



Braille Reading Proficiency of Students with Visual Disabilities

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Abstract: Restriction in visual abilities in students with visual disabilities makes them majorly dependent on Braille (an embossed script that can be accessed through tactile sensation) for reading and writing in context with their education. This paper is reporting on a study on the Braille reading proficiency of students with visual disabilities. The study was conducted on students with visual disabilities studying at the secondary stage. The main objective of the study was to know the Braille reading proficiency of students with visual disabilities. This study reported that the average Braille reading speed of students with visual disabilities is 70 words per minute. It was also found that there is no significant difference between Braille reading proficiency of female and male students; rural and urban students; students with low vision and blindness; as well as students with adventitious and congenital visual disabilities.

Key Words: Braille Reading Proficiency; Students with Visual Disabilities; Reading Speed; Reading Accuracy; Visual Impairment; Special Needs Education; Special Education.

1. INTRODUCTION:

Education enhances opportunities in the lives of individuals; therefore, education is crucial for every individual. It is the main engine for the expansion of knowledge, resulting in superior human and system growth. It is not just a process, of convenience learning or acquisition of knowledge, rather it also includes skills values, morals, beliefs and habits [1]. National Education Policy (2020) describes Education as fundamental to achieving full human potential, equitable development and promoting a just society [2]. Education is therefore equally crucial for all pupils, including students with visual disabilities, and they must participate in the educational process on an equal footing. However, visual impairment can make learning challenging and can affect academic performance [3].

For reading and writing a tactile system designed as Braille for the use of students with visual disabilities; is a key to reading and writing skills and the primary means by which they become literate. Literacy skills enhance our opportunities in life [4] (Stanfa & Johnson, 2015). Restriction of visual abilities in students with visual disabilities makes them majorly dependent on Braille. Learning Braille script involves sensing small, embossed Braille dots. A very difficult task for the students to sense the Braille dots and recognize the letters. Students with visual disabilities learn various sets of keys of the Braille matrix assigned for different letters/symbols to read and write effectively [5] (Jadamali & Basavaradder, 2014). Braille also has some contracted patterns for some languages. Students with visual disabilities need to acquire Braille reading and writing competencies well facilitated by some special education teachers. It needs to be frequently practiced under the guidance of educators.

2. BRAILLE READING PROFICIENCY:

Reading is the key skill and prerequisite for completing education. As Braille is a major tool for accessing education by students with blindness, it is also an important skill for access to Education. Students with visual impairments engage in a highly precise and vigorous tactile technique called braille reading that uses their fingers as well as arms, and even elbows [6]. Therrien, Gormley & Kubina (2006) described that Speed, precision, and the capacity for appropriate expression are all components of reading fluency [7]. When reading fluently, readers prioritize understanding the text over word-by-word decoding. Proficiency in Braille makes a person with visual disabilities more confident and independent.



Having the ability to read Braille in public places means that it gives more independence and decreases the dependency on others. It has been asserted that Braille-fluent youngsters with visual impairment have an edge over those who rely entirely on print. Ryles (1996) discovered that children with visual impairments who learnt were more likely to succeed than those who used the Braille script and had a college degree did not study Braille. Braille readers also exhibit stronger reading habits, such as reading more frequently, devouring a greater variety of books, and subscribing to more publications [8]. For readers of both print and Braille, higher literacy skills are associated with improved employment prospects [9]. Further, Kutner et al. (2007), Ryles (1996), and Wolffe & Kelly (2011) accept this claim [8,10,11]. Additionally, the reading skills of students with visual impairments also enhance mental well-being [12]. Higher levels of self-esteem, freedom, and confidence are also associated with braille literacy [13]. Evidence from recent research ideas suggests that print can benefit exercise that has been demonstrated to boost fluency for braille readers, increasing their ability to acquire reading skills and, ultimately, their lifespan and academic success.

3. METHODOLOGY:

The present article is based on a study conducted with the objective of finding out the Braille reading proficiency of students with visual disabilities and comparing the Braille reading proficiency with reference to gender, habitation, degree of impairment and age of onset of visual disabilities. The descriptive method was chosen to accomplish the goals of this study. The study was delimited to the Braille reading proficiency of students with visual disabilities studying in special schools of the Dehradun districts of Uttarakhand at the senior secondary level in the academic session of 2021-22 and further English Braille (Grade 2) was used to know the reading proficiency.

The population for this study was students with visual disabilities studying in the special school at the senior secondary level in Uttarakhand state of India. A sample of 33 students with visual disabilities (22 boys and 11 girls from classes XI and XII) from special school settings was taken for the study. To select the sample non-probability sampling (purposive sampling) method was used.

The Braille reading proficiency data was collected from the samples with the help of an observational scale Braille Reading Proficiency Test. The tool comprises four dimensions i.e., Speed, Accuracy, Expression and Comprehension as part of Braille reading proficiency. For data collection school administration was approached and data was collected from identified samples. The score obtained from the Braille Reading Proficiency Test was tabulated according to sex, habitat and degree of visual Impairment. With the help of the score obtained by the group, the Mann-Whitney test was performed to determine the significant difference between the two groups.

4. FINDINGS:

The objective of the research was to know about the Braille reading proficiency of students with visual disabilities. The mean and standard deviation of Braille reading proficiency among students with visual disabilities were calculated on Excel and presented below:

Table 1: Braille reading proficiency of Students with Visual Impairment

Sl.		N	Speed		Accuracy		Expression		Comprehension		Gross		Mann Whit ney U
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mea n	SD	
1	Total	33	5.73	1.42	8.48	1.86	8.36	2.01	5.97	1.42	28.54	5.93	
2	Female	11	6.81	0.93	9.72	1.86	9.90	1.23	6.54	1.30	33.00	4.60	41
3	Male	22	5.18	1.30	7.86	1.51	7.59	1.87	5.68	1.39	26.32	5.44	
4	Rural	17	5.94	1.21	8.52	1.75	8.76	1.95	6.11	1.40	29.35	5.70	113
5	Urban	16	5.50	1.58	8.43	1.96	7.93	1.98	5.81	1.42	27.69	6.05	
6	Blindness	24	6.00	1.29	8.70	2.03	8.75	1.85	6.20	1.85	29.66	5.92	61
7	Low Vision	09	5.00	1.49	7.88	1.09	7.33	2.05	5.33	1.41	28.00	4.83	
8	Congenital	28	5.85	1.45	8.75	1.76	7.40	1.88	6.07	1.46	29.21	5.75	41
9	Adventitious	05	5.00	0.89	7.00	1.67	7.40	2.41	5.40	1.01	24.80	5.49	

While comparing the Braille reading proficiency of female and male students with visual disabilities. The calculated Mann-Whitney 'U' value was 41 which is statistically significant at a 0.05 level of confidence (df=32). Thus, the study confirms that there is significant difference between Braille reading proficiency of female and male students with visual disabilities (studying in a special school at the senior secondary level). The significant difference between Braille reading proficiency of rural and urban students with visual disabilities was calculated with Mann-Whitney 'U' value. The calculated 'Mann-Whitney 'U' value was 113 which is not statistically significant at a 0.05 level of



confidence ($df=32$). Hence, no significant difference found in Braille reading proficiency between rural and urban students with visual disabilities was reported at a level of significance of 0.05.

Whereas, comparing the Braille reading proficiency on the basis of degree of impairment (i.e. blindness and low vision), the Mann-Whitney 'U' value was calculated 61 which is statistically significant at a 0.05 level of confidence ($df=32$). Thus, confirming that there is significant difference found in Braille reading proficiency between students with blindness and low vision. Further, the difference between Braille reading proficiency of students with adventitious and congenital visual disabilities were calculated with Mann-Whitney 'U' value 41. The Mann-Whitney 'U' value confirms significant difference between students with adventitious and congenital visual disabilities.

With the above findings and data presented in table we can confirm that female students with visual disabilities, students with blindness and students with congenital blindness showed higher braille reading proficiency. In other hand we can say that male students with visual disabilities, students with low vision and students with adventitious visual disabilities showed lower Braille reading proficiency. Rural students with visual disabilities also showed higher reading proficiency than urban students but there was not significant difference between the groups.

5. DISCUSSION:

Braille reading is an important area that is being ignored. Braille readers tend to read Braille at a slower rate than print readers reading print [14, 15]. Braille reading in persons with visual disabilities is done through tactile sensation (through fingertip). Therefore, Braille reading is positively related to good tactile perception ability among individuals with visual impairment [16]. It is to be noted that Braille reading is of paramount importance and hence special attention should be given to the development of tactual perception during the process of teaching or learning Braille. Further, the average speed of reading French Braille is 124 words per minute for adults in France [17]. In a study conducted on highly skilled Braille readers in India, the speed was reported as 125 words per minute [18]. The present study reports the average speed of English Braille Grade 2 is 70 words per minute by a group of students with visual disabilities. The speed of Braille reading is relatively slower. The same may be due to relatively less focus on Braille reading drills at school and home.

Various research studies also agreed that in the absence of vision, it was important to give sensory training to the remaining senses like the sense of touch so that they might be used as sources of information [19]. Pre-reading instructions given during early school years are crucial for students with visual disabilities and it led to proficiency in Braille reading [20]. It might be possible that due to varied onset of impairment, Braille reading ability among students with adventitious and congenital visual impairment may exhibit different patterns. Lack of training in pre-Braille or Braille reading during the early school day may be the cause of the lower level of Braille reading competency. Proficiency in Braille is very important to the accomplishments of independence and accessibility [8]. Therefore, it is important to develop proficiency in Braille reading in persons with visual disabilities which leads to independent living and career aspirations. Teachers must also be able to recognize tactile perception abilities and learn how to improve them [21].

6. CONCLUSION:

Braille reading proficiency is as important for students with visual disabilities as it plays a vital role in the academic performance of students with visual disabilities. Sometimes the poor academic performance of a student with visual disabilities may be caused by slow and inaccurate Braille reading proficiency. Moreover, reading is only useful if readers can understand the meaning. Speed, precision, and comprehension connected to Braille reading are therefore in harmony and synergy, as they are complementary in the context of reading proficiency. The speed and accuracy of reading Braille can be increased through proper training and practice.

The average Braille reading speed of students with visual disabilities was found to be less than the average speed of print reading. Hence, it is an obvious need to give special attention to Braille reading proficiency at schools, so that learning of students with visual disabilities do not get confronted with learning. This creates a need for special attention to the Braille competency of special educators working for the education of students with visual disabilities.

Therefore, teachers for students with visual disabilities should be trained enough to teach Braille and other related skills [22]. Teacher activities could be focused on enhanced reading readiness skills, exercises for sharpening the sense of touch and encouraging students to good movements of their hands [23]. Schools need to suitably facilitate pre-Braille reading skills, Braille reading and writing drills, and sufficient literature in Braille. In this way, a conducive environment will be generated at school which will enhance reading and writing competency among students. As a result, there will be more chances to be successful in education, employment & other spheres of life; and proceed towards real empowerment. Braille reading also needs to be synergised with evolving technological development. In the new



technological era, print as a form of literacy has changed significantly but Braille has changed little [24]. Therefore, striving for the adoption of new technological advancement is equally important in braille reading competency.

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REFERENCES:

1. Lamichhane, D. C. (2018). Understanding Education Philosophy and Its Implications. *NCC Journal Vol. 3, No. 1, 2018, Page: 24-29*
2. National Education Policy (2020). Ministry of Education, Government of India. Retrieved from https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf
3. Kapur, R. (2018). Challenges experienced by visually impaired students in education. Delhi: University of Delhi.
4. Stanfa, K., & Johnson, N. (2017). Improving reading fluency in braille readers using repeated readings. *The Journal of Blindness Innovation and Research. Vol 7, No 1.*
5. Jadamali, N., Jadamali, P. & Basavaradder, A. (2014). Electronic progressive Braille learning kit for blind; low cost, all languages and multiline Braille screen. Karnataka, India.
6. Argyropoulos, V., & Papadimitriou, V. (2015). Braille reading accuracy of visually impaired students, University of Thessaly-Greece.
7. Therrien, W. J., Gormley, B., & Kubinar, M. (2006). Boosting fluency and comprehension to improve reading achievement. *Teaching exceptional children 38(3):22-26*
8. Ryles, R. (1996). The impact of braille reading skills on employment, income, education, and reading habits. *Journal of Visual Impairment and Blindness, 90*, pp.219-226.
9. Koenig, A. J., & Holbrook, M. C. (2000). Ensuring high-quality instruction for students in Braille literacy programs. *Journal of Visual Impairment and Blindness, 94(11)*, 677-694.
10. Kutner, M., Greenberg, E., Jin, Y., Boyle, B., Hsu, Y., & Dunleavy, E. (2007). Everyday life: Results from the 2003 National Assessment of Adult Literacy (NCES 2007-480). Washington, DC: National Center for Education Statistics, US Department of Education.
11. Wolffe, K. E., & Kelly, S. (2011). Instruction in areas of the expanded core curriculum is linked to transition outcomes for students with visual impairments.
12. Ferrell, K., Mason, L., & Cooney, J. (2006). Forty years of literacy research in blindness and visual impairment: Greeley, CO: University of Northern Colorado.
13. Schroeder, F. K. (1989). Literacy: The key to opportunity. *Journal of Visual Impairment and Blindness, 83(6)*, 290-293.
14. Emerson, R. W., Holbrook, M. C., & D'Andrea, F. M. (2009). Acquisition of literacy skills by young children who are blind: Results from the ABC Braille Study. *Journal of Visual Impairment & Blindness, 103(10)*, 610-624.
15. Wetzel, R., & Knowlton, M. (2000). A comparison of print and braille reading rates on three reading tasks. *Journal of Visual Impairment and Blindness, 94(3)*, 1-18.
16. Malsawmdawngliani. (2019). Braille reading fluency and tactile perception in prospective special education teacher. Unpublished dissertation. NIEPVD, Dehradun, India.
17. Larocche, L., Boule, J., & Wittich, W. (2012). Reading speed of contracted French braille. *Journal of Visual Impairment & Blindness, v106 n1 p37-42 Jan 2012*
18. Thomas A., & Rufus, E. (2017). Investigations on later tactile Braille reading. Springer Cham Publication. *Human-Computer Interaction - INTERACT 2017 pp 196-204*
19. Mathews, P., & Klaasens, A. (1999). Reading readiness. London: Lingual Links Publishers.
20. Lowenfeld, B. (1983). Blindness and blind people. New York: American Foundation of the Blind.
21. Mangold, S. (1978). Tactual perception and braille letter recognition: Effects of developmental teaching. *Journal of visual impairments and blindness, 72 (252- 259).*
22. Adwan, A., Mezyed, A. S., & Khatib, R. F. (2016). Competencies needed for the teachers of visually impaired and blind learners in Al Balqaa Province area schools, Jordan. *Journal of Nursing Education and Practice 2017, Vol. 7, No. 4*
23. Dogbe, D. (2020). Braille reading proficiency among learners with visual impairments: Teachers' strategies and learners' readiness. Winneba, Ghana.
24. Braille Authority of North America. (2013). Unified English Braille. North America.