Investigating the Reading Efficacy Through the Neurological Impress Method on the Mentally Retarded Male Students' Reading Development in First Year of Professional Skills Course in Boroujerd City

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Abstract: This study was conducted with the aim to determine the effectiveness of Neurological Impress Method on the mentally retarded male students' reading development in first year of professional skills course in Boroujerd city. In this research, the experimental pretest-posttest plan with the control group was used. Statistical population of this study contained the first year male students in professional skills course in Boroujerd city. 30 students were randomly selected from this population and were classified into two 15-individual groups, one which was the experimental group and the other was the control group, and the Neurological Impress Method (NIM) was used for the experimental group, but the control group was educated by the usual method. It is worth noting that the pretest of reading ability was taken before education on both groups and the posttest of reading ability was taken on both groups after 16 sessions of education. The tool used in this study consists of two parallel researcher-made forms of reading ability test. Data analysis of statistical tests indicated that the students, educated with the Neurological Impress Method in the professional skills course, have the significant difference with the control group in terms of fluent and speed reading, but this difference is not significant in terms of comprehension.

Key words: Neurological Impress Method, reading development, mental retarded, professional skills course.

INTRODUCTION

Exceptional students is the student who has obvious difference with most of his classmates physically or in terms of mental and behavioral characteristics and the exceptional education is more appropriate for him than the regular education (Seif-Naraghi and Naderi, 2003). A group of exceptional students included the children with cognitive problems and they have been named as mentally retarded children or the children with significant mental disabilities. (Kakavand, 2006) American Psychiatric Association (APA) (2000) defines the mental retardation as follows. The mentally retarded person has the Intelligence Quotient ranged from 50-55 to approximately 70 in addition to the constraints at least in two areas of consistency skills (such as self-care and communication), and the age of its prevalence is before the age 18 (Troller, 2002). The main objective in educating the mentally retarded children is to help them to develop their potential abilities to the highest degree, but since there is a strong relationship between the intelligence and educational achievement, there is no doubt that they are more retarded in the field of expectations which can be expected from a certain mental age and their development in the field of reading is significant (Done, 1973).

Studies conducted by Merrill BENT et al indicate that like other children, who have normal intelligence, generally the mentally retarded children can learn reading proportional to their own age, but the reading-teaching programs for this children should be analyzed and teaching to read be moderated about them in order to utilize programs according to the level of abilities. Changing their teaching methods is one of these changes and moderations. Neurological Impress Method (NIM) is one of these methods of teaching to read. Hecklman (1969) explains that a NIM is a multi-sensory approach to teach reading in which the verbal memory is affected based on the natural processes. NIM is an approach which is formed by Hecklman and a number his following partners based on consistency between the teacher and student (Flood and et al, 2005) In this approach, the teacher and student hold a book or any other text together while the student is sitting slightly ahead of teacher and the teacher sits next to the student's dominant ear. In this way, the teacher speaks without any intermediate in student's turn while moving his finger along each row and below every word and they read the content together eloquently and fluently and only stop in places where there are written punctuations. (Gerald Wallace and James McLoughlin; translated by Monshi-Toosi, 1997) Hecklman recommends the teachers for providing the positive reinforcement during the training methods by NIM approach because this way encourages the student (Flood and et al, 2005). About the effectiveness of this approach in the field of reading in Iran, the researchers have not found any research and there are only a few numbers of foreign studies in this regard and Gerald Wallace and James McLoughlin have mentioned this scarcity in their book entitled as "Learning Disabilities". A few studies have been reported in the books and texts about applying this approach (Neurological Impress). In confirming Gerald Wallace and James McLoughlin's point of view, Flood and et al
(2005) argue that the research about the effectiveness of NIM, which has been one of major methods in the field of fluent reading during 1960 to 1980, has been mysteriously disappeared from research literature during the past decades. But this disappearance from the world publications is not necessarily with the meaning of quitting the work and attempt in this regard. Given the lack of studies in the field of reading by the Neurological Impress Method (NIM) in our country and a few studies in this regard outside our country, the researchers have sought to investigate its effect on mentally retarded students' reading development in professional skills course by using this method. The main objective of this study is to investigate the efficacy of reading by the Neurological Impress Method on the mentally retarded students' reading development in the professional skills course; and the following hypotheses have been developed in order to achieve this objective.

1 - Neurological Impress Method is effective in enhancing the mentally retarded students' comprehension scores of in the professional skills courses.
2 - Neurological Impress Method is effective in enhancing the mentally retarded students' fluent reading scores of in the professional skills courses.
3 - Neurological Impress Method is effective in enhancing the mentally retarded students' speed reading scores of in the professional skills courses.

Methodology:

Population, Sample and Sampling Method:
Statistical population for this study included all first grade students with mentally retardation in professional skills course in Boroujerd city during the school year 2007-8. The research sample included 30 mentally retarded students who had been selected randomly and put in the control and experimental groups. Each of the control and experimental groups contained 15 students.

Tool:
The first data collection tool in the current study was the investigation of students' educational records and their scores in IQ tests.
- The second tool used in this study was the test of investigating the mentally retarded students' reading development; and due to the lack of standard test in this regard, the researchers sought to make this test after completing the following steps.
  A - The test range of entire textbook specific for these students was considered according to the information obtained from the school and the execution time of research during the last months of school year.
  B - After determining the above framework, all words were listed in a table according to the grammatical and meaning function and the frequency and number of syllables of each word was determined and inserted in front of each one.
  C - After the above step, the visual words (words which the reader can recognize them immediately while reading) are determined and indicated in the table. The criterion of selecting the visual words has been to have at least the frequency equal to 15 and higher for each of the words (Fallah-Chay, Reza, 1991)
  According to the provided contents, the frequency of word has been considered as the criterion of easiness or difficulty of each word. Therefore, the visual words with the maximum frequency among the words are considered as the easiest words and the words with the minimum frequency are considered as the hardest words.
  D - In order to review the progress of reading and three relevant components (comprehension, fluent reading, and speed reading) two similar texts were prepared after completing the above steps. The text (1) contained 115 words and text (2) contained 114 words and the text 1 was used in the pre-test and the text 2 was used in the post-test and each of the texts had 10 comprehension questions.
  It is worth noting that other cases such as the space of lessons, thematic link among the paragraphs, frequency of words in the book, the number of applied word syllables, the number of repeated words and their wording have been taken into special attention in preparing the reading texts.
  E) In the field of comprehension questions, because it was predicted that some of the questions might not be appropriate for some reason. A large number of questions were extracted for each text and ultimately 10 comprehension questions were selected and the rest of them were eliminated.
  The reliability of this test has been reported equal to 83% by using Cronbach's alpha coefficient and it has desirable level. Moreover, the university professors and experts' viewpoint in Lorestan exceptional education was utilized in order to determine the content validity of these tests and all of them confirmed its suitability.

Method:
The research method has had the experimental pretest-posttest type with the control group. In such studies, the researcher is seeking to determine the functional relationships among the variables of research through applying the independent variables and controlling the misleading and disturbing factors in the research (Delavar, 2004). In this study, the descriptive statistical methods such as the "mean, variance and standard
deviation” and the inferential statistics such as Cronbach's alpha coefficient and t test have been used for comparing the independent groups.

To study the people in experimental group was continued for 8 consecutive weeks and each week with two sessions according to the regulatory program.

The structure of educational sessions by Neurological Impress Method included as follows.

1- The teacher selects a text appropriate to the student's level of reading ability; 2- The teacher sits next to the student so that he can speak near to the student's ear; 3- The student's finger is placed on the teacher's finger so that they can read the text from the text; 4- The teacher moves his finger below each reading word; 5- The teacher reads louder and faster so that the student apply it as a model for loud and fluent reading (the students can combines the terms and stops where there are the punctuations); 6 - The teacher guides the student to have the comfortable feeling while facing with the text. (Lerner, 2004)

After the education sessions by Neurological Impress Method, the post test was done on the members of control and experimental groups with reading test. It should be noted that in this research the education with the Neurological Impress Method has been the independent variable and the reading development with the components including the comprehension, fluent reading and speed reading have been the dependent variables; furthermore, the variables such as gender, course and grade have been controlled.

Findings:

First, the descriptive statistics of comprehension for the pretest and posttest scores have been presented separately based on the group in Table (1). According to the results of this table, the distribution of scores in terms of standard deviation in the control group is higher than the experimental group.

Table 1: Descriptive statistics of comprehension.

<table>
<thead>
<tr>
<th>Group</th>
<th>Statistics</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Number of individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>Pretest</td>
<td>11.36</td>
<td>3.2</td>
<td>14</td>
</tr>
<tr>
<td>Control</td>
<td>Pretest</td>
<td>11.47</td>
<td>4.2</td>
<td>15</td>
</tr>
</tbody>
</table>

For comparing the mean scores of difference in the comprehension, the result of t test has been presented in Table (2). Based on the results of this table, the value of t (2.28) with degrees of freedom equal to 27 indicates that the difference between the pretest and posttest of both groups is not significant at the level 0.01; thus it can be concluded that to teach reading by Neurological Impress Method has no effect on the students' comprehension.

Table 2: T-test for comparing the mean scores of difference between two groups in comprehension.

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean difference between two pretest groups</th>
<th>Mean difference</th>
<th>t</th>
<th>Degrees of freedom</th>
<th>Significant level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>-2.15</td>
<td>-2.31</td>
<td>-2.28</td>
<td>27</td>
<td>0.01</td>
</tr>
<tr>
<td>Control</td>
<td>+0.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To respond to the second hypothesis, first the descriptive statistics of pretest and posttest scores of variable "Fluent Reading" is presented in Table (3).

Table 3: Descriptive statistics of fluent reading level.

<table>
<thead>
<tr>
<th>Group</th>
<th>Statistics</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Number of individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>Pretest</td>
<td>8.3</td>
<td>13.42</td>
<td>14</td>
</tr>
<tr>
<td>Control</td>
<td>Pretest</td>
<td>6.17</td>
<td>10.27</td>
<td>15</td>
</tr>
</tbody>
</table>

For comparing the mean scores of difference in the fluent reading, the result of t test has been presented in Table (4). The value of t (6.74) with degrees of freedom equal to 27 indicates that the observed difference between the pretest and posttest of both groups is significant at the level 0.01; thus it can be concluded that reading by Neurological Impress Method has an effect on the students' scores of fluent reading.

Table 4: T-test for comparing the mean scores of difference between two groups in fluent reading level.

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean difference between two pretest groups</th>
<th>Mean difference</th>
<th>t</th>
<th>Degrees of freedom</th>
<th>Significant level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>-0.48</td>
<td>-28.54</td>
<td>6.74</td>
<td>27</td>
<td>0.01</td>
</tr>
<tr>
<td>Control</td>
<td>-28.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To respond to the third hypothesis, first the descriptive statistics of pretest and posttest scores of variable "Speed Reading" is presented in Table 5.

**Table 5: Descriptive Statistics of Speed Reading level.**

<table>
<thead>
<tr>
<th>Group</th>
<th>Statistics</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Number of individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>Pretest</td>
<td>29.29</td>
<td>29.9</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>18.21</td>
<td>6.35</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>Pretest</td>
<td>20.16</td>
<td>4.58</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>16.08</td>
<td>4.03</td>
<td></td>
</tr>
</tbody>
</table>

For comparing the mean scores of difference in the speed reading, the result of t test has been presented in Table (6). The value of $t$ (3.273) with degrees of freedom equal to 27 indicates that the observed difference between the pretest and posttest of both groups is significant at the level 0.01; thus it can be concluded that to teach reading by Neurological Impress Method has an effect on the students' scores of speed reading.

**Table 6: T-test for comparing the mean scores of difference between two groups in speed reading.**

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Mean difference between two pretest groups</th>
<th>Mean difference</th>
<th>t</th>
<th>Degrees of freedom</th>
<th>Significant level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>11.08</td>
<td>7.01</td>
<td>3.273</td>
<td>27</td>
<td>0.01</td>
</tr>
<tr>
<td>Control</td>
<td>4.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Discussion and Conclusion:**

The results of study indicated that the Neurological Impress Method (NIM) has a positive and significant effect on two components of reading, speed and fluent reading, but this effect has no significant result on other two components of reading, i.e. the comprehension. Results, obtained from the tests and hypotheses, are consistent with the results by Hecklman (1969), Haffman and Vecyneski (2003), Mak Lorenz and Wookel (2003) and Flood et al., (2003, 2005).

In explaining these findings, it can be stated since reading by the Neurological Impress Method is effective in the development of reading ability (especially two components of speed and fluent reading) in students with cognitive disabilities, thus it can be utilized as an effective approach in educating the mentally retarded students.

The history and review of existing research suggest that teaching reading to students with significant cognitive disabilities has been less considered. Qualitative research including the content analysis of textbooks (Gommes, 2000) and the ethnicity studies on the experiences of schools and children (Calliver, 1998) indicate the lack of attention to the students' reading skills with cognitive disabilities. Instead, the teachers have been focused on the fundamental skills reflected in daily activities of life and have recently emphasized that the students with significant cognitive disabilities need education focused on learning to read. (Browder 2006). Despite the fact that these students need the basic skills, reading should have the educational priority. In general, the students with little opportunity to learn reading will be deprived of the effect of reading on the financial security and welfare in adulthood.

Chebra and McCurdle, (2004) argue that the educators reduce the future opportunities if exclude some of the students from teaching reading due to the nature or severity of disability according to their previous assumptions. (Brian Troller, 2002) According to the provided interpretations of the results obtained from this study, it is suggested that first a more detailed planning should be considered for teaching reading to mentally retarded students. Second, the teachers of this educational group should be familiar with the efficient methods in teaching reading to these students. Third, a more accurate estimation of ability to read should be done in mentally retarded students in order to design and compile the more appropriate textbooks and according to their learning methods. Fourth, the special attention should be paid to the individual teaching methods in educating this group of individuals.

The main limitation of this study is the lack of research background in the field of teaching to read by the Neurological Impress Method in Iran and even in foreign studies and there are no effective publications in this regard.

Other limitations of this study are the lack of institutional facilities, lack of research about the ability to read in children with cognitive disabilities and lack of standardized tests.

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