INFLUENCE OF REPEATED BRAILLE READING AND READING SPEED ON COMPREHENSION SKILL OF STUDENTS WITH VISUAL IMPAIRMENT IN IBADAN SOUTH-EAST OYO STATE

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Abstract

Literacy skills (reading and writing) enhance opportunities in life. This is no less true for individuals with blindness and fluent in Braille. Unfortunately, because of technicalities and the expensive nature of Braille machines and papers, coupled with its accompanying stigmatization, person with visual impairment are at increased risk of reading failure and its devastating consequences. Previous studies largely focused on adjustment, academic achievement of students with visual impairment, while there is paucity of literature on repeated Braille reading and reading speed. The study, therefore, examined the influence repeated Braille reading and reading speed had on the comprehension skill of students with visual impairment in Oniyere Grammar School, Ibadan, Nigeria. The design adopted for this study is the survey research design of the correlational type. Purposive sampling technique was used to select the study area and the respondents. This is because the school (Oniyere Grammar School) is with high population of students with visual impairment. A self developed comprehension passage transcribed into Braille was used as instrument for data collection. Data were analysed using Pearson Product Moment Correlation and multiple regression analysis at 0.05 level of significance.

Significant relationship exists between repeated Braille reading and comprehension. The study further shows that reading speed significantly influences comprehension (r=0.919). There was significant composite effect of independent variables on the dependant variable (R2=0.990). There was relative significant contribution of the independent variables to the dependent variable (B=0.859, t=33.427). However, reading speed indicates the more potent contributor followed by repeated Braille reading (B=0.150, t=5.822). Repeated Braille reading and reading speed influenced comprehension skill of students with visual impairment in Ibadan South East, Oyo State, Nigeria. Therefore, teachers of students with visual impairment should encourage constant and continuous Braille reading which will aid reading speed and enhance comprehension of any given task.

Keywords: Repeated Braille reading, Reading speed, Comprehension, Students with Visual impairment

Introduction

Background to the Study

The importance of reading cannot be overemphasized due to its enormous advantage to an individual and the society at large. Reading is essential in the context of education. for individuals who do not have easy access to print materials because they are with visual impairment (that is, they are with blindness or low vision), this process of acquiring knowledge through reading requires additional effort and accommodations. One key adjustment that is made for students for whom Braille is the preferred communication method (hereafter referred to as "Braille readers") for completing their examinations is the allocation of additional time. Depending on the country, educational system, or institution, the amount of extra time that is allotted may vary.

It is estimated that there are between 1.5 and 3.4 million adults with visual impairment (or 40 years of age) in the United States, while the number of Americans over the age of 65 will be more than double over the next 25 years, from 35 million in 2000 to 72 million in 2030. There are legal and educational definitions of visual impairment (VI). Visual acuity, the ability to see objects clearly and to distinguish details

at a specific distance, is the criteria used to decide whether an individual is legally blind. Acuity is measured by reading letters or symbols from a chart at a distance of 20 feet. If a person needs to stand at a distance of 20 feet to see what most people see at 70 feet, the person has 20/70 vision. A person is considered legally blind if they have visual acuity of 20/200 or less in the better eye, with glasses or corrective lenses. A normal field of vision is 180 degrees. A person may also be considered legally blind if their field of vision is limited to 20 degrees or less. The educational definition of VI is contained in Arizona Revised Statutes 15-761 (National Federation of the Blind Jernigan Institute, 2009), which states: "Visual impairment' as a loss in visual acuity or a loss of visual field...that interferes with the child's performance in the educational environment and that requires the provision of special education and related services". Besides impairments to visual acuity and to the field of vision, there are other ways in which vision is affected. The ability of the eye to move (ocular motility) and the ability to merge two separate images into one (binocular vision), this can affect a child's vision. Strabismus, the inability to direct the eyes to the same object, may sometimes result in amblyopia. Amblyopia, also known as "lazy eye", frequently results in a reduction or loss of vision in the weaker eye. Other types of visual impairment include far-focus/near-focus vision problems and nystagmus. A child may not be able to switch easily from far-focus to near-focus vision. For example, it may be very difficult or impossible for a child to copy from the chalkboard (far-focus) to a paper on his/her desk (near-focus).

In the writings of people who are with blindness, the literary Braille code has been called the key to opportunity (Schroeder, 1989), the means of emancipation, the greatest gift to the blind (Eldridge, 1979), a viable equivalent of the print media, highly flexible and adaptable (Stepehns, 1989), and a marvelous vehicle that holds the key to genuine literacy and independence (Napier, 1988). Writings on the Braille code make it clear that as long as print is the primary literacy medium of sighted people, Braille will be the primary literacy medium for persons with blindness people" (Wittenstein, 1994). In addition to typical literacy activities, persons who are blind use Braille for many daily tasks that sighted persons take for granted, such as using recipes to cook, measuring wood before cutting it with a power tool, and

reading aloud to their children. For persons who are with blindness, Braille represents independence and equality as well as literacy in the workplace, in the home, and in the community. The importance of the Braille code is more recognized today than at any time in its history (Schroeder, 1989). The language of English Braille is the same as for print, and the reading system mainly uses the same imperfectly alphabetic orthography. But Braille is unique in three important respects: the modality of input, the compositions of the symbols, and in some orthographic conventions. The ostensible modality is touch, but the intake of information occurs during movement. The symbols are raised dot patterns that are based on a single matrix. The orthographic conventions differ, because they include logo graphs (single characters that represent whole words), contracted forms, and mandatory rules for using these contractions as words and within words.

The risk of poor academic performance and the potential for frustration that is associated with slow reading speed has been a topic of concern for students with visual impairments (that is, those who are with blindness or low vision) for more than a decade (Corn, Wall, Jose, Bell, Wilcox and Perez, 2002). Students with visual impairments often have slow reading rates (Fellenius, 1999; LaGrow, 1981), and slow reading rates have a negative impact on the acquisition of literacy skills (Koenig and Holbrook, 1991). Negative attitudes toward Braille, large print, or reading in general may also affect reading performance (Erin and Sumranveth, 1995; Frank, 2000). A significant role for teachers of students with visual impairments is to address their students' slow reading rates and attitudinal barriers through the use of appropriate instructional strategies and assistive technology tools. Two major factors that lead to slower reading rates among students with visual impairments are the type of visual impairment and visual acuity, with lower visual acuity resulting in reduced reading rates (Krischer and Meissen, 1983). Furthermore, the disparity between the reading rates of sighted students and students with low vision increases as students' progress to middle school and high school (Corn et al., 2002).

Reading is inarguably one of the most important and critical educational skills, in part because it influences virtually all academic disciplines. Due to reading's universal influence, reading competency is a primary concern in today's schools. Fluency is a major component of reading competency and the reading process. Fluency is defined as the

ability to read connected text rapidly, smoothly, effortlessly, and automatically with little attention to the mechanics of reading, such as decoding. Fluent readers decode text automatically. They do not have to focus attention on decoding each individual word. This automaticity leaves the child's attention free for comprehension (Meyer and Felton, 1999; Samuels, 1979). Fluent reading allows the reader to attend to the meaning of the text rather than the mechanics of reading, therefore increasing comprehension skills. If children do not acquire the fundamentals of reading, which is based largely on reading fluency, at a young age it places them at a considerable disadvantages in their future academic pursuits. For this reason, the ability to read fluently at an early age has become increasingly emphasized. Unfortunately, fluency remains a skill that many students struggle to master. According to research, the average reading speed for the general population is around 120 words per minute (wpm), and that is while taking into account their ability to comprehend the text. The top readers, who form merely 1% of the populace, can read up to 400 wpm and not more than that. With the help of speed reading (Meyer and Felton, 1999). The focus of the speed reading programme is to increase reading speed. Reading quickly is an important skill for native and non-native speakers and most people can double their reading speed with practice. A good speed of aim for is around 300 words per minute (Nation, 2005). This skill will be necessary at university to cope with heavy reading requirements and for tests. Reading quickly can help in understanding of a text because if you read slowly you will have forgotten what was said at the top of a page by the time you get to the bottom. Thus, the faster you read the more effective and enjoyable it will be. In addition, research suggests that an improvement in reading leads to benefits across other skills (Elley and Mangubhai, 1983). In repeated Braille reading, the obvious method of reading for people who are with blindness, has been de-emphasized throughout the past several decades. Reading and writing for the student who is with blindness are becoming lost skills. Success depends upon the ability of a child to read and write, be it in print or Braille. It is the position of this study that, the child who is with blindness, in most cases today, is not offered the same opportunity as his or her sighted peer to become a successful and productive citizen.

For individuals who are with blindness or visual impairment, the value of literacy skills is as significant as it is for those without visual impairments. It has been suggested that children with visual impairments who learn Braille have an advantage compared to those who rely solely on print. Ryles (1996) found that children with visual impairments who learned Braille were more likely to be employed and obtain a college degree than those who did not learn Braille. Moreover, the Braille readers in Ryles' study exhibited stronger reading habits, including spending more hours per week reading, reading more books, and subscribing to more magazines. This phenomenon mirrors the positive effects of literacy skills demonstrated for sighted readers. Higher levels of literacy are associated with better employment outcomes for both Braille and print readers (Koenig and Holbrook, 2000; Ryles, 1996; Wolffe and Kelly, 2011). In addition, reading proficiency contributes to the emotional well-being of students with visual impairments (Ferrell, Mason, Young and Cooney, 2006). Braille literacy is associated with higher levels of independence, confidence, and self-esteem (National Federation of the Blind Jernigan Institute, 2009; Schroeder, 1996; Wells-Jensen, 2003).

Reading speed is one experience that involves allotment of time which may not be sufficient to allow students who are with visual impairment to operate under the same time constraints as their sighted peers. To propose a concrete change in the allotted amount of time, however, this research is necessary. The most easily measured component of an examination that is conducted using Braille is reading speed, of which there are considerable individual differences in reading speed for both print and Braille readers. Legge, Madison, and Mansfield (1999) used both the print and Braille versions of the MNRead test to compare the reading speeds of sighted print readers and Braille readers while reading out loud. Whereas print readers ranged in speed from 150 to 310 wpm (medium 251 wpm), Braille readers ranged from 24 to 232 wpm (medium 124 wpm), indicating that some of the fast Braille readers actually outperformed some of the slower print readers. Reading speed therefore involved the ability to gather visual information in an allotted time from the pages as well as the ability to understand what have been read (Raynerand Pollatsek, 1989). Hence, reading is a complex task involving both visual and no visual factors such as motor coordination, motivation and cognitive ability. Wetzel

and Knowlton (2000) found that reading task is the primary determinant of reading strategy and ultimately reading rate. For example, whilst scanning reader will be looking for specific information and thus reading rate can be very fast. On the other hand, when studying the reader need to retain and recall facts and reading rate can slow down. However, it has been suggested that if students with visual impairment students need more time and effort for word recognition, they have less processing capacity and ultimately comprehension will be affected.

Comprehension was seen as the percentage of content words provided by a participant through oral retelling after the last reading. Oral retelling is an informal measure of reading comprehension that correlates with the standardized measure of reading comprehension (Fuchs, Fuchs and Maxwell, 2001; Reed and Vaughn, 2012). Content words were defined as proper nouns, common nouns, adjectives, adverbs, and verbs (Layton and Koenig, 1998). Prior to intervention, the investigator identified content words in the passages. An independent second observer also identified content words in the passage, and the lists were compared. Disagreements were discussed and resolved. The student's retelling was analyzed by tallying the number of exact matches or synonymous words used with the list of content word in the passage. The investigator calculated the percentage of content words in the passage (Layton and Koenig, 1998). Literacy is one of the components of comprehension which is most important educational goals for all students because of the opportunities it provides to gain strategies for further learning and access to information about the world. For students with significant and complex disabilities, strategies for promoting literacy are difficult to identify. For example, in a comprehensive review of reading for students with significant disabilities, Browder, Wakeman, Spooner, Ahlgrim-Delzell and Algozzine (2006) found most studies focused on students with moderate intellectual disabilities and sight word reading. When students have visual impairments, as well as severe intellectual disabilities, finding a model for literacy can be especially challenging.

This study therefore intends to investigate the effect of repeated Braille reading and reading speed on comprehension of student with visual impairment.

Statement of the Problem

Academic success is rooted in the development of proficient reading skills. Research has shown that children with visual impairment do not read as proficiently as their sighted peers (Corn, et al., 2002; Fellenius, 1999). A key factor in this discrepancy is the slower reading fluency of children with visual impairments (Trent and Truan, 1997; Wormsley, 1996). Also, comprehending read word is another challenge faced by student with visual impairment. Previous studies had focused on adjustment, academic achievement to the detriment of Braille reading, reading speed and comprehension students with visual impairment. Therefore, this study, seeks to examine how repeated Braille reading and reading speed may influence comprehension skill of students with visual impairment.

Purpose of the Study

1) To determine if a relationship exist between repeated Braille reading, reading speed and comprehension of students with visual impairment;
2) To assess the composite effects of these two independent variables (repeated Braille reading and reading speed) on comprehension;
3) To investigates the relative contribution of each of repeated Braille reading and reading speed on comprehension of students with visual impairment.

Research Questions

1) What is the relationship between repeated Braille reading, reading speed and comprehension of students with visual impairment?
2) What is the composite effect of independent variable (repeated Braille reading and reading speed) on comprehension of students with visual impairment?
3) What is the relative contribution of each of Repeated Braille reading and reading speed on comprehension reading of students with visual impairment?

Significance of the Study

This research hopefully may enlighten school authorities, teachers and parents the extent at which repeated Braille reading may likely influence the academic performance of students with visual impairment.

The finding of this study will add new knowledge to the existing clues and will also serve as a reference for teachers, students, parents as well as provide useful clues for future researches. Hopefully, this study would inspire students with visual impairment to practice Braille reading everyday to increase their reading speed.

The study would also inspire parents and teachers of students with visual impairment to get familiarize with Braille reading so as to feel comfortable to encourage the students in progressing.

Scope of the Study

The scope of this study centers on Repeated Braille reading and reading speed on the comprehension of students with visual impairment in Oyo State. However, this study would be restricted to Oniyere Grammar School (A mainstreamed school which includes students with visual impairment and the sighted) in Ibadan South-East Local Government, Oyo State.

Methodology

The design adopted in this study is survey research design of the correlation type because no manipulation of variables of interest was involved. The study was conducted to examine the influence of repeated Braille reading and reading speed on comprehension of students with visual impairment. Samples comprises all the students with visual impairment in the school. However, this study was restricted to Oniyere Grammar School in Ibadan South East, Oyo State, Nigeria. Pearson Product Moment Correlation (PPMC) and Multiple Linear regression were used as statistical tools in achieving the study objectives.

Result

RQ_1: What is the relationship between repeated Braille reading, reading speed and comprehension of students with visual impairment?

Table 1: Showing Relationship between independent variables and comprehension

Variable pairs	$\bar{x}$	**SD**	**r**	**P**	**Remark**
RBR vs Comprehension	50.35	6.928	0.612	0.00	P<0.05 (sig.)
Reading speed vs comprehension	54.31	7.763	0.993	0.000	P<0.05 (sig.)

Table 1 reveals that a significant relationship exists between repeated Braille reading and comprehension of the respondents. The results further shows that reading speed also significantly influences comprehension of the participants used for the study (r=0.919, P<0.05). This implies that repeated Braille reading as well as reading speed, are important factors affecting comprehension among students with visual impairment in the Ibadan South East, Oyo State, Nigeria.

Table 2: Summary of Regression Analysis of the combine prediction of repeated Braille reading and reading speed on comprehension

R	**R. Square**	**Adjusted R Square**		**Std. Error of the Estimate**		
0.995	0.990	0.990		0.704		
SUMMARY OF REGRESSION ANOVA						
	Sum of Squares	**df.**	**Mean square**	**F**	**P**	**Remark**
Regression	3754.030	2	1877.015	3786.509	0.00	Significant
Residual	38.170	77	1496			
Total	3792.200	79				

Table 2 showed there was significant composite effect of independent variables (Repeated Braille reading and Reading speed on the dependent variable (comprehension) of students with visual impairment. The table also shows a coefficient of multiple correlations (R) of 0.995 and a multiple R square of 0.990. This means that 99.0% (Adj. R^2=0.990) of the variance in the comprehension is accounted for by the independent variables of repeated Braille reading and speed when taken together. The significance of the composite contribution was tested at p<0.05. Using the f-ratio at the degree of freedom

(df=2/77). The table also shows that the analysis of variance for the regression yielded an f-ratio of 3786.509 (significant at 0.05 level), which infers a significantly varying degrees of contribution of each of the independent variable of repeated Braille reading and speed.

Table 3: Relative contribution of the independent variables to the dependent variables (Test of significance of the regression coefficients)

Variable	**Unstandardized coefficients (B)**		**Standardized coefficients**			
Model	(B)	Std Error	Beta	t	Sig.	Remark
Constant (comprehension)	1.974	.561	-	3.516	.001	-
Repeated Braille Reading	.199	.034	.150	5.822	.000	Sig.
Reading speed	.766	.023	.859	33.427	.000	Sig.

Table 4.2.3 reveals there were relative significant contribution of the independent variables to the dependent variable, expressed as beta weights. The correlation coefficients of repeated Braille reading and reading speed have significant ($p<0.05$) relationship with reading comprehension. Using the standardized regression coefficient to determine the relative contributions of the independent variables, reading speed ($\beta=0.859$, $t = 33.427$, $p<0.05$) indicates the more potent contributor to the prediction, followed by repeated Braille reading ($\beta = 0.150$, $t = 5.822$, $p <0.05$). It implies that there is a significant relative contribution effect of repeated Braille reading and reading speed on the comprehension of students with visual impairment.

Discussion of Results

Research question 1 states that what is the relationship between repeated Braille reading, reading speed and comprehension of students with visual impairment? The result revealed that there were significant relationship between repeated Braille reading, reading speed and comprehension of students with visual impairment. That is, repeated Braille reading has correlates with comprehensive reading ($r=0.919$, $p<0.05$), and with Reading speed ($r=0.993$, $p<0.05$), and since P was lesser than 0.05 level of significance, there was significant relationship between repeated Braille reading, reading speed and comprehension

on students with visual impairment. This substantiate with Ryles's (1999) studies who found that legally blind individuals who read Braille fared better than those who had learned to read using large print: they had higher employment rates and higher educational levels; they were more financially self-sufficient; and they spent more time reading. In short, literacy leads to a better future.

Question 2 states that what is the composite effect of independent variables (repeated Braille reading and reading speed) on the dependent variable (comprehension) abilities of students with visual impairment? The result showed there was a significant composite effect of independent variables (repeated Braille reading and reading speed on the dependent variable (comprehension) abilities of students with visual impairment. The table also shows a coefficient of multiple correlations (R) of 0.995 and a multiple R square of 0.990. This means that 99.0% (Adj. R^2=0.990) of the variance in the repeated Braille reading and reading speed is accounted for by the independent variables, when taken together. The significance of the composite contribution was tested at $p<0.05$ using the F-ratio at the degree of freedom (df=2/77). The table also shows that the analysis of variance for the regression yielded a F-ratio of 3786.509 (significant at 0.05 level).

The finding equated with Edmonds and Pring, 2006; Wall Emerson, Holdbrook and D'Andrea, 2009, who at different times submitted that significant delays in Braille reading parallel the slower rate of comprehension abilities by Braille readers. The poor reading achievement of students with visual impairments and the life-long consequences of low literacy make it imperative that Teachers of the students with visual impairment use Braille teaching practices that have a demonstrated record of success in comprehension abilities. Layton and Koenig (1998) evaluated the effectiveness of the repeated-reading strategy with four elementary-level students with low vision. They found that three students' reading rates improved significantly and that the fourth student's reading rate improved moderately resulting to a speedy comprehension. All four students retained their greater fluency during the maintenance phase. Assistive technology devices may also be used to enhance both independence and reading performance to enhance comprehension abilities. Some of these devices include low vision devices, such as magnifiers or slant boards; screen-magnification

software; screen-reading software; auditory alternatives; such as four-track tape systems; and optical character recognition (OCR) programs. Enlarging printed material with low vision devices or through electronic magnification has been found to increase the reading rates of individuals who are visually impaired (Lovie-Kitchen and Whittaker 1998; Mangold and Mangold, 1989). In addition, LaGrow (1981) demonstrated the effectiveness of closed-circuit television training in improving the reading rates of six college-bound.

Research question 3 states that what is the relative contribution this method (repeated Braille reading) to the development of reading speed and comprehension? The result revealed that there was relative contribution this method had to the development of reading speed and comprehension of the independent variables to the dependent variable, expressed as beta weights. The correlation coefficients, of repeated Braille reading have relationship with reading speed and comprehension. The value of the reading speed and comprehension shows determinant in the reinforcement of the independent variables. Using the standardized regression coefficient to determine the relative contributions of the independent variables. Reading speed ($\beta = 0.859$, $t=33.427$, $p<0.05$) indicates most potent contributor to the prediction, while comprehensive reading ($\beta =0.150$, $t=5,822$, $p<0.05$) has a contribution to repeated Braille reading. It implies that there is relative contribution effect of repeated Braille reading on reading speed and comprehension.

This correlate with Bell, 2001 and Iwahori, 2008 in their research studies that have established a link between extensive Braille reading and reading speed. It was stated that Repeated Braille reading requires the learners to read the same text repeatedly, either silently or aloud (Nation 2009). This activity is said to meet the condition for reading speed development and comprehension. There are several possible ways in which repeated reading can be implemented, with one variation being the amount of support provided to the learners. For example, in assisted repeated Braille reading, learners read and simultaneously listen to the text during some of the re-reading stages. In foreign language teaching, assisted repeated reading has been found to be effective in developing fluency, reading speed and comprehension as measured in words per minute (wpm), but with no

significant difference between the impact of repeated reading and extensive reading (Taguchi, Takayasu-Maass and Gorsuch, 2004).

Conclusion

Reading is the fulcrum for result oriented education and academic success. This is also true for individuals with visual impairment. Deficit reading skill may not enhance the academic activities of these individuals. This is the reason the study affirm that for Braille reading to be effective, it should be made part of the individual with visual impairment by constantly practicing. Constant reading which is repeated reading increases reading speed and enhances comprehension.

Recommendation

Based on the findings, the study suggested that:

- Teachers should allow conducive atmosphere for repeated Braille reading and reading speed.
- Parents should also follow up the teachers' effort at making their children/wards with visual impairment acquire these skills to enhance comprehension of any given task.

References

Bell, T. 2001. Extensive reading: Speed and comprehension. The Reading Matrix, 1, 3-15.

Browder, D. M., Spooner, F., Ahlgrim-Delzell, L., Flowers, C. Karvonen, M., and Algozzine, R. 2003. A content analysis of the circular philosophies reflected in states' alternate assessment performance indicators. Research and practice for Persons with Severe Disabilities, 28, 165Y181.

Corn, A. L., Wall, R. S., Jose, R. T., Bell, J. K., Wilcox, K., and Perez, A. 2002. An initial study of reading and comprehension rates for students who received optical devices. *Journal of visual Impairment and Blindness,* 96(5), 322-334.

Edmonds, C. J., and Pring, L. 2006. Generating inferences from written and spoken language. A comparison of children with visual impairment and children with sight. *British Journal of Developmental Psychology,* 24 (2), 337-351, doi: 10.1348/026151005X35994

Eldridge, C. 1979. Braille literary: The best route to equal education. *Journal of Visual Impairment and Blindness,* 73, 331-333.

Elley, W. B. and Mangubhai, F. 1983. The impact of reading on second language learning. Reading Research Quarterly, 19 (1), 53-67.

Erin, J., and Sumranveth, P. 1995. Teaching reading to students who are adventitiously blind, Review, 27, 103-112.

Fellenius, K. 1999. Reading environment at home and at school of Swedish students with visual impairments. *Journal of Visual Impairment and Blindness,* 93, 211-222.

Frank, J. 2000. Requests by persons with visual impairment for large-print accommodation. *Journal of Visual Impairment and Blindness,* 94, 716-720.

Fuchs, L. S., Fuchs, D., Hosp., M. K. and Jenkins, J. R. 2001. Oral reading fluency as an indicator of reading competence: A theoretical, empirical and historical analysis. *Scientific Studies of Reading,* 5(3), 239-256.

Iwahori, Y. 2008. Developing reading fluency: A study of extensive reading in EFL. Reading in a Foreign Language, 20, 70-91.

Koenig, A. J. and Holbrook, M. C. (1995). Learning media assessment of students with visual impairments: a resource guide for teachers (2nd ed). Austin, TX: Texas School for the Blind and Visually Impaired.

Krischer, C. C. and Meissen, R. 1983. Reading speed under real and simulated visual impairment. *Journal of Visual Impairment and Blindness,* 77, 386-388.

LaGrow, S. 1981. Effects of training on CCTV reading rates of visually impaired students. *Journal of Visual Impairment and Blindness,* 75, 368-372.

Layton, C., and Koenig, A. 1998. Increasing reading fluency in elementary students with low vision through repeated readings. *Journal of Visual Impairment and Blindness,* 92, 276-292.

Legge, G. E., Madison, C., and Mansfield, J. S. 2000. Measuring Braille reading speed with the MNRead test, J Vis Impair Blindness.

Lovie-Kitchen, J., and Whittaker, S. 1998. Relative size magnification versus relative-distance magnification: Effect on reading performance of adults with normal and low vision. *Journal of visual impairment and Blindness,* 92, 433-435.

Mangold, S. and Mangold, P. 1989. Selecting the most appropriate primary learning medium for students with functional vision. *Journal of Visual Impairment and Blindness, 83,* 294-296. Retrieved from http://www.afb.org/jvib980104.asp (36 of 39)5/5/2005 7:57:40 AM The Impact of a Modified Repeated-Reading Strategy paired with Optical Ch... Rates of Students with Visual impairments... Reading Rates- January, 2004.

Meyer, M. S. and Felton, R. H. 1999. Repeated reading to enhance fluency: Old approaches and new directions. *Annals of Dyslexia,* 49(1), 283-306, doi: 10.1007/s11881-999-0027-8.

Nation, P. 2009. Teaching ESL/EFL reading and writing. New York, NY: Routledge.

National Federation of the Blind Jernigan Institute. 2009. Arizona Revised Statutes 15-761.

Reed, D., Wexler, J., and Vaughn, S. 2012. *RTI for reading at the secondary level: Recommended literacy practices and remaining questions,* Guilford: New York.

Ryles, R. 1996. The impact of Braille-reading skills on employment, income, education, and reading habits. *Journal of Visual impairment and Blindness,* 90(3), 219-226.

Ryles, R. 1999. The impact of Braille-reading skills on employment, income, education and reading habits. *Journal of Visual Impairment and Blindness,* 90(3), 219-226.

Samuel, S. J. 1979. The method of repeated readings. The Reading Teacher, 32, 403-408.

Schroeder, F. K. 1989. Literacy: The key to opportunity. *Journal of Visual Impairment and Blindness,* 83(6), 290-293.

Stephens, O. 1989. Braille Implications for living. *Journal of Visual impairment and Blindness,* 83, 288-289.

Taguchi, E. 1997. The effects of repeated readings on the development of lower identification skills of FL readers. Reading in a Foreign Language, 11, 97-119.