Investigating the efficacy of Fernald teaching method on the development of reading in mentally retarded male students in professional skills course

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Abstract: Objective: This study aims to investigate the efficacy of Fernald teaching method on development of reading in mentally retarded male students of the first year of professional skills course in Boroujerd city. Method: The research sample contained 30 male students in the first year of professional skills course during the school year 2007-8 and they were selected by simple random sampling. At the next stage, the pre-test was done on both groups through the researcher-made questionnaire and the groups were studied according to the ability of fluent reading, comprehension, and speed reading, then the experimental group was tested by using Fernald method for 16 sessions. Analysis and comparison of data obtained from subtracting the pre-test - post-test indicated that implementing Fernald teaching method has a significant effect on enhancing the scores of fluent reading, comprehension and speed reading compared with the conventional method. Fernald method can be used in order to increase the students' ability to read in professional skills courses and this method can be replaced with the conventional methods.

Key words: Reading development- Mentally retarded- Professional skills course

INTRODUCTION

Mentally retarded educable child is the individual who cannot utilize the common program of study which is arranged at a normal school due to the below-normative of mental development. But if the education is appropriate, he will have the capacity of development in three areas: 1) Educability at the levels of elementary school courses (reading, writing, and elementary arithmetic at the level of elementary schools), 2) Educability in social adaptation, 3) Finding a job and life finding (Seif-Naraghi and Naderi, 2003). Reading disability has been considered as the most important factor of failure at school so that over 25% of children's failure at elementary school is oriented from reading disability. (Narimani and Aghajani, 2004)

The time spent by most of the teachers on reading is more than the time spent on teaching other subjects (Kirk 1975, quoted by Halahan & Kaufman Translated by Javadian, 2002). Most of the education experts believe that the reading problems are oriented from other factors among which the appropriate or poor education can be mentioned (Gerald Wallace and James McLoughlin, Translated by Monshi-Toosi, 2000), thus according to the special problems of mentally retarded students in learning to read and on the other hand the spent time and costs for educating these students, investigating different teaching methods and determining the effectiveness of each of different teaching methods seems obvious. Piaget (1936) emphasizes on the importance of sensory-motional learning as the parts of complex perceptual and cognitive development structures. Moreover, based on Hebb neuropsychology viewpoint (1949), he emphasizes on the importance of sensory-motional learning as an integral part of structuring and creating the brain membrane cells. (Quoted by Faryar, Rakhshan, 2000) Sensory-motional concept refers to the combination of sensory input, in other words receiving the environmental stimuli and output or expressing it as the action. This process reflects what happens in the child's central nervous system. Human being has six sensory systems which transfer the raw data of world into the perceptual system like the sucking canals. Given the provided subjects, the multi-sensory approaches have been created in a way that stimulating the senses by different ways will lead to the developed learning. In these methods, it is emphasized on the motional and tactile sensory stimulation along with the sensory visual and auditory paths (Janet Lerner, 1997). In learning through the multi-sensory approach, the children 1) can see the word, 2) hear the pronounce of that words from the teacher word, 3) tell the word, 4) hear their own word speaking, 5) feel their own muscular gestures during tracing the word, 6) touch the learning background by their own fingers, 7) watch the motion of hands while tracing and writing, 8) hear their own voice of word pronunciation while tracing (Gerald Wallace and James McLoughlin, translated by Monshi-
Toosi, 1997). Fernald method is one of the methods of learning which emphasizes on muscular sense; it is used to teach reading and writing as well as spelling teaching.

Given a few number of studies conducted in the field of efficacy and comparison of Fernald teaching method about mentally retarded children both inside and outside of Iran, the researchers have been trying to implement this method on mentally retarded children and study the changes due to implementing this method on these students' reading development.

Research Objectives:
The main objective of this study is to investigate the efficacy and Fernald teaching method on the mentally retarded male students' reading development in professional skills courses. The following hypotheses have been provided in order to achieve the mentioned objective.

Research Hypotheses:
1. Fernald multi-sensory method is effective in enhancing the scores of students' comprehension in professional skills course.
2. Fernald multi-sensory method is effective in enhancing the scores of students' fluent-reading in professional skills course.
3. Fernald multi-sensory method is effective in enhancing the scores of students' speed reading in professional skills course.

Population, Sample And Sampling Method:
Statistical population for this study contained all first grade male students in the professional skills courses of exceptional schools in Boroujerd city during the school year 2007-8 and the population size was 61 students of which 30 students were randomly selected and put into two experimental and control groups by random alternative method. Experimental group contained 15 students and the control group contained 15 ones.

Tool:
The first tool of data collection in this study contains the students' academic records and investigating the results of IQ tests from students.

The second tool was the measurement of reading test; and due to the lack of standard researcher-made tests, it was designed in the context of reading test by the help of academic professors according to the following steps.

A) Determining the framework for designing the test according to the past duration in the school year and listing all words according to the grammatical and semantic roles and determining the frequency, the number of syllables of each word in the students' textbook.

C) Determining the visual words (The words which the reader can recognize them immediately while reading) in test specification table

D) Determining the amount of easiness or difficulty of each word according to their frequency; so that, the visual words with highest frequency among the words have been considered as the easiest words and the words with the least frequency considered as the hardest words.

After these two steps, two parallel (Similar) texts were prepared; the text 1 contains 115 words and the text 2 contains 114 words, and the text 1 was used in pre-test and the text 2 used in Fernald post-test and each of the texts have 10 comprehension questions.

The reliability of these tests was obtained through Cronbach's alpha coefficient 0.83 which has the satisfactory level. Moreover, some of the exceptional education teachers and experts' view in Lorestan province was utilized in order to determine the content validity and it was confirmed by them.

Method:
The research has been conducted according to the quasi-experimental method with the pretest-posttest type with 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 including the "mean and variance" and the inferential statistics including the independent t have been used in data analysis.

To study the people in experimental group was continued for 8 consecutive weeks and each week with two sessions according to the regulatory program. In this study, the sessions are held two sessions per week due to the imposed constraints by schools and also the increased effectiveness of Fernald teaching method.

The structure of teaching to read sessions by Fernald method includes the following steps.

A) The child is told that he will learn reading by a new technique which would ensure his success and he was encouraged to select a word which was eager to learn.
B) The teacher writes a word on a piece of paper with the size about 15× 10 cm and as soon as the child looks at the word, the teacher will pronounce it.
C) The child traces the image of word by his finger at the same time with pronouncing it and repeats this act for several times, and then while saying it begin to write it on a separate paper.
D) At this stage, the word is written from the memory and without looking at original word. If it is wrong, the tracing and saying processes will be repeated. If the word is written correctly, it will be placed in a box to be used later in a story.
E) In the next steps, the most difficult method of drawing the word is not essential for learning. Now, the child learns the word, which is written by the teacher, as soon as looking at it and says and writes it. After this step, he learns it just by looking at the written word and eventually he will learn the word just by looking at it. (Faryar, Rakhshan, 1988)

After the end of teaching-to-read sessions by Fernald method, the post test was done on the members of control and experimental groups.

Findings:
The first research hypothesis was that the multi-sensory Fernald approach was effective in enhancing the students' scores of comprehension in professional skills courses. The findings in the first row of table indicate that subtracting the total scores of comprehension in pre-test and post-test in the control and experimental groups is significant at the level 0.001; in other words, the multi-sensory Fernald approach increases the mentally retarded students' comprehension ability in professional skills courses. Therefore, the first hypothesis is confirmed.

The second research hypothesis was that the multi-sensory Fernald approach was effective in enhancing the students' scores of fluent reading in professional skills courses. The findings in the second row of table indicate that subtracting the total scores of fluent reading in pre-test of both control and experimental groups is significant at the level 0.05; in other words, the multi-sensory Fernald approach increases the mentally retarded students' scores of fluent reading in professional skills courses. Therefore, the second hypothesis is confirmed.

The third research hypothesis predicts that the multi-sensory Fernald approach was effective in enhancing the students' scores of speed reading in professional skills courses. As seen in the third row of table, subtracting the total scores of speed reading in pre-test and post-test of both control and experimental groups is significant at the level 0.05; in other words, the multi-sensory Fernald approach increases and improves the mentally retarded students' scores of speed reading in professional skills courses. Therefore, the third hypothesis is confirmed.

Table: Comparison of the mean scores in both experimental and control groups in comprehension, fluent reading, and speed reading tests at both pre and post-test stages

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>M</th>
<th>Sd</th>
<th>df</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtracting the total scores of comprehension in pre-test and post-test</td>
<td>Control Test</td>
<td>2.94</td>
<td>0.67</td>
<td>28</td>
<td>3.6</td>
<td>0.001**</td>
</tr>
<tr>
<td>Subtracting the total scores of fluent reading in pre-test and post-test</td>
<td>Control Test</td>
<td>3.000</td>
<td>-1.74</td>
<td>28</td>
<td>2.40</td>
<td>0.023*</td>
</tr>
<tr>
<td>Subtracting the total scores of speed reading in pre-test and post-test</td>
<td>Control Test</td>
<td>4.5</td>
<td>1.4</td>
<td>28</td>
<td>2.80</td>
<td>0.026*</td>
</tr>
</tbody>
</table>

*P<0.05  **P<0.001

Discussion and Conclusion:
The results of research indicated that the multi-sensory Fernald approach is positive and significant on enhancing the reading development with the components such as comprehension, speed reading and fluent reading. The obtained results of hypotheses test are consistent with the research conducted by Barodin and Horkid (quoting by Kesi, 2001) Torgesen et al (1994, quoted by Same, 2004), Homer(2004), Kakaei (2002) and Shahin-Yeylagh et al (2002), Hashemi-Nejat (2005), Jafarian (2006), and Hazeri (2006).

In explaining these findings, it can be stated that since the multi-sensory Fernald method is effective in the development of mentally retarded students' reading skills in professional skills courses, thus it can be utilized as a successful teaching technique in teaching the students in the professional skills courses.

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 educating focused on learning to read. (Browder, Elgrim - Dalzell, Kortid, Littell, Estill 2006, Ericsson, Copenhiv 1995, 1995 Calliver and Landis 1999). Despite the fact that the 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 & 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. 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, authorities should pay special attention to the individual teaching methods in educating the mentally retarded children. (Brian Triler, 2002)

Like any other study, the researchers in this study were faced with limitations such as the lack of institutional facilities, lack of research about the ability to read in mentally-retarded children, lack of standardized tests in the field of mentally retarded children and so on.

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