Abstract

We all are aware of the Verbal learning disorders among students such as Dyslexia, Dysgraphia, and Dyscalculia etc. Now days there are many educational provisions for such kind of people such as Open Schools, Special Schools, and Inclusive Education etc. But how many of us are aware of the non-verbal learning disorders in children. We usually ignore that part which is essential for his/her all-round development. Also it may affect their academic performance. In the present paper, the investigator gives a brief description about the Non-verbal learning disorders in children and made an attempt to identify the secondary school students in Kottayam district with non-verbal learning disorders. Also the investigator compared the Academic achievement of students with and without Non – Verbal learning disorders in various subjects.

1. INTRODUCTION

Learning disability, a problem that affects learning for many children, adolescents and adults, which in turn affects their schooling and adjustment to society. The term learning disability encompasses a cluster of disorders and no one individual will display all of them. It can be Verbal or Non – Verbal. We all are aware of the Verbal learning disorders among students such as Dyslexia, Dysgraphia, and Dyscalculia etc. Now days there are many educational provisions for such kind of people such as Open Schools, Special Schools, Inclusive Education etc. But there is also another side, the Non – verbal part which most of the people is unaware of or gives less importance. Both these together (Verbal and Non – verbal) forms the two sides of the same coin, which together contributes learning. In short we can say that, in a classroom there will be able students and also there may be disabled students in learning. In the present paper the investigator gives a brief description about the non – verbal learning disorders among children.
1.1 Non-Verbal Learning Disorders

Non – Verbal learning disorders (NVLD) are right hemisphere dysfunction that affects every one of ten children (Rourke, 1995). NVLD doesn’t affect all kids in the same way or to the same degree. But it will have some impact on the following skills:

- **Conceptual skills**: Difficult to understand large concepts, problem-solving and to find out the cause-and-effect relationships.
- **Motor skills**: Problems with coordination and movement.
- **Visual-spatial skills**: Has trouble with visual imagery, visual processing, and spatial relations. People may remember what they hear, but not what they see.
- **Social skills**: Find difficult to understand social cues and sharing information in a socially appropriate way.
- **Abstract thinking**: People may be good at memorizing details but not at understanding the larger concepts behind them. They may also have trouble organizing their thoughts.

1.2 Assets and Deficits of Non-Verbal Learning Disabilities

Like other disabilities, non – verbal learning disabilities ranges from mild to severe and no two students shows identical behaviours. Students with Non Verbal learning disorders excel in certain areas but shows weaknesses in certain other areas. Nonverbal learning disabilities possess the following assets and deficits.

**Assets**

- Higher functioning in the verbal domain
- Good in memorization and rote learning
- Excellent auditory attention and learning capabilities;
- An advanced store of factual information;
- Strong literacy skills
- Excellent phonemic awareness, segmentation, and blending abilities.
- Good receptive language abilities.
- Can follow sequential presentations and simply formatted visual aids
- Able to follow verbal or written directions by rote.

**Deficits**

- Difficult to recognize patterns or concepts and then apply them to new situations.
- Organizing thoughts
- Difficult in understanding the concepts.
- Difficulty with handwriting, including weak spacing and letter formation.
- In math, they may have a limited sense of number concepts, place value, and estimation; difficulty aligning mathematical information properly to produce an accurate answer; and a tendency to misread mathematical signs (Spreen, Risser, & Edgell, 1995).
• Poor in geography because complex maps and graphs elude them.
• Art and team sports may present frustrations.
• In language arts, these students may have a disorganized writing style or simply string together related—or even unrelated—facts for a report.
• They may have difficulty developing a point of view or a theme, understanding the relationships between events, and relating these events to the main topic.
• They may be unable to draw conclusions, make inferences, or understand subtleties
• Has trouble adjusting to changes

1.3 Different Areas of NLD
The difficulties faced by NLD students are categorized into five main areas based on which the researcher conducted the study. They are,

a. **Visual and spatial awareness:** Students with NLD have trouble understanding visual images. They also have difficulty in evaluating visual-spatial information. This means they have trouble in finding out the relationships between things they see and having a clear sense of where they are. This can make them physically awkward.

b. **Higher-Order Comprehension:** Higher-order comprehension is the capability to identify the main idea in something, the points that support the main idea, and the relationships among them. Students with Non – Verbal learning disorders find it difficult to comprehend reading, and writing or tell a story effectively. It also affects taking notes. Sometimes they take down everything the teacher says because they don't know what's important and what not to take down or they may take down all the wrong things.

c. **Social Communication:** Students with NLD have trouble reading emotion in facial expressions and body languages, so they often don't know what's going on in social interactions. They miss the social patterns that others pick up automatically, so they don't know what's the appropriate behavior in a given situation.

d. **Math Concepts:** Students with NLD are very good at rote learning, and they are able to do well in math just by memorizing data. But as they get older they struggle to solve more advanced mathematical problems that are based on recognizing concepts and patterns.

e. **Executive Functions:** Executive functions are a set of skills we use to organize our thinking, plan and carry out actions, and figure out how to solve problems. Students with NLD have weaknesses in these organizing and planning functions. For instance they struggle with breaking down a project into smaller pieces, or conceiving steps that need to be taken to get something done.

2. **REVIEW OF STUDIES**
Non Verbal learning disorders are right hemisphere dysfunction. Children who have NLD can be identified by a core set of nonverbal characteristics (Rourke, 1995). The
characteristics identified include visual-spatial/motor skills deficits relative to verbal skills, lower mechanical mathematical achievement as compared to word recognition skills, and nonverbal abstract reasoning and problem solving deficits (Bender & Golden, 1990; Korhonen, 1991; Little, 1993; Lyytinen & Anhonen, 1989; Ozols & Rourke, 1985; Semrud Clikeman et al., 2010). NLD affects the ability to learn academics and also the acquisition of social/emotional (Semrud-Clikeman, et al., 2010), self-help (Petti et al., 2003) and psychomotor skills (Rourke, 1995).

From the above discussions it is clear that the students with Non – Verbal learning Disorders surely face some difficulties in their school life –in academic life, Social life and personal life. So the investigator decided to conduct a study to identify the secondary school students with Non – Verbal Learning Disorders and made an attempt to compare their achievement scores with that of normal students.

3. OBJECTIVES OF THE STUDY
   I. To identify the secondary school students with Non – Verbal Learning Disability.
   II. To find out the level of Non-Verbal learning disabilities among Secondary School students.
   III. To compare the academic achievement of secondary school students with and without Non – Verbal Learning Disorders.

4. HYPOTHESES OF THE STUDY
   I. The level of Non-verbal learning disabilities among secondary school students is moderate.
   II. There is significant difference in the mean scores on academic achievement of secondary school students with and without Non – Verbal Learning Disorders

5. RESEARCH METHODOLOGY
   As the present study intends to gather information regarding the present condition from a large group of samples, Survey method was found to be appropriate. The investigator randomly selected 300 students from four secondary schools of Kottayam district and administered the diagnostic test to assess Non Verbal learning disability. From the data obtained the investigator identified 40 students with high Non Verbal learning disorders. Then the investigator randomly selected another 40 students without learning disabilities from the remaining 260 students. Then the investigator collected the achievement scores of these 80 students in their previous examination from the respective schools. The data thus obtained were tabulated and subjected to appropriate statistical techniques such as Mean, Standard deviation, Percentage Analysis and Critical Ratio to reach various conclusions.
6. ANALYSIS AND INTERPRETATION OF DATA

6.1 Level of Non-Verbal learning Disability among Secondary School students.

The analysis was done based on the scores obtained from 300 secondary school students after administering the diagnostic test to assess non-verbal learning disability. The level is determined using percentage analysis and the results are given below.

<table>
<thead>
<tr>
<th>No: of Students</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>200</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

| Percentage      | 20  | 66.67  | 13.33 |

From the above table it is clear that among 300 secondary school students, only 20% (60 students) have low non-verbal learning disabilities. The other students have medium (66.67%) and high (13.33 %) level of nonverbal learning disabilities. Thus the investigator identified 40 students with high nonverbal learning disabilities from four secondary schools of Kottayam district.

6.2 Comparison of achievement scores (total and subject wise) of secondary school students with and without Non – Verbal Learning Disorders

The achievement scores (total and subject wise) of secondary school students with and without Non – Verbal Learning disorders were compared using ‘t’ test. The data and results of test of significance are given in the table below.

<table>
<thead>
<tr>
<th>Academic Achievement Scores</th>
<th>Groups</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>CR</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>With NVLD</td>
<td>40</td>
<td>25.5</td>
<td>2.45</td>
<td>25.96</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td></td>
<td>Without NVLD</td>
<td>40</td>
<td>37.42</td>
<td>1.56</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| English                      | With NVLD | 40  | 20.25| 1.34| 35.85| P<0.01                |
|                              | Without NVLD | 40  | 31.4 | 1.45|      |                       |

| Malayalam                   | With NVLD | 40  | 22.3 | 2.1 | 19.96| P<0.01                |
|                              | Without NVLD | 40  | 31.56| 2.05|      |                       |

| Physics                     | With NVLD | 40  | 19.68| 1.65| 39.29| P<0.01                |
|                              | Without NVLD | 40  | 32.45| 1.24|      |                       |

| Chemistry                   | With NVLD | 40  | 20.5 | 1.55| 39.94| P<0.01                |
|                              | Without NVLD | 40  | 34.56| 1.6 |      |                       |

|                               | With NVLD | 40  | 32.5 | 2.25|      |                       |
From the above analysis it is clear that there is significant difference in the mean scores of total achievement (CR=25.96) and subject wise achievement (CR for English = 35.85; CR for Malayalam = 19.96; CR for Physics= 39.29; CR for Chemistry = 39.94; CR for Mathematics = 23.36; CR for Social Science = 36.48) of students with and without Non Verbal learning disabilities at 0.01 level. Also the mean scores shows that the total achievement and subject wise achievement of students without NVLD is higher than that of students with NVLD. Therefore we can infer that students with NVLD face difficulties in learning majority of subjects.

But there is no significant difference in the mean scores of achievement in Biology (CR = 1.18) of students with and without Non Verbal learning disabilities at 0.01 level. Therefore we can infer that the students whether abled or disabled excel in learning Biology.

The graphical representation of the comparison is shown below.

<table>
<thead>
<tr>
<th>Subject</th>
<th>With NVLD</th>
<th>Without NVLD</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>22.45</td>
<td>33</td>
<td>P&gt;0.01</td>
</tr>
<tr>
<td>Mathematics</td>
<td>23.36</td>
<td>31.8</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Social Science</td>
<td>36.48</td>
<td>34.23</td>
<td>P&lt;0.01</td>
</tr>
</tbody>
</table>

Figure 6.1: Graphical Representation of Comparison of Academic Achievement (Total and Subject wise ) of Secondary School Students with and without Non –Verbal learning disabilities
7. MAJOR FINDINGS AND CONCLUSION
Among 300 secondary school students, only 20% (60 students) have low NVLD. The other students have medium (66.67%) and high (13.33%) level of NVLD. Thus the investigator identified 40 students with prominent NVLD from four secondary schools of Kottayam district. Therefore teachers should be aware that there may be students with Non-verbal learning disorders in their classes. The values of the critical ratio and the mean scores shows that except in Biology the students with NVLD lags behind the students without NVLD in their total achievement and also achievement in English, Malayalam, Physics, Chemistry, Mathematics and Social Science. This may be due to the fact that NVLD students excel in rote learning and this will be a blessing for scoring more marks in Biology than other subjects which require higher order comprehension and more organized writing.

8. RECOMMENDATIONS
Schools plays a central role in each and every student’s life, educators should try to understand this disorder and must help those who have it. Many students with NVLD can perform well in elementary school because they are very good at memorization and rote learning. They run into trouble around middle school, where they find difficulty with the higher order reasoning and thinking which causes them to fall behind. The child with NVLD requires individualized approaches in order to succeed in academic matters. An effective remedial method for such type of students is the direct Verbal training in planning, Organizing, social cognition, interpersonal communication and written expressions. Also provide additional practical supports and other coping skills to lessen the daily stress he encounters. Also give enough time to get ready and to finish the work assigned. The teacher should be careful to avoid punishment and threatening. Any activities that would find difficult for them must be avoided.

9. References
