61 (± 2.95) | 22.50 ** |
| | Missing letters | 4.88 (± 0.83) | 2.50 (± 0.70) | 20.20 ** |
| | Substituting letters | 5.28 (± 1.48) | 2.38 (± 0.91) | 13.61 ** |
| | Reversing letters | 2.16 (± 0.61) | 0.50 (± 0.70) | 10.30 ** |
| | Wrong capitals | 5.67 (± 1.64) | 2.66 (± 1.71) | 15.15 ** |

** Significant at 0.01 per cent level.

Table 4. Mean scores of children in arithmetic operations before and after intervention.

| Arithmetic operations | Difficulties | Mean scores | | 't' value |
|-----------------------|-------------------------|----------------------|----------------------|-----------|
| | | Pre-test | Post-test | |
| Addition | Simple addition | 3.50 (± 0.50) | 4.38 (± 0.50) | 11.66 ** |
| | Graded addition | 3.30 (± 0.47) | 3.77 (± 0.42) | 3.68 ** |
| | Fraction addition | 0.33 (± 0.47) | 0.88 (± 0.70) | 4.13 ** |
| | Total | 7.06 (± 1.20) | 8.88 (± 1.13) | 11.00 ** |
| Subtraction | Simple Subtraction | 2.77 (0.45) | 3.00 (± 0.68) | 4.57 ** |
| | Graded Subtraction | 1.77 (0.64) | 2.38 (± 0.50) | 5.16 ** |
| | Fraction Subtraction | 0.44 (0.50) | 0.95 (0.80) | 3.00 ** |
| | Total | 4.27 (± 1.20) | 6.38 (± 1.19) | 8.75 ** |
| Multiplication | Simple multiplication | 1.66 (± 1.53) | 2.50 (± 0.51) | 8.00 ** |
| | Graded multiplication | 1.16 (± 0.38) | 1.67 (± 0.59) | 4.12 * |
| | Fraction multiplication | 0.56 (± 0.50) | 0.56 (± 0.50) | 0.00 NS |
| | Total | 3.17 (± 0.98) | 4.77 (± 1.16) | 9.79 * |
| Division | Simple division | 2.33 (± 0.47) | 2.94 (± 0.72) | 5.16 ** |
| | Graded division | 1.33 (± 0.47) | 1.77 (± 0.72) | 3.68 ** |
| | Fraction division | 0.61 (± 0.51) | 0.83 (± 0.61) | 1.71 NS |
| | Total | 4.22 (± 1.30) | 5.50 (± 1.61) | 6.55 ** |
| | Grand Mean | 19.82 (± 1.31) | 25.52 (± 1.79) | 13.81 ** |

* Significant at 0.05 percent level, ** Significant at 0.01 percent level and NS- Non significant.

significant effect in improving the ability of children to do arithmetic operations except fraction multiplication and division operations. This may be because during intervention children were first taught the concepts at the concrete level, then they were taken to semi-concrete level and given adequate drilling exercises and finally children were encouraged to do the sums without any teaching aid which might have led to better

understanding about the arithmetic concepts among children. Thus, the school based remedial education facilitated better comprehension as well as retention of the subjects. Similar results were found in a study conducted on scholastic backward children (among 11 year old children studying in 4th standard) by Rozario (1991). Valivambal (2002) noticed the use of graded, activity-based learning involving games, songs, individual

and group activities considerably improved the competence of 2nd and 3rd standard students to do addition of two digit numbers.

Conclusion

It is obvious from the finding that majority of institutional children are poorly equipped with scholastic skills which are necessary for achieving academic success. However, research results proved that intervention provided through package developed by the researcher was considerably effective in reducing scholastic problems of children. Greater gains were observed in the areas of reading, writing and arithmetic except fractions. This suggests that there is little doubt that institutional children are under achievers and their apparent backwardness can be improved by intensive efforts. Academic lag continues to increase with time if no assistance is provided and there is a risk of the child not completing the school. Hence there is a need for enriched programme with variety to enhance interest in academic field among students in all the institutions. Teachers should create rich learning environment and encourage students to participate actively in the process of teaching learning programme. They must develop the skills in preparing teaching aids by using indigenous low cost materials and also to make use of the available teaching materials, picture books, charts in the classrooms to sustain interest in learning process among children. Even with efforts, some children may fail to achieve satisfactory progress. Such children require supplementary services like tutorial programmes by professional teachers, group counseling and personal skill development classes to provide opportunities for developing skills and supervise children studies regularly. Hence there is a need for enriched school program to create interest in academic field among students in all the juvenile institutions.

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