

# Braille Competency among Learners with Visual Impairments: Methodology and Learner Preparedness Factors in Thika and Meru Counties, Kenya

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## Abstract

*Braille remains the main medium of reading and writing among persons with blindness world over. This study aimed at establishing factors that have continued affecting Braille competency among young beginners in Kenya. The study was carried out at Thika School (Thika County) and St. Lucy School (Meru County), both being among the largest schools for learners with visual impairments in Kenya. The study adopted a descriptive survey design. A random sample of thirty girls and thirty boys was selected for the study. Five out of the eight teachers teaching reading and writing of Braille participated in the study. Two English lessons were observed in progress in each of the schools under study. The study revealed that there were no arrangements put in place to train children in reading readiness skills before introducing them to reading and use of Braille. There lacked uniformity in the way teachers approached the teaching of Braille.*

**Keywords:** Visual impairment, Braille, Slate and stylus, Reading Readiness, Disabilities Act, Kenya

## 1.0 Introduction

Braille remains the main medium of communication for persons who are blind. Kenya adopted Braille's code which was made up of six dots. Braille writing equipment includes Perkins braille writers and slate and stylus. Perkins braille writers are quite ideal for writing but rather expensive. The slate and stylus on the other hand are a cheaper alternative. However, when using the slate and stylus, the child writes from right to left, thus contradicting the left-right eye orientation. The child turns the paper when it comes to reading what has been written. This makes the process rather slow. This is also cumbersome and more so to the young children who are blind (Sharon & Rosanne, 1998).

A review of the Koech Report of 1999 confirmed that majority of children in schools for children with visual impairment in Kenya used crude, outdated writing equipment, thus did not perform as expected. It was also observed that production of reading materials in a form usable by persons with visual impairments was usually slow, tedious and costly business.

The Disability Act of 2003 on its part stipulated that Learning Institutions should take into account the special needs for persons with disabilities with respect to the entry requirements, pass marks, curriculum, examinations, auxiliary services, use of school facilities, class schedules and other similar considerations. The Act also emphasized that provisions should be made in all parts of the country for an integrated system of special and non formal education for persons with all forms of disabilities. It also proposed for the establishment where possible of Braille and recorded libraries for persons with visual impairments.

## 1.1 Principles of Reading Instruction

During recent years, methods of reading instruction have become more student centered, fostering not only knowledge and ability but also independence (Grace, 2005). It is vital for students to have a strong knowledge base when they begin to learn to read. Children who do not have a strong knowledge of the environment and concepts about print would experience reading problems which might endure.

## 1.2 Methods of Teaching Reading

There are a number of methods that teachers can embrace in teaching reading to beginners. Among the most commonly used are the phonic method, look and say, learning experience approach and the context support method.

### **1.2.1 Phonic Method**

The phonic method is probably the best known and widely used method to teach reading and writing in the English language. It relies on children being taught the alphabet first, the names of the letters and the sound they make. Once they have learnt the letter sounds they would begin to blend two letters together to make simple words, then three letters, then four and so forth. For children to learn the phonic method they need phonically written books using regular words that are interesting to young children. Each word must be sounded out by the child in order to achieve the highest level outcome. Learning the sounds and their blends may be disinteresting for young children, so the teacher should keep it short and entertaining. Often the children are so busy concentrating on sounding the words and blending the sounds that they do not learn the meaning of the word, making it boring for them (Griggs, 2000). Teachers should therefore ensure that they explain the meaning or expound on the word to keep interest and enthusiasm for learning. When using the phonic method, most children learn to read basic words and sentences within three to six months. The method supplies the learners with tools to expand their vocabulary (Griggs, 2000).

### **1.2.2 Look and Say Method**

With the look and say method, children learn to recognize whole words or sentences rather than individual sounds. Children look at a word which the teacher sounds and in return repeat the word. Flash cards with individual words written on them are used for this method often accompanied with a related picture. It is recommended with this method to use whole short sentences rather than individual words. The teacher writes a short sentence representing the picture displayed, says the sentence and asks the child to repeat it while pointing at each individual word as he/she repeats what the teacher says. By use of work cards, the teacher can create many different sentences again and again.

### **1.2.3 Learning Experience Approach**

This method uses learners' own words to help them read. Learners may draw a picture of dad in the car. The teacher writes underneath the drawing 'dad is in the car'. The teacher continues to collect drawings and the learners make and write short sentences about them. Some teachers use this method as a first approach to reading in order to help their learners understand that what they have drawn and what is written is a form of communication. The language experience approach supports the child's concept development and vocabulary growth while offering many opportunities for meaningful reading and writing activities through the use of personal experiences and oral language (Griggs, 2000).

### **1.2.4 Context Support Method**

When children are just learning to read, it is important to choose books that really interest them. If boys like cars, the teacher should choose a book with pictures and simple words about cars. This would keep their interest and they would enjoy learning with the teacher. If girls like dolls on the other hand, then the teacher gets a book with doll pictures and simple words. Griggs (2000) noted that this method encourages enthusiasm because children are actually looking at something they can relate to.

## **1.3 General Guidelines: Differences between Braille and Print Reading**

### **1.3.1 Tactile versus Visual Reading**

Various research studies by Kosman and Castellano (1997), Harley, Truan and Sanford (1987) and Holbrook and Koenig (1992) agreed that in the absence of vision, it was important to give a pupil sensory training to the remaining senses like the sense of touch and the sense of hearing so that they might be used as sources of information.

There are three general reasons why reading is important, the first one being a tool for learning. Once a child is able to read, he can do much more learning on his/her own. On the other hand, a child with a reading problem will be handicapped in all other subjects and will continue to do poorly until the problem is rectified. Secondly, reading is an indispensable skill in terms of entertainment for one can experience ideas, adventures, feelings and situations that are expressed in form of print and are not available in everyday life. Thirdly, reading is also an important means by which people obtain information about the environment and make use of it (Brunner, 1996).

The most basic and obvious way in which reading Braille differs from reading print is the sensory modality used. Braille readers read tactilely and print readers read visually.

Kusajima (1974) conducted a comprehensive investigation of both tactile and visual reading. His findings are still valid and they are important for teachers to consider in understanding the two processes. Kusajima summarized the different characteristics of efficient visual and tactile reading as follows: Good visual reading is characterized by a small number of short regular pauses, no regressive movements and well-adjusted return sweeps combined with a deep and accurate understanding of the meaning of a text. Good Braille reading is characterized by few zigzag, up-and-down, or fluttering movements, uniform pressure of the finger on the page, no regressive movements and well-adjusted movements between lines with the help of both hands combined with a deep and accurate understanding of the meaning of the text. Kusajima's findings demonstrated that perception is tied to movement in Braille reading. In fact, without movement, perception cannot occur. Subsequent research also demonstrated the key importance of an individual reader's tactile perceptual abilities in developing good Braille reading skills, such as how the reader moves his or her hands (Mangold, 1978; Wormsley, 1978). This difference in perception from print reading has significant implications for the skills Braille readers need to learn, and teachers must make sure that their instructional strategies are consistent with the way Braille readers' process information (Rex, Koenig, Wormsley, & Baker, 1994).

In print reading, the teacher pays little attention to the mechanics of reading, that is, the movements of the eyes but the Braille teacher must help students develop good hand movements if they are to become efficient readers. Teachers must also be able to recognize inefficient hand movements and learn how to eliminate them and replace them with efficient ones. Many teachers think that they can teach tracking or the ability to follow a line of Braille across the page and down to the next line, by itself. As a general rule, therefore, teachers should pay close attention at the beginning of Braille reading instruction to teach the child how to move his or her hands on the Braille materials and to constructing materials that allow for movement across lines and characters in the manner of the most efficient readers (Kusajima, 1974).

It is in the light of the above that the study sought to establish whether teachers took time to train the young learners with visual impairments in reading readiness skills before introducing them to reading and writing Braille.

### **1.3.2 Complexity of the Code**

Another difference between learning to read and write in Braille and in print that affects the development of the instructional programmes is the fact that Braille readers have more symbols to learn than do print readers, and they do not learn all the elements of the code until long after print readers have learned theirs. Generally, all of the print symbols, with the exception of certain standardized marks such as the ampersand (&) and certain punctuation signs such as the semi-colon (;), are introduced by the end of first grade.

However, the vocabulary in children's reading materials would not contain all of the Braille contractions until they have reached a third grade reading level. Conversely, providing materials at a first, second or third grade reading level may not ensure that the child would be able to recognize or interpret the Braille symbols that do appear. In addition to the symbols themselves, Braille readers must learn rules of usage of the Braille symbols that print readers do not have to contend with. This means that Braille readers have an extended period of time during which they are still learning their literacy medium, while their sighted classmates have moved on beyond learning their code.

### **1.4 Braille Instruction and Approaches of Teaching Braille**

It would be wonderful if all children and adults could learn to read in the same manner. In fact, children learnt the skill in very many different ways, depending upon their inborn abilities, their experiences, and their motivation and interests. For that reason, every teacher must have knowledge of the major methods for teaching reading (Mousty & Beterlson, 1985). Teaching Braille to young children with visual impairments is more than just teaching them the meaning of the Braille symbols. Young children with visual impairments learn to read using Braille just as young sighted children learn to read using print. Both those with visual impairments and those with sight learn the meanings of symbolic representations (print and Braille characters) and how those representations form words, sentences, paragraphs etc which when put together communicate a unique message. Many teaching methods which work for sighted children could also work for children with visual impairments, possibly with some modifications. Choosing the method or combination of methods which best suited the learner's needs was critical to the students in learning to read (Holbrook & Koenig, 1997).

In view of that, the study explored the teaching methods used by teachers of Braille in Kenyan schools for learners with visual impairments. The analysis indicated that those teachers who used phonic method had a disregard of the learners with visual impairments. This was because while they had text books for learners with vision, there was no equivalent for those learners who used Braille. Things were no better for learners who used Braille in class three. In the reading lesson observed, the teacher partly embraced phonic and look and say methods. In look and say method, the teacher had flash cards with words and sentences which the learners were supposed to read after the teacher. Unfortunately the children with visual impairment had to repeat the words and sentences probably without attaching any meaning to them since they could not see the pictures accompanying the words and sentences.

### **1.5 Reading Readiness**

A study carried out by Mathews and Klaassens (1999) in some Kindergarten classes in Britain found out that reading readiness activities were included in all instructional programmes. In some instructional programmes, reading was taught separately whereas in others it was part of the basic reading and writing instructions. The reading programme a teacher chose and modified, determined when and how he/she would handle reading readiness (Mathews & Klaassens, 1999). Language reading and writing skills began to develop in the first three years of life. The study further found out that parents, who began reading to their children early, taught the importance of that skill. Children learnt to love the sound of language even before they were able to recognize printed words on a page. It was noted by the same study that reading books aloud to children stimulated and expanded their imagination, and was the single most important activity for developing their literacy skills.

Reading provides a quiet time to spend with the child, and could be a bonding experience. Early exposure to reading could lead to a successful start to Kindergarten, and it lays the ground work for future success in life. The same study contended that some instructional programmes approached reading readiness as a part of teaching beginning reading. Here, reading readiness concepts are taught in context as the teacher modelled reading and writing. In that case, great emphasis is placed on learning through observation. The teacher plays a major role and it is expected that learners gain quite a great deal on observing him/her. The philosophy is based on the view that when learners are learning to read and write, they are not just learning a set of skills, but they are acquiring, a 'network' of strategies for operating on or with the text (Mathew & Klaassens, 1999). In that context, the teacher and learners are involved in lots of talking as they work on tasks. Here, the teacher provides strong interactional support to the learner and creates a learning environment. Learners are encouraged to take considerable responsibility for their learning and their pace is not forced but is geared to what they are comfortable with. Teaching/ learning materials are critical in learning situations particularly for learners with sensory deficits.

#### **1.5.1 Reading Readiness for Learners with Visual Impairment**

In the absence of vision, sensory training of the remaining senses like the sense of touch and the sense of hearing is important since they are the ones to be used as sources of information. That should be included in the reading readiness programme. The findings revealed that there was no reading readiness activities taught in either of the schools under study. This is an important area which is unfortunately ignored. A study by Marshall and Hunt (2002) revealed that it was of paramount importance that special attention be given to the development of tactual perception and listening skills before beginning to teach reading to a learner using Braille. These are important pre- reading activities usually incorporated in reading readiness programmes for beginners.

Various research studies (Mathew & Klaassens, 1999; Rex, Koenig, Wormsley, & Baker, 1994) had also agreed that in the absence of vision, it was important to give a pupil sensory training to the remaining senses like the sense of touch and the sense of hearing so that they might be used as sources of information. Such training should be imparted to learners before the introduction of reading/ writing Braille to prepare them for what they are to encounter later in life. In their study, Rex *et al*, (1994) observed that learners with visual impairments had to be taught to use touch, just like sighted learners are taught to use vision. A similar study by Hamsphire (1981) noted that pupils with congenital loss of vision who had been taught tactual sense discrimination from very early ages usually did not have many problems with Braille reading if they did not have any other complications. When children are not involved in reading readiness and pre-Braille activities, they are bound to experience problems with finger dexterity and hand movement. Such was observed on class two children in one of the schools. One of the learners observed used only the index finger to read. He read with the wrist on the material and would rub on dots making them faint. The second learner observed also used one finger with the others hanging above the text.

That would make him get fatigued from the wrist which he kept resting on the material after a short while. Generally there was no uniformity in the way children in that class read Braille. From the interview, the teachers agreed that they did not usually prepare learners for reading Braille. Learners explored the best ways of reading Braille on their own. In Braille reading, the teacher paid little attention to the mechanics of reading, which was, the movements of the hands and the fingers. The Braille teacher must help learners develop good hand movements if they were to become efficient readers.

Mangold (1978) felt that teachers must also be able to recognize inefficient hand movements and learn how to eliminate them and replace them with efficient ones. A similar study by Lowenfeld (1983) in America revealed that pre-reading instructions were given during pre-school years. During such instructions learners were guided on the best hand/fingers to use in reading Braille. Language reading and writing skills began to develop in the first three years of life. Children who are sighted are exposed and they are always seeing their siblings or parents reading or writing. Thus, by age three years a sighted child is already scribbling and learning to hold reading materials. However, that is not the case with the child with visual impairments. That being the case, Mathews and Klaassens (1999) further suggested that parents of children with visual impairments should be guided on how to instill reading readiness skills to them long before they attained school going age. In his study, Buel (1996) found out that over protected and under stimulated children with visual impairments performed far below the norms of other children with visual impairments in gross and fine motor skills. There are a number of mechanical skills that are unique to Braille reading. These skills must be well developed before placing emphasis in decoding of Braille words, phrases or sentences. In that context, a study by Mangold (1978) suggested that children with visual impairments should be involved in sorting and stacking activities, stringing beads, punching and sewing Braille paper as part of pre reading activities among other such activities.

The beginning Braille reader, like all beginning readers, must acquire the readiness skills associated with the actual reading process. An important pre requisite that all readers must have to be efficient and read with comprehension is a rich background of concrete experiences involving many objects, people, places, activities and cause and effect relationships. In addition, the child must have receptive and expressive vocabulary that correspond to his/her experiences. Each individual child must develop auditory skills of identification, closure, sequence, memory for stories, and discrimination. The young reader must be able to concentrate, exert self control, and follow directions. Another important readiness factor is motivation.

During the pre-school years of 3 - 5, special attention should be given to 'readiness' especially in the area of language arts. If a child is visually impaired or seemed to be a tactual/auditory learner, attention should be given to the development of tactual perception and listening skills. It is important that the teacher evaluates the child's best sensory channels through a Learning Media Assessment (LMA). Some children might remain multi sensory learners and the decision for a primary reading medium might be difficult. Moreover, a few children with visual impairments could end up using one medium for some tasks and another for other tasks; such children might use both print and Braille, depending on the task and the degree of residual vision. If all sensory channels are afforded opportunity for development in the early years, the choice for learning/literacy media later can be made much easier. The preschool years are critical times for a child who is visually impaired and can make the difference between success and struggle during educational experiences (Marshall & Hunt, 2002).

Evans (1991) carried out a study in America with 20 children who had visual impairments and characterized by being overweight with weak upper limbs and low aerobic capacity. The study found out that proper muscular maturation was paramount for proper reading instruction in Braille; a good readiness programme for Braille reading would require fine motor hand coordination. Buel (1996), in his study carried out in Britain, found out that overprotected and under stimulated children with visual impairments performed far below the norms of other children with visual impairments in gross and fine motor skills.

Another study carried out in America with children less than 10 years, by Mangold (1978) found out that there were a number of mechanical skills that were unique to Braille reading. Those skills must be well developed before placing emphasis in decoding of Braille words, phrases or sentences. Teachers of those children should combine teaching of math concepts and counting with fine motor activities. The study further noted the importance of demonstrating correct finger position to the child, making some simulated reading materials to help teach hand movement and also demonstrating smooth, independent movements of the hands to the students.

Mangold however, noted that hand-use training seemed to be a neglected aspect which teachers often left children to discover for themselves. She felt that the training needed to be carried out with a proper understanding of what was involved or harm could be done. All students learning to use Braille must acquire the following: tactual discrimination, finger dexterity, hand and finger movement, light finger touch and page turning skills.

## **2.0 The Study Methodology**

The study adopted a descriptive survey design to find out whether learners with total loss of vision were taken through any pre Braille reading skills before being introduced to Braille. The study also interrogated the methodology embraced by teachers in teaching Braille to learners who were blind. Teacher questionnaires and interviews were used for data collection. To supplement the two were lesson observation. The study was carried out at Thika School (Thika County) and St. Lucy School (Meru County), both being among the largest schools for learners with visual impairment in Kenya. A random sample of 30 girls was selected from a population of 52 girls. Another random sample of 30 boys was selected from a population of 53 boys. 5 out of the 8 teachers teaching reading and writing of Braille were selected for the study. Head teachers from both schools participated in the study. Two English lessons were observed in progress in each of the schools under study. Data were analyzed along text-based themes.

## **3.0 Results and Discussion**

### **3.1 Teaching Braille: Approaches/Methods used at Thika and St. Lucy Schools**

Every teacher must have knowledge of the major methods for teaching reading. Teaching Braille to young children with visual impairments is more than just teaching them the meaning of the Braille symbols. Individual differences of the learners should be put into consideration and the teachers should therefore chose materials which maximally benefit individual learners.

It was evident that some teachers in the study used one to one approach in teaching Braille. Others used group approach and others whole class approach. A related study by Mousty and Bertelson (1985) stressed that every teacher have knowledge of the major methods for teaching reading. This is because children learn the skill in very different ways. Many teaching methods which work for sighted children could also work for children with visual impairments, possibly with some modifications. Choosing the method or combination of methods which best suited the learner's needs is critical to the learners in learning to read (Holbrook & Koenig 1997). Another study by Grace (2005) found out that during recent years, methods of reading instruction have become more learner centered, fostering not only knowledge and ability but also independence. It is vital for learners to have a strong knowledge base when they begin to read (Young, 1995).

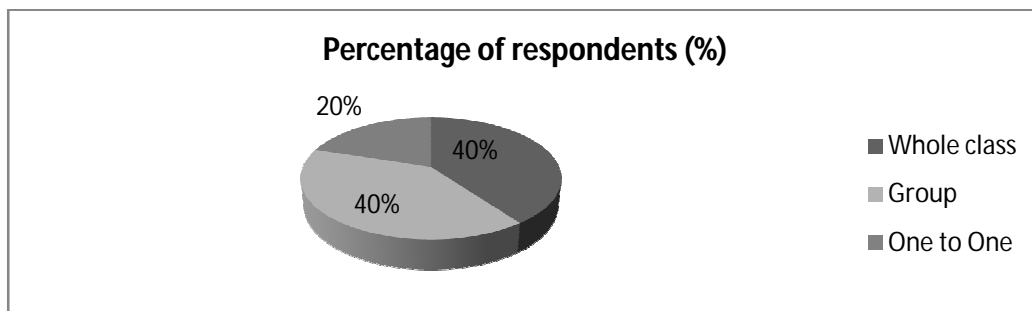
Individual attention is paramount when teaching Braille to beginners just like any other practical subject. From the study only 20% of the teachers used one to one approach. This was where each individual learner was attended to on a one to one basis. The other teachers used whole class approach (40%) and group (40%). It is important for teachers of children beginning to read Braille to attend to them as individuals as opposed to working with them as groups or the whole class. However, the large classes were prohibiting, thus limiting the amount of time spent on individual learners by the teacher. From the observation carried out, one of the teachers using one to one approach only managed to work with just three learners before the lesson was over. Meanwhile, the rest of the class was left rather passive.

Two of the teachers interviewed agreed that an ideal class for children with visual impairment should not be more than five, with such a number, it would then be possible for the teacher to work comfortably with individual learners or even small groups of two or three learners. Another teacher observed was partly using whole language method in teaching reading. She guided learners to read aloud short sentences on their own. Whole language reading instruction creates many opportunities for children to read, either independently, with other children in small guided reading groups or being read to by the teacher. While the approach worked for learners with low vision that were using print in the study, it did not work well for those using Braille. In the first place, Braille books were inadequate. Braille books were being shared, leaving some of the learners idle most of the time. Secondly, pictures in the print books which helped in enriching the learners' experiences had no equivalent in Braille for those using it. In their study, Kosman and Castellano (1997) noted that the whole language approach required a considerable amount of time on the part of the teacher of learners with visual impairments, to prepare materials and spend time in the classroom with the learners guiding them and orienting them to the materials.

Analysis of this study indicated that this was not happening in the two schools, considering that Braille reading/writing was not even slotted on the school timetable, the large number of learners was also prohibitive.

Another teacher observed was using a combination of the phonic and look and say method. On phonic method the teacher had some phonically written words which children were pronouncing after her. She led the children in blending the sounds to make words. This looked quite interesting to those children who were using vision (in both schools children with low vision and those with total loss of vision were learning together). However, children who were using Braille seemed to be left out since they did not have their words presented in Braille. They were left to repeat sounds and words without attaching them to their written form. On look and say method, the situation was even worse. The use of flash cards with pictures and accompanying words disadvantaged the children using Braille. On interviewing the teacher, she agreed that her methods left out the full participation of her learners using Braille, thus disadvantaging them more. Another teacher observed made some effort in incorporating both categories of learners (print and Braille users) in her lesson. She used a combination of phonic, look and say and partly learning experience approach. Although all the three methods call for the use of pictures which learners with total loss of vision could not explore, the teacher took time to explain to them the pictures she was presenting to those who could see. She also presented words that she was teaching in Braille form to them.

**Fig.1: Approaches used in teaching Braille**



### 3.2 Teaching of Reading Readiness and Pre Braille Skills at Thika and St Lucy Schools

In both schools, the study found out that there were no arrangements put in place to train children in reading readiness skills before introducing them to reading Braille. Yet, it was important that for a child with visual impairment attention be given to the development of tactual perception and listening skills (Marshall & Hunt, 2002). During the interview, one of the head teachers confirmed that by saying, "Reading readiness is an area we do not take seriously, we have not thought of teaching it because in the first place time is very limited. So we are left to concentrate on only the content in the curriculum, otherwise we would really drag behind in the curriculum if we have to teach those things". Teachers who teach Braille are not trained on the skills to be able to impart the same to their learners.

#### 3.2.1 Problems with Finger Dexterity and Arm Movement

From the findings it was evident that some children experienced problems in finger dexterity and arm movement while reading. That was also confirmed by an observation schedule carried out on class two children in one of the schools. In that class, six children were observed while reading simple three to four letter words. Three of the children observed seemed slower than the rest. One of them used only the right index finger to read. He read with the wrist resting on the material and would rub on dots which made them faint. That would slow down the reading speed. Another child observed also used one finger (index) with the others hanging above the text. That would make him get fatigued from the wrist which he kept resting on the material before he could even finish reading a series of three words. The third child kept on interchanging the hands as he read. He could use his left hand and then switch off to the right before he was through with reading the words. The other children had no reading materials. Two rested their heads on the desks almost throughout the lesson. The other one looked quite attentive but just like the other two; she could not fully participate in the lesson since she did not have the reading material.

It was learnt that there was nothing that teachers did to alleviate problems of finger dexterity and hand movement. In fact, the teachers had not even thought of it as an area that needed some attention to improve on reading.

#### 4.0 Conclusion

The study revealed that reading readiness was an area completely ignored by teachers of learners with visual impairments yet those learners had unique learning needs as they learned to read. The teachers would benefit from considering those needs and identifying methods and techniques useful to address them. Consistency, encouragement, optimism, and other teacher traits and behaviours often made the difference between success and failure in learning to read. This was missing in teachers teaching Braille in Kenyan schools for learners with visual impairments. On both reading readiness and teaching methods, it is necessary to consider what it involves for seeing children and how it may be adjusted to the special needs of a child with visual impairment. Readiness is an important aspect of any learning. It depends on all previous experiences. As many researchers have noted, reading methods useful for learners who are sighted could also be adjusted to work for those with visual impairments.

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