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About the Journal

Journal of Disability Management and Special Education (JODYS) is a bi-annual peer reviewed and open access journal to publish research articles. JODYS is published by Faculty of Disability Management & Special Education, Ramakrishna Mission Vivekananda Educational and Research Institute (RKMVERI), Coimbatore Campus. JODYS aims to bring out original research articles and quality scholarly reviews on research, policy, and practice in the field of special education. The journal publishes case study, book and literature reviews, meta-analysis, service utilization studies, community surveys, public policy issues, training and current research in special education.

JODYS supports the publication of research and development activities, provides technological information and resources, and presents important information and discussion concerning important issues in the field of special education technology to scholars, teacher educators and practitioners. JODYS seeks new contributions based on original work of practitioners and researchers with specific focus on or implications for the field of special education. JODYS has the panel of referees and experts who are dedicated to review the research papers for getting the high impact factor.

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MULTISENSORY STORYTELLING FOR CHILDREN WITH MULTIPLE DISABILITIES

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ABSTRACT

Multisensory storytelling (MSST) can be one of the best ways to enhance and improve communication, and rebuild the relationship between children and families. Most importantly, MSST might give the individual a chance to become part of an inclusive community. It can assiduously help parents; caregivers communicate with them in a common language and endure the sensational experience that multisensory storytelling provides. In dealing with problems, storytelling answer children's problems in other ways, improving literacy, and many other areas can be used. This research aims to evaluate the effectiveness of Multisensory Storytelling in individuals with multiple disabilities. MSST is a structured method in which teachers or parents read personalized stories to children with Profound Multiple Disabilities (PMD) to motivate them to interact and explore their environment (Multiplus,2008). As an essential part of our lives, storytelling is used to communicate with others and make sense of the world. Taking many forms, stories can be expressed to allow information to be accessible to diverse people of different ages and abilities in various contexts. Individuals with profound and multiple disabilities are one such group of people who can also experience a rich storytelling experience. The current article is focused to answer how multisensory storytelling can help children with multiple disabilities and improve their performance. In the current study, articles published between 2005 and 2020 about multisensory storytelling and multiple disability in PubMed, SID, Sage, Springer link, Elsevier and Google databases were searched using the following keywords: multisensory, Storytelling, stimulation, multiple disabilities, and special needs. Results showed that the Multi-sensory storytelling (MSST) is a promising approach for children and young adults with disabilities. Therefore, it is recommended to use MSST for all children including children with disabilities.

Key words: Multisensory, Story Telling, Multiple Disabilities

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INTRODUCTION

Storytelling is among the simplest and most enjoyable and transformative activities globally (Grove,2012). Moreover, they stimulate children's cognitive, communicative and socio-emotional development (Penne et al., 2012). People with profound multiple disabilities (PMD) are characterized by their pervasive needs for support (Slange, 2016). They have a developmental age below 24 months, combined with a severe or profound motor disability and, in addition, sensory disabilities and general health problems (van der Putten, Bossink, Frans, Houwen, & Vlaskamp, 2017). Individuals with multiple disabilities frequently face difficulties when communicating with peers and adults (Farrell, 2013). Difficulties may appear as language issues, inability to control non-verbal communication, or even issues to focus on their thoughts and feelings and properly explaining them to others. This impact on affective development may generate frustration and anger, which delays learning and development, resulting in a negative looping effect. Thus, an important goal of special education in all grades is to identify and remove these barriers, which is the primary step to effectively integrating individuals with multiple disabilities (Johnels, Vehmas, & Wilder, 2019). In this regard, sensory stimulation looks promising, which includes multisensory storytelling.

Using MSST, people with multiple profound disabilities may share human experiences using storytelling medium (Ngong, 2019). The present study provides insight concerning the effectiveness of MSST and investigates the benefits from MSST for individuals with multiple profound disabilities.

METHODOLOGY

An article review of contemporary academic writings, was used to ascertain support for the use of multisensory storytelling on children with multiple disabilities as a means to engage and improve education. The objective of the review was to audit reliable literature to identify common themes relating to: storytelling; multisensory storytelling, stimuli; multiple disabilities.

Selection of Relevant Literature

Included in the review are contemporary papers, and documents published within the last 15 years from recognized academics in the fields of special education and psychology, including: Matos,2015; Grace,2014; Martins,2017; Ngong,2019; Halfens,2012; PMLDLink,2006; Spence,2020; Grove,2012; Miller,2008; Rasmussen,2005; Azzopardi,2014; Young, 2010.

Key Terms in the Review: Key terms searched relating to storytelling literature included: Multisensory storytelling, multiple

disabilities, and storytelling. Literature was also analyzed for a relationship between multisensory storytelling and its effect on children with multiple disabilities. These searches were conducted between 2005 and 2020.

Multiple Disabilities

The term "multiple disabilities" is utilized differently, though it is usually associated with the basic concept of disability. They are often defined as having at least two disabilities in an individual. Individuals with multiple disabilities may be considered, regarding the educational point of view, as a thoroughly intertwined network of settings. Children with profound multiple disabilities struggle with motor and cognitive disabilities that often co-occur with language and social disabilities (Ten Brug,2012). As a result, they have a low mental age, up to 2 years, corresponding with the sensori-motor stage of Piaget's Theory of Cognitive Development (Berk,2008). People with multiple disabilities often have minimal mobility, reduced sensory functioning, and minimal interaction with the environment (Munde and Vlaskamp,2015). Therefore, they are at risk of receiving insufficient stimulation and, correspondingly, experiencing low happiness levels and poor life quality (Hostyn, & Maes, 2013). Given their general condition, most of these people cannot benefit from traditional programs to establish self-care or occupational skills

(Lancioni, Singh, O'Reilly, Sigafoos, Resta, Campodonico, & Chiariello, 2020). One of the main approaches for improving this population's situation emphasizes providing them with environmental stimulation, which is critical to promoting attention, satisfaction, and development (Lancioni et al. 2006; Vlaskamp and Nakken, 2008). Different strategies are available for providing environmental stimulation. One such strategy involves the use of multisensory storytelling (Matos et al., 2015). In this strategy, stories are presented to the participants by emphasizing the sensory experiences such stories entail. Specifically, the participants are exposed to various sensory events/stimuli characterizing the story being told to support the narration and its impact on the participant and the interaction between storyteller and participant (Ten Brug et al. 2015, 2016). People with profound disabilities may comprehend when experiencing their different senses. Consequently, MSST is well suited for children who have multiple disabilities.

Storytelling

Storytelling is defined as sharing experiences and ideas using actions and words to present the meaning of our own and others' lives (Karim, 2015). It is a unique human experience enabling us to convey using words, language, imagined or real aspects of ourselves and the others, and the worlds we

inhabit (Behmer, 2005). Stories help us learn about these worlds and our position in these worlds since stories constitute them to some extent. As an effective method to improve individuals, competency storytelling may be served (Giagazoglou, & Papadaniil, 2018). Stories help us understand new ideas and experiences, develop imagination and empathy, and learn how to face challenges and deal with our problems. They are focused on meaning transference despite their format diversity (Matos, Rocha, Cabral, & Bessa, 2015).

Storytelling and Sensory Stimulation

To facilitate the associated experience when sharing a multisensory, it only requires reading lines (Grace, 2014). Using multisensory stimuli is an attempt to enhance selective attention and awareness to elicit meaningful, behavioral responses (Multiplus, 2008). It seems that without stimulation and an awakening of the senses, children with PMD find it almost impossible to make sense of their experiences (Willems, 2014). In the case of a multisensory story, visual experiences, touches, sounds, smells, and tastes may encourage children's attention (Grove, 2012). According to Aldrich, Jennifer, and Shelly's opinion that "all children exhibit the need for sensory activities and usually respond to them focusing better in the classroom, increasing interactions with peers, and improving overall

daily function" (Aldrich, & Tracy, 2006; Martins, 2017). An intervention using the senses seems to be suitable for children with PMD. In line with, Gascoyne (2012) states: "Sensory- rich play is an inclusive way of encouraging learning and development, with the hands-on approach appealing to children with different thinking and learning styles" (Martins, 2017). Multisensory stories provide children with an opportunity to experience stimuli interaction in the safety of a story. The meaning of the sentences may be delivered either during the sentence or at the end. Sensory storytelling delivers highly stimulating sensory experiences besides sharing the story (Marr, Mika, Miraglia, Roerig, & Sinnot 2007). A clear structure makes it possible to repeat the experiences. Repeating experiences improve their predictability for the individuals who experience them, enhancing their security feeling sensed in association with those experiences. Repetition is key to learning. Using structured methods to present experiences, anticipation, and memory may be developed. Sensory stimulation is appreciated on its own (Smith, 2019). In sensory storytelling, consistency may be beneficial. Consistent sharing is merely reading the words and simplifying the stimuli; constant telling is the only way to read the words and simplify the stimuli similarly each time of story delivery (Grace, & Silva, 2017). MSST provides an

exceptional opportunity for children with PMD, who may not necessarily be able to communicate using language, and the chance to share an appealing journey sense of a story beyond language alone (Preece & Zhao, 2015).

Evolution of Multisensory Storytelling

A child with communication difficulties, such as individuals with multiple disabilities, may experience the transformation via engagement with others by multisensory storytelling through leisure and education (Link, 2006). The multisensory approach is not merely based on language and intends to improve social interactions and simplify the PMD individual's learning experience. In general, MSST provides new stimulating experiences for PMD individuals, and it has been shown to exert therapeutic benefits for them (Azzopardi, 2014). The MSST principles especially insist on the importance of interpersonal interaction by using narrative and sensory stimuli through their healthy sensory capacities. The purpose of multisensory storytelling is to give an experience of narrative using sensory stimuli wherein interactions among listener and storyteller can also rise. This has been essential for enriching children's lives with PMD (Lacey, 2006).

Multisensory Storytelling

Multisensory storytelling (MSST) is an approach to storytelling in which 'stories are not simply told but can be experienced with all our senses' (Fornefeld ,2013; Preece & Zhao, 2016). MSST is a structured method used to motivate individuals with profound multiple disabilities to interact and explore their environment by reading personalized stories (Multiplus, 2008). A story consists of 6 to 8 pages, and every page includes 1 or 2 short sentences. Each page is supported by an object of reference, stimulating the different senses, to draw the child's attention, invite exploration, and supporting meaning-making. The goal of multisensory storytelling by using sensory experiences is to develop social skills and stimulate social interaction with the environment (Penne, ten Brug, Munde, van der Putten, Vlaskamp, & Maes, 2012; Willems, 2014). As such, storytelling creates a place where close interactions can be experienced, and knowledge can be transferred (Young & Lambe,2011). MSST story has a big box containing six to seven white A3-format cardboard pages with two simple sentences and an object stimulating at least one sense. MSST intends to integrate the sensory information to enhance the storyteller's responses and the objects (Preece, & Zhao, 2016). MSST language may be experienced directly, which results in vocalization or emotional reactions. To understand the story's meaning, children do not need to understand the language—same story repetition using MSST results in predictability and recognizability that

stimulates social responses (Boer & Wikkerman, 2008). When using MSST, short sentences are used that imply clear acoustic information to improve predictability and recognizability. The reader's prosody changes intonation and rhythm within MSST, which provides melody for the speech, generating the story's emotion for the children. Auditory, visual, and tactile stimuli of the objects exaggerate responses (Ten Brug, Van der Putten, Penne, Maes & Vlaskamp, 2016). The children are more attracted using sensory stimuli and inspired to explore the items, i.e., looking, reaching, holding, touching, and pointing to the objects. In MSST, we bring an object into children's bearing area to allow object reaching, grasping, and exploration and provide the potential to use the object. When the storyteller shows the children the object's manipulation method, modeling appears. Lastly, this provides a pleasurable activity for children, which allows them to improve their alertness and concentration (Spence, 2020). Better opportunities are available for children's exploratory behavior, such as looking at the storyteller or the object when enjoying the activity (Boer & Wikkerman, 2008). The fundamental idea of multisensory storytelling is that the child is addressed as a whole, not limited to his/her cognitive abilities. Using the narrators' voice, music, and sensory materials awaken the child's emotion and creates images (Grove, 2012). Several studies have been conducted regarding the use of multisensory storytelling as a teaching strategy. PAMIS and Multiplus are organizations for individuals with profound multiple disabilities. Their first observations of MSST appear promising (PAMIS, 2002; Multiplus, 2008; Jonckheere, 2008; Young, Fenwick, Lambe & Hogg, 2011). However, these findings begin appearing in the peer-reviewed literature; thus, their research results should be preliminary. Jonckheere (2008) evaluated progress by using a questionnaire, claiming no significant effect was found using MSST in ten sessions in involvement and wellbeing. However, the storytellers filled out questionnaires, and their opinion on children's initial wellbeing was already relatively high at the outset of the sessions, indicating a possible ceiling effect. Another two studies analyzed children and young adults with profound multiple disabilities videotapes and storytellers on eight or ten MSST-sessions (PAMIS, 2002; Young et al.,2011). Results showed an increase in the frequency of social engagement measures and measures indicative of engagement with the story (PAMIS, 2002; Young et al.,2011). Qualitative research involving interviewing storytellers confirmed the outcomes of this study (Young et al.,2011). Several limitations mark these studies. These studies using small sample sizes, with the absence of a control group to inspect the effect of MSST (PAMIS, 2002; Young et al., 2011; Jonckheere,2008).

Table1- PAMIS guidelines used to assess the MSST books

	Constructing a multisensory storytelling book	Reading a multisensory storytelling book
Book in general	A title is present The story has a clear end	Caregiver takes time to read the book (4-6 mins)
Sentences	Sentences are written on a story script Maximum of two sentences per page Sentences are directly related to the stimuli One whiteboard per one or two sentences	No additional text is used in addition to the original story script
Pages	Whiteboards are present Maximum of eight pages	Whiteboards are used
Stimuli	Maximum of one stimulus per page, which may address multiple senses	Stimuli are actively offered to the person

The book Sensory Stories for Children and Teens with Special Education (Grace, 2014) reviews the literature on sensory stories and provides invaluable instructions and advice regarding sensory stories' creation and sharing. These instructions and guidance are summarized below:

Creation

1. Stories should be short, correctly told in under ten sentences; however, more sentences can be used if suitable for the person experiencing the story.

2. Each section of the story should accompany a strong sensory experience.

3. Creators should aim to address as many of the seven sensory systems (visual, tactile, gustatory, olfactory, auditory, proprioceptive, and vestibular) as possible. The specific interests and needs of the child with whom they plan to share the story should be taken into consideration (Grace & Silva, 2017).

Sharing the Story

1. Mediator should read the story text and share the related experience clearly, aiming to do this, in the same way, each time they share the story.

2. Mediator should allow time for reactions and responses.

3. Mediator should refrain from adding additional language to the story to keep the story's experience consistent and allow the experiencer to focus on the experiences.

4. Ideally, the mediator should know the person they are sharing the story with and be aware of their sensory abilities and preferences.

5. Mediator needs to prepare for sharing a sensory story thoroughly, ensuring all resources are ready for use before the story begins (Grace & Silva, 2017).

Effectiveness of Multisensory Storytelling

Since Multisensory storytelling is a relatively new method, only a few research types have been done to examine the effectiveness. Promoting a More Inclusive Society (PAMIS), the MSST training developer, examined the effectiveness of MSST on children and young adults with PMD (Slange, 2016). They videotaped several sessions of the same story and scored these sessions by behavioral observations. They found more frequent and different behavioral responses from the initial reading to the eighth reading. Besides, across readings, the stimuli' presentation provoked increased attention to both the stimuli and the storyteller. Lambe (2011) found that after MSST training, individuals with PMD significantly improved behavioral responses, attention, and interaction with the storyteller. They suggested that stories could stimulate enjoyment, motivate acknowledgment and engagement in the story, and enhance language understanding. Young and colleagues (2011) also found that after receiving MSST, individuals with PMD were more involved with the stories and storytellers and were better able to cope with sensitive topics. Inversely to these positive findings, Jonckheere (2008) did not find any significant effects of MSST training on children's health and participation with PMD. These different outcomes may be due to methodological deficiencies. As discussed,

studies had a small sample size, lacked a control group, and used different outcome measures (Slange, 2016).

Moreover, they partially used questionnaires filled in by the caregivers of the participants, not objective methods. Finally, this research did not analyze the consequences of maintenance and generalization. These components, plus empirically validated theories, are necessary to assess the efficiency of the MSST.

To conclude, the efficiency of an intervention is by examining its maintenance effects. In general, an intervention's positive results should be maintained over time before a program can be considered adequate. Although research on maintenance effects among individuals with PMD is limited, it appears that it is challenging to retain acquired skills (Frey&Kaiser, 2011; Case-Smith,2013). Thus, more research that addresses these methodological issues is needed.

What are we seeking?: Every child access and enjoys the stories at their developmental level, which means that the stories can be used with a group of mixed intellectual ability. Outcomes can begin at an essential stage. The disabled children are purely being exposed to the stories' range and variety of linguistic, physical, and emotional experiences, tolerate the required physical interaction, and display simple reflex responses. Some people will beam at

recognizable phrases. To make the action independently for others, they will learn to reach and grasp and, at the right time. For someone with no voluntary movement, progress will be muscles relaxed and ready to make the aided movement for a familiar page, and increased attention skills (Grace, 2014). Others will look and enjoy their friends' reactions, and some auditors will be able to repeat or remember specific words and eventually tell the story themselves. When a story has been repeated many times, there is evidence of increased alertness and anticipation, improved attention skills, and real pleasure in hearing the expected and factual personal stories, proof that a sequence has been learned. Children with profound

multiple disabilities depend on the care of others and are defenseless in the world. For individuals with profound disabilities, it is understandable that they will find unfamiliar situations or experiences disturbing. If they are not helped to overcome this discomfort, they can lead lives where their access to new sensory experiences is limited. Sharing various sensory stimuli in the comfort of storytelling space where the child feels comfortable and predictably and consistently will help individuals get used to new experiences (Grace, 2014).

Case Study

Multi-sensory storytelling to support learning for people with intellectual disability: an exploratory didactic study

This research aims to overcome the difficulties in communication as found in the group with intellectual disability.

Participants: 18 individuals with intellectual disabilities.

Method:

A prepared story called "fruits story"; the purpose was teaching the group about fruits.54r

Two versions of this story – regular story (audio-visual) (two stimuli)

Multisensory Storytelling (including all stimuli – audio, visual, tactile, & smell)

Two interviews – one for a regular story and one for MSST experience.

Procedure:

In the MS activity, they used a scent machine and PowerPoint presentation. The participants touched fruits to experience the touch stimuli (tactile sensor), followed by smell emission (olfactory sensor). Throughout the session few images and a video revealing how to make orange juice (visual and audio stimuli).

While in the audio-visual activity, they used only two of the seven sensory systems. They listened to the story and saw the same presentation.

At the end of the story, some questions about the story were made to check whether the information was understood.

In conclusion, participants had a better performance in the multisensory environments, with an average of correct answers (69%) compared to audio-visual environments (49%). These results showed that multisensory storytelling experience is more effective regarding memory

Table 2 - Summary of studies conducted on multisensory storytelling for children with special needs

Article topic	Year	Authors	Result
Literature review digital storytelling: Examining the process with middle school students. In Society for Information Technology & teacher education international conference.	2005	Behmer, S.	This review of the literature addresses several topics associated with digital storytelling. Storytelling, more specifically digital storytelling, has the potential to become a valuable educational tool for students when taught in an effective manner.
Storytelling: an educational approach in the inclusive kindergarten and school adapted to the experience of meaning for all children with and without special needs: a study within an oral narrative tradition in Kenya: an analysis of the content of Pokot stories for children about persons who are different in society, and attitudes conveyed	2005	Rasmussen & Anna Birgitte	Storytelling may promote a feeling of identity, self-esteem, mastering of recognition and empathy and a feeling of belonging in every child
The effect of sensory stories on targeted behaviors in preschool children with autism	2007	Deborah Marr, Heather Mika, Jennifer Miraglia, Maxine Roerig, & Rebecca Sinnott	Positive changing in behavior after reading and sharing sensory stories
The effect of sensory stories on targeted behaviors in preschool children with autism	2007	Hannah Young, Maggi Fenwick,Loretto Lambe, Hogg J	Multisensory learning & sensory based intervention can greatly impact the academic success to student with autism.

Multi-Sensory Storytelling (MSST) makes sense	2008	Nelleke Boer and Carla Wikkerman Translated by Renske Vos	We can conclude that a huge advantage of MSST is that both the audience &storyteller enjoy this practice a lot. MSST gives all those involved a sense of satisfaction. MSST boosts personal contacts, which can improve individual relationship, prove socio-emotional development.
Therapeutic interventions in the Netherlands and Belgium in support of people with profound intellectual and multiple disabilities	2008	Vlaskamp, C., & Nakken, H.	Results show that some interventions are very frequently used, with Snoezelen. Sensory Integrative Therapy, Equine Therapy, Basic Stimulation and Aromatherapy being the most common.
The Power of Story: Using Storytelling to Improve Literacy Learning	2008	Sara Miller and Lisa Pennycuff	Story telling is an effective pedagogical strategy that can be woven into instruction to increase students' competencies in all areas.
Using Storytelling to Support Children and Adults with Special Needs (Book)	2012	Nicola Grove	
Multi-sensory storytelling as an aid to assisting people with profound intellectual disabilities to cope with sensitive issues: a multiple research methods analysis of engagement and outcomes	2010	Hannah Young; Maggi Fenwick,Loretto Lambe &James Hogg	Positive changes in engagement for 7 participants; outcome of the experience positively enabled the participant to cope better with sensitive topics.
The Effectiveness of Storytelling in Enhancing Communicative Skills	2010	Nor Hasni Mokhtar, Michi Farida Abdul Halim & Sharifah Zurina Syed Kamarulzaman	The findings show that storytelling has beneficial effects on reading skills by students being able to associate meanings and emotions with words. Students also develop their vocabulary and learn when and where to use certain words and phrases.
Stories, Drawings and Digital Storytelling: A Voice for Children with Special Education Needs	2010	Luca Botturi, Chiara Bramani, & Sara Corbino	The positive achievements of the project led to the extension of teachers training over the following school year, and to the development of new project ideas in the school.

The use of play expansions to increase the diversity and complexity of object play in young children with disabilities. Topics in Early Childhood Special Education	2011	Frey, J. R., & Kaiser, A. P	All participants increased their performance of different actions and the complexity of their play with toys; however, the magnitude of effects varied across participants.
Sensory Stories: Improving Participation for Children with Sensory Modulation Challenges	2011	Victoria L. & Nackley, MS,	Results are generally favorable
Multi-sensory Storytelling for Persons with Profound Intellectual and Multiple Disabilities: An Analysis of the Development, Content and Application in Practice	2011	Annet ten Brug, Annette van der Putten, Anneleen Penne, Bea Maes & Carla Vlaskamp	Although most books were properly con- structed, guidelines were barely followed during reading which may negatively influence the effectiveness.
The efficacy of narrative therapy and storytelling in reducing reading errors of dyslexic children	2011	Parisa Rahmani	According to these results, the hypothesis of research was supported very strongly. It means the narrative therapy reduces the numbers of reading's errors.
Learn and apply: Using multi-sensory storytelling to gather knowledge about preferences and abilities of children with profound intellectual and multiple disabilities – three case studies	2013	Annet Ten Brug Annette A. J. Van der Putten Carla Vlaskamp	Changes in teacher's knowledge were observed, However, teachers are insufficiently aware of their new knowledge and do not apply it in practice.
Interaction with a person with profound intellectual and multiple disabilities: A case study in dialogue with an experienced staff member. Journal of intellectual & developmental disability	2013	Hostyn, I., & Maes, B.	The interactional pattern revealed in this study is that of a staff member who offers an activity that is considered to be stimulating for the client, by using a variety of initiatives and structuring strategies, and a client who is alert andresponsive, but has limited chances to take own initiatives.
Educating special children: an introduction to provision for pupils with disabilities and disorder	2013	Farrell, M	-
An evaluation of bag books Multi-sensory stories	2014	David Preece & Yu Zhao MA	Bag Books MSST; is a great source for PMID to interact with the world around them.

The effectiveness of an adapted version of Multisensory Storytelling on the responsiveness of children, adolescents, young adults with multiple disabilities	2014	Willems, N.W.J.	All group showed an increase in the number of responses overtime, but this could not be clearly linked to MSST training.
Effects of an Individualized Narrative Intervention on Children's Storytelling and Comprehension Skills	2014	Trina D. Spence, Mandana Kajian, Mandana Kajian, Douglas B. Petersen, & Nicholas Bilyk	Parents and teachers reported that the storytelling activities were engaging, enjoyable, and produced improvements in the children's language skills.
Virtual intervention to improve storytelling ability among deaf and hard-of-hearing children	2014	Sigal Eden	In the VR group, the improvement was much more significant. In addition, participants at an early age at onset of treatment correlated with children's better achievements in storytelling.
Using multisensory stories in mainstream schools as a tool for inclusion: a case study	2014	Azzopardi, Mariella	The findings indicate that multisensory storytelling sessions are of great benefit since the children were fully engaged in the learning process.
Sensory Stories for Children and Teens with Special Educational Needs (Practical Guide)	2014	Joanna Grace	-
Multi-sensory storytelling to support learning for people with intellectual disability: an exploratory didactic study	2015	Andreia Matosa, Tânia Rochaab, Luciana Cabrala, Maximino Bessaa	Results showed an overall improvement regarding the participant's memory when using the very multi-sensory contents
From Early Childhood to Special Education: Interactive Digital Storytelling as a Coaching Approach for Fostering Social Empathy	2015	Tharrenos Bratitsis Petros Ziannas	The results indicate that the intervention can be evaluated as successful. Not only the children recognize the emotional states of the characters, but they also formulated interpretation hypotheses, created direct connections to their personal experiences and drew conclusions about the significance of empathic behavior in their everyday social interactions.

Penny Lacey's Contributions to Improving Teaching and Learning for People with PMLD.	2015	Ashdown, R.	Despite the profound difficulties faced by learners with PMLD, it is possible to teach them how to think more effectively. Even if the tiniest progress is made, it can be celebrated, though perhaps not always through the officially recognized tools for recording.
Storytelling as a Pedagogical tool to Learn English Language in Higher Education: Using Reflection and Experience to Improve Learning	2015	Karim, B. H. H.	The results of this study have found that Storytelling as a pedagogical tool to learn English language in Higher Education leads to enhance language development, the results improve that Storytelling is an important educational key to learn both receptive skills such as reading and listening and productive skills like writing and speaking.
Making a difference? A comparison between multi-sensory and regular storytelling for persons with profound intellectual and multiple disabilities	2016	A. ten Brug A. A. J. Van der Putten A.Penne B.Maes C. Vlaskamp	The persons with intellectual & multiple disabilities paid more attention to the book and/or stimuli in the MSST condition compared with the regular storytelling groups
The effectiveness of an adapted version of Multi-Sensory Story Telling on the responsiveness of moderate to profound multiple disabled individuals in South Africa.	2016	Yolanda van Beek; Marthe Stoffer	MSST is not only a pleasurable activity, it also seems to be a promising intervention to stimulate exploration responsiveness of MD individuals, making a variable contribution to their development.
The Effectiveness of Storytelling Therapy on Decreasing Spelling Errors of Students with Spelling Disorders (Dictation Disorders)	2016	Marzieh Zeini, Mohammad Balouchi Anaraki, Somayeh Rezai, Atefeh Molla Jafari	It can be concluded that the fiction therapy strategy decreases the spelling errors of students with spelling disorders. According to the results of this study, it can be recommended to learning disorders coaches, consultants, and psychologists that try to improve the spelling of students with spelling disorders by applying these strategies.

The Effectiveness of Storytelling Therapy on Decreasing Spelling Errors of Students with Spelling Disorders (Dictation Disorders)	2016	Marzieh Zeini, Mohammad Balouchi Anaraki, Somayeh Rezaei, Atefeh MollaJafari	It can be concluded that the fiction therapy strategy decreases the spelling errors of students with spelling disorders. According to the results of this study, it can be recommended to learning disorders coaches, consultants, and psychologists that try to improve the spelling of students with spelling disorders by applying these strategies.
Enhancing peer acceptance of children with learning difficulties: classroom goal orientation and effects of a storytelling programme with drama techniques	2016	Yin-kum Lam, Wilbert Law &Zoe W. Y. Tam	The findings indicated that the more students perceived that their classroom was performance-approach oriented, the less they would accept their peers with learning difficulties in doing things together. After the intervention, the students in the experimental condition, compared to their counterparts in the control group, were more likely to render financial assistance and have affective acceptance to their peers with learning difficulties.
A Critical Reflection on How Sensory Stories Facilitate High Quality Teaching and Learning for Children with Profound and Multiple Learning Disabilities(PMLD)	2017	Phil Martins	Using of sensory stories is a good strategy of teaching; intensive interaction; engagement has been shown from students with PMID
Refining the guidance for sensory storytelling with individuals with PMLD: a move towards improved research and practice	2017	Grace, J., & Silva, A.	The participants responses increased over time suggesting that the guidelines followed supported their ability to respond.
Multisensory storytelling: A co-designstudy with children withmixed visualabilities	2018	Clare Cullen; Oussama Metatla	MSST can be a successful method for inclusion
A Multi-Sensory Interactive Reading Experience for Visually-Impaired Children; A User Evaluation	2018	Chamari Edirisinghe, Norhidayati Podari & Adrian David Cheok	High level of engagement from both teachers and children; children showed high level of enjoyment in the MS interaction

Effects of a Storytelling Program with Drama Techniques to Understand and Accept Intellectual Disability in Students 6 - 7 Years Old. A Pilot Study	2018	Paraskevi Giagazoglou, Maria Papadaniil	The results showed a significant positive effect on the understanding and the acceptance of intellectual disability.
Supporting Literacy and Digital Literacy Development in Early Childhood Education Using Storytelling Activities	2018	Irena Y. Maureen, Hans van der Meij & Ton de Jong	Overall, the research indicated that the integration of a storytelling approach with the didactic approach of Gagné's nine events of instruction is a promising approach for enhancing literacy and digital literacy development in early childhood classrooms.
Effects of therapeutic storytelling and behavioral parent training on the problem behaviors of children and on parental stress	2018	Laura T. Painter	Although variable effects were found at follow-up, the frequency of these target behaviors did not rise to their premorbid levels, and the intensity of the behavior exceeded the premorbid level only for one subject.
The Effect of Storytelling at School on Children's Oral and Written Language Abilities and Self-Perception	2019	Catherine Z. Wright & Sandra Dunsmuir	Results showed that the storytelling group retold stories that were significantly longer and used a significantly wider range of vocabulary than both the group that was read the same stories and the comparison group at posttest and 3-month follow-up.
To Improve Speaking Skill of Students with Special Needs by Mentioning The Words Heard Using Multisensory Storytelling	2020	Nurul Ain binti Badrul Hisam	Students have shown an increase in mastering of spoken words in their speech; positive feedback for parents
Self-Regulated Versus Staff-Regulated Stimulation for Promoting Indices of Satisfaction in Persons with Severe/Profound and Multiple Disabilities. Journal of Developmental and Physical Disabilities, 1-16.	2020	Lancioni, G. E., Singh, N. N., O'Reilly, M. F., Sigafoos, J., Resta, E., Campodonico, F., & Chiariello, V.	the results of this study are encouraging particularly about the potential of self-regulated stimulation strategies for improving the mood of people with severe/profound and multiple disabilities while promoting their self-determination and acquisition of functional responses

CONCLUSION

In every society, individuals with disabilities have the same social needs as other children. They need to be respected and loved. They need to explore their world and play with other children and adults. Whatever it may be, they need to learn and use their bodies and minds to their fullest potential. They deserve to feel welcomed and respected by their families and their communities. Unfortunately, in our countries, disabled individuals are not given a chance they deserve. People often do not appreciate what is right in these individuals; they only see in them what is wrong or different.

According to studies and reviews of different articles regarding multisensory storytelling, storytelling is one of the essential tools of any educator or parent of a child with special needs. It helps children with multiple disabilities to improve language skills, build social interactions and increase attention spans. Storytelling provides children with an understanding of their social positions, the society in which they live. They benefit from the experiences and knowledge throughout their lives to develop their personalities. It is not always simple for children with multiple disabilities, but giving a child a love for books will expand their minds and learning capabilities.

All children profit from MSST and improve, irrespective of their capabilities or progress on other interventions. This confirms previous research on the effectiveness of MSST (Young,2011). So MSST is a promising approach for children and young adults with disabilities. Therefore, it is recommended to use MSST for all children, maybe also including normal children as well. In conclusion, we believe that MSST is a suitable intervention for children with disabilities.

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A COMPREHENSIVE ANALYSIS OF PERSONS WITH DISABILITY IN MAHARASHTRA, INDIA

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ABSTRACT

Research studies in the area of disabilities need to be enhanced to incorporate diversity among individuals with disabilities. Information related to the magnitude of disability prevalence, type, age, etc., is essential for policymakers in formulating any scheme and for the welfare of individuals with disabilities. The present study attempts to find the diversity of individuals with disability across Maharashtra, a state in the western region of India, using data from the 2011 Census. Teachman's and Blau's indices were used to analyse within-group variance. The result shows distinctive types of variation by which districts are distributed, one set of districts with high variation by age group and others with high variation by disability type. District-wise differentials by population proportion were prominentlyseen in disability type movement impairment, mental retardation, mental illness, and multiple disabilities. Overall the study highlights the importance of a comprehensive outlook for persons with disability, which will help the planners to implement schemes addressed to persons with disability.

Key words: *Age, Disability, Diversity, Districts of Maharashtra, Variation*

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INTRODUCTION

Research studies in the area of disabilities need to be enhanced to incorporate diversity among individuals with disabilities. Information related to the magnitude of disability prevalence, type, age, etc., is essential for policymakers in formulating any scheme and for the welfare of individuals with disabilities. Research emphasizing exposure and interaction with diverse populations are well documented Scheefet et al (2020) highlighted that experiences with diverse populations are particularly relevant to young adults, who are developing their worldview by evaluating their perspectives and the perspectives of others. Woodhams and Danieli (2000) argued that differences between disabled groups and those constituted based on gender or race, together with differences amongst disabled people, render the group-based and managing diversity approach to equality largely rhetorical.

Further, several research studies have documented the likelihood that individuals with disabilities increase as they age. Verbrugge and Yang (2002) found that most persons with a disability are older and had recent onsets, but some persons with childhood onsets have entered middle and older ages. The greatest diversity of disability experience is in the middle ages. People with childhood-onset disabilities have more disabilities than those with adulthood-onset disabilities, but their social role participation is similar or even higher. For both groups, poor overall health is the main factor that reduces social participation. Impairment in hearing, seeing, movement, and mental illness tend to increase as one ages. Schalock (1996), in a research study on persons by the degree of activity limitation due to chronic conditions and age, race, and sex in the United States, 1989 noted that the prevalence and severity of activity limitation increase with age. For example, among those under 18, only 53 per cent have a limitation, and 0.6 per cent are unable to carry on their major activity. In the 18-44 age group, 9.0 per cent have an activity limitation, and 2.6 per cent cannot conduct their major activity. The percentage rises to 22.2 per cent with a limitation, and 8.8 per cent are unable to conduct their major activity in the 45-64 age group. For those 65 and older, 38 per cent have an activity limitation. In comparison, 10.1 per cent cannot carry on their major activity at all.

In middle age groups, impairment in movement and mental illness tend to be higher due to lifestyle and accidents. The proportion of the disabled population by disability type, such as impairment in seeing, hearing, and movement, will be higher in older age groups than in younger age groups (Dandona 2019).

Moreover, one needs to understand that the young population in the age group 0-10 in the census 2011 will be in the age group 10-20 in the census 2021, whereas the population in the age group 20-59 will be in the age group 30-70+. Finally, the population in the age group 60+ will be in the age group 70 and above so on. When formulating policies, one also needs to assess the future needs of individuals with disabilities. For example, young individuals or college-going students with disabilities will be in the middle age group and seeking employment after a decade; hence policymakers and planners should not only concentrate on education, but the focus should be quality education and skill development that will enhance individual prospects in the job market.

The present study attempts to find the distribution of individuals with disability across Maharashtra, a state in the western region of India. As per details from the 2011 Census, Maharashtra has a population of 112,374,333. The male and female populations are 58,243,056 and 54,131,277, respectively. The total population growth in this decade was 15.99 per cent. The population of Maharashtra formed 9.28 per cent of India in 2011. As per the census of 2011, there were 2963392 individuals with disability n Maharashtra.

Maharashtra is a large state in India, and the hallmark of this state is high regional diversity. This paper explores whether the same diversity is observed among individuals with disability across Maharashtra. For the convenience of the present study, the individuals with disability were distributed into three main age groups 0-19 (young population), 20-59 (working population) and age 60 and above (elderly population). The primary focus was on the distribution of individuals with disability by age group across the region by type of disability.

METHODOLOGY

To explore the diversities among persons with disabilities, diversity indices Teachman's index, and Blau's index were used to analyse within-group variance. Blau's index, denoted here by B, is defined as $\sum_{i=1}^{n} p_i^2$ where p_i corresponds to the proportion of the individuals with disability in the respective districts and n denotes the number of categories which can be either age group or by types of disability. B equals its minimum value (i.e., zero), all members of the group are classified in the same category, and nil variation. In contrast, the higher B is, the more dispersed group members are over the categories.

In general, the focus is on examining the diversity and heterogeneity across states by types of disability.

Whereas Teachman's index, T, is defined as,

$$-\sum_{i=1}^{n} p_i \times \ln p_i$$

The minimum value of Tequals zero, meaning there are no differences among group members for the specific categories.

Apart from one of them, all proportions are equal to zero.

Following these conceptualizations, the table below shows that it is important to consider the issue of group characteristics in interpreting index values.

RESULTS

Table 1 - *Top Five Districts in Terms of Proportion of Population to Total Persons with Disability by Age Groups Maharashtra, India 2011*

Ranks	Age Groups		
	0-19	20-59	60+
	Districts		
1.	Nandurbar	Mumbai	Ratnagiri
2.	Nanded	Mumbai (SUBURB)	Wardha
3.	Parbhani	Thane	Sindudurg
4.	Aurangabad	Pune	Osmanabad
5.	Hingoli	Nagpur	Amravati

Table 1 shows the highest proportion of persons with disability in the total population by age group. Nandurbar and Ratnagiri districts which were least in terms of population size of persons with disability are the highest in terms of proportionate of the population with disability to the total population in the younger age group 0-19 years. However, Mumbai and Thane districts have the highest number of persons with disability both by population size and by the number of persons with disability proportionately in the middle age group 20-59 years.

Table 2 - *Diversity Indices Across Age Groups and Disability Type of Persons with Disability in Maharashtra, India, 2011*

Name of the Districts	Blau's index		Teachman index	
	Age group	Types of Disability	Age group	Types of Disability
Raigad	0.59	0.84	0.99	1.92
Ratnagiri	0.63	0.83	1.03	1.91
Sindhudurg	0.61	0.85	1.02	1.96
Satara	0.60	0.83	1.01	1.89
Sangli	0.61	0.84	1.01	1.92
Nandurbar	0.61	0.84	1.00	1.90
Parbhani	0.62	0.83	1.02	1.88

District				
Nashik	0.60	0.84	1.00	1.91
Pune	0.57	0.84	0.95	1.90
Osmanabad	0.64	0.82	1.05	1.87
Gadchiroli	0.61	0.84	1.02	1.92
Gondiya	0.59	0.84	0.99	1.93
Hingoli	0.63	0.83	1.04	1.89
Chandrapur	0.60	0.83	1.00	1.88
Dhule	0.60	0.83	1.00	1.86
Jalgaon	0.60	0.84	1.01	1.88
Thane	0.55	0.82	0.90	1.85
Solapur	0.61	0.82	1.01	1.85
Washim	0.62	0.83	1.03	1.89
Wardha	0.63	0.82	1.04	1.89
Yavatmal	0.62	0.83	1.03	1.91
Ahmadnagar	0.62	0.84	1.02	1.92
Aurangabad	0.61	0.81	1.00	1.83
Bhandara	0.59	0.84	0.97	1.90
Amravati	0.62	0.82	1.03	1.86
Akola	0.61	0.84	1.01	1.92
Buldana	0.62	0.83	1.03	1.89
Bid	0.63	0.82	1.05	1.88
Jalna	0.62	0.83	1.03	1.86
Kolhapur	0.59	0.83	0.98	1.88
Latur	0.62	0.83	1.02	1.85
Mumbai (SUBURB)	0.54	0.82	0.91	1.82
Mumbai	0.54	0.81	0.92	1.82
Nagpur	0.58	0.84	0.98	1.94
Nanded	0.61	0.84	1.01	1.90

Diversities captured by using Blau and Teachman indices are given in Table 2. The values of both these indices indicate not much variation between districts by persons by disability. However, analysis by age group shows variation by age group estimated by Blau and Teachman indices. The diversity was highest by age group of persons with disability in Osmanabad, Bid, Wardha, Hingoli, and Ratnagiri districts. Further, result indicates significant diversities by type of disability and was found to be highest in the districts of Gadchiroli, Gondiya, Nashik, Pune, Raigad, Sindudurg, Sangli, Nanduurbar, Jalgaon, Bhandara, Akola, Amravati, Nagpur, and Nanded districts. The result shows two distinct types of variation in persons with disability. One set of districts with high variation by age group and other sets of districts with high variation by types of disability.

Table 3 - *Diversity Indices Across Districts by Age Groups of Persons with Disability in Maharashtra, India, 2011*

Diversity Indices	Age Group			Total
	0-19	**20-59**	**60+**	
Blau's index	0.96	0.95	0.96	0.96
Teachman index	3.4	3.3	3.4	3.4

Table 3 presents the **a**nalysis of diversity indices by age group and shows diversities in younger (0-19 years) and older age groups (60+) to be comparatively more than the middle age group 20-59 years.

Table 4 - *Diversity Indices Across Districts by Types of Disability of Persons with Disability in Maharashtra, India 2011*

Diversity Indices	Types of Disability							
	Visual Impairment	**Hearing Impairment**	**Speech Impairment**	**Movement Impairment**	**Mental retardation**	**Mental Illness**	**Any Other**	**Multiple Disability**
Blau's index	0.95	0.95	0.94	0.96	0.96	0.96	0.95	0.96
Teachman index	3.3	3.3	3.2	3.4	3.4	3.4	3.3	3.4

As depicted in Table 4, variations across districts show a high variation of persons with disability by disability type, as observed from the Blau and Teachman indices. As observed from respective values by types of disability, the variation by districts is highest among disability type movement impairment, mental retardation, mental illness, and multiple disabilities as compared to disability type such as impairment in seeing, hearing, speech, and any other type of disability.

SUMMARY AND CONCLUSION

The proportionate representation of persons with disability to the total population by age group shows districts of Nandurbar and Ratnagiri districts which were the least in terms of the total number of persons with

disability, are highest in proportionate of persons with disability to the total population in the respective age groups,whereas the proportion of persons with disability in the younger age group 0-19 is highest in the Nandurbar district, in the older age group, it is highest in the Ratnagiri district. However, Mumbai and Thane districts have the highest number of persons with disability in total numbers and proportions in the middle age group 20-59 years.

Analysis, as indicated by the values of Blau and Teachman indices, shows the variation by age group was highest in districts of Osmanabad, Bid, Wardha, Hingoli, and Ratnagiri. In contrast, analysis by disability type shows the highest diversity in disability

types in the districts of Gadchiroli, Gondiya, Nashik, Pune, Raigad, Sindudurg, Sangli, Nanduurbar, Jalgaon, Bhandara, Akola, Amravati, Nagpur, and Nanded districts.

The result shows distinctive types of variation by which districts are distributed, one set of districts with high variation by age group and others with high variation by disability type. Disability type variation by the district is highest in disability type movement impairment, mental retardation, mental illness, and multiple disabilities. Overall, the study highlights the importance of a comprehensive outlook for persons with disability, which will help the planners to implement schemes addressed to persons with disability.

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OPPORTUNITIES AND BARRIERS TO DISABLED STUDENTS IN HIGHER EDUCATION: AN EXPLORATIVE STUDY OF VISUALLY IMPAIRED STUDENTS OF ALIGARH MUSLIM UNIVERSITY

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ABSTRACT

The present study aimed to investigates and explore the opportunities as well as barriers that visually impaired students face in higher education at Aligarh Muslim University (A.M.U.). For this study, only 20 visually impaired students have been accessed, including 15 (75%) males and 5 (25%) females based on their availability in higher education in the university. The result of this study reveals that the visually impaired students experienced three major types of barriers in the university, i.e., barriers in infrastructural accessibilities, barriers in accessing study materials, and in classroom learning.

Key words: Visually Impaired; Higher Education; Barriers, A.M.U.; Rights of Persons with Disabilities (RPWD) Act of 1995 and 2016; WHO.

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INTRODUCTION

According to World Health Organization (WHO 2011), an estimated fifteen percent (15%) of the world's population is affected by some form of impairment among them, 2% to 4% have severe difficulties in functioning. The prevalence of disabilities worldwide is higher than prior WHO estimates from the 1970s, which estimated a rate of 10%.This global estimate of disability is increasing as a result of the aging of the population, the rapid spread of chronic diseases, and procedures for measuring disabilities are improving. Whereas, according to the Census of India 2001, 21,906,769 (2.13%) of the country's total population were disabled, which has increased to 26,814,994 (2.21%) in the 2011 Census. The census of 2011 also revealed that 20% of total disabled persons having disability in movements, 19% have a disability in seeing, 19% in hearing, and 8% have multiple disabilities in India. WHO (2002) defined disability as "a problem in body function or structure, an activity limitation, has difficulty in executing a task or action, with a participation restriction," is considered disabled. At the same time, there are 253 million people in the world who are blind or suffer from some other form of vision loss, representing 3.2% of the world population (Disabled People in the World: Facts and Figures. Okeenea Group, 2022).

The world's highest population of blind people lives in India. According to a study carried out between 1986 and 1989 under the auspices of the World Health Organization and the National Programme for Control of Blindness, an estimated 12 million people are blind in both eyes, and 8 million people are blind in one eye. A further 2 million people have lost sight due to traumas, vitamin 'A' insufficiency, trachoma, and corneal abnormalities brought on by corneal opacity (Kitchlu, 1991).Vision loss indicates that a person's vision may not be "normal."Low vision is defined by the WHO as visual acuity between 20/70 and 20/400, with the best possible correction, or a visual field of 20 degrees or less, while blindness as visual acuity of less than 20/400 with the best possible correction or a visual field of fewer than 10 degrees (RPWD Act, 2016).

Understanding Disability

The understanding of disability is a subject of intense debate and discussion. For a very long time, people with disabilities have always been viewed as matters of charity or simply from a medical or individual point of view. The medical model of disability is explained by World Health Organization (WHO 2002) as "the medical or individual model views disability as a feature of the person, directly caused by disease, trauma, or other health condition, which requires medical care

provided in the form of individual treatment by professionals."Various disability activists have criticized this medical or individual model of disability, arguing that society creates barriers for physically challenged persons to join mainstream social organizations (Oliver, 1996; Giddens, 2009; Mitra et al., 2018). Therefore, this model of disability is called the social model of disability.

The difference between physical impairment and disability led to the idea of the social model. In 1976, the Union of Physically Impaired against Segregation (UPIAS) wrote a document called "Fundamental Principles" that argued for and spread the idea of this difference. The social model of disability is defined as "the disadvantage or restriction of activities caused by a modern social organization that doesn't or doesn't take into account the needs of people with physical disabilities and, as a result, keeps them from taking part in most social activities" (WHO, 2002; Giddens 2009, p. 416; Mitra et al., 2018).

In 2001, the WHO issued another model for defining disability called International Classification of Functioning, Disability, and Health (ICFDH), more commonly called the I.C.F. model of disability. The I.C.F. has features of both the individual and medical and social models. According to the WHO, a person with a health condition becomes disabled when their health condition interacts with their environment, which includes their physical, social, and attitudinal environments. This model starts with a health condition (disorder or disease) that causes impairments, activity limitations, and participation restrictions due to contextual factors. Impairments are body function or structure problems such as a significant deviation or loss. Activity Limitations are difficulties an individual may have in executing activities. Participation Restrictions are problems an individual may experience in life situations (WHO, 1980; 2001; Giddens, 2009; Mitra et al., 2018).

Blindness and Education

Being blind is not a sin. Blind persons can achieve their goals with commitment, effort, and perseverance. Many blind people have achieved success in a variety of fields. The education, training, rehabilitation, and employment of the blind in the nation have advanced significantly over the past century. Just before the outbreak of the French Revolution, people in France began to get attention toward blind persons. Around the same time in India, activists, academicians and philanthropists started paying attention to people who were blind. As a result, in 1887, Miss Anne Sharp founded the first school specially designed for the education of visually impaired students in Amritsar (Kitchlu, 1991). After various educationists

and philanthropists started many other special schools in the different parts of the country, as Jane Leupotopened a school for the 'blind' in Banaras in 1869.Mrs. Jai Vakil also opened a school for the 'intellectually' disabled in Bombay in 1941, etc. (Puri and Abraham, 2004, pp. 19). Following the disability rights movement that was initiated in the 1970s and 1980s, governments worldwide started placing a significant emphasis on higher education opportunities for blind students. In India, the pace of higher education for the disabled has increased since the enactment of the RPWDs Act 1995. The Central and State Governments have shown interest in the socioeconomic rehabilitation of the visually impaired persons and have launched several measures to formulate legislation, create programs, and implement them. The government of India has allocated funds through different Five Year Plans and other comprehensive schemes/programs for the educational development of disabled students, including the blind.

Laws for Persons with Disabilities

Many conferences and conventions have been organized globally to remove barriers in the education of students with disabilities (SWDs), such as Standard Rules on the Equalization of Opportunities for Persons with Disabilities (PWDs) adopted by the United Nations General Assembly in 1993, Salamanca Statement 1994, United Nations Convention on the Rights of Persons with Disabilities (UNCRPD 2007) etc. The central theme of all these conferences and conventions is that educational institutions should be made disabled-friendly so that their full participation in education can be determined. As a result, many policies and acts were made for the education of disabled students worldwide and in India. India is a democratic country that has tried to formulate plans and programs adhering to the principles of justice and equal opportunity for its people. India is a signatory to almost all United Nations treaties and declarations and has introduced innovative laws and programs for the education of SWDs to keep pace with the rest of the developed world (Jameel, 2011).

In this connection, for the first time in 1995, the Government of India enacted a comprehensive law for PWDs called the "Persons with Disabilities ((Equal Opportunities, Protection of Rights and Full Participation) Act."The Act emphasizes equal opportunities for PWDs in every walk of life, including education. For example, the Act stipulates that all higher educational institutions reserve 3% seats for admission to PWDs. This Act also emphasizes barrier-free education for PWDs like all institutional education infrastructure and other essential requirements should be disabled friendly, provide equal opportunities in employment, social security, etc. (PWDs Act, 1995). After

a few years of enactment of the PWDs Act, the Government of India introduced programs such as Teachers Preparation in Special Education (TEPSE) and Higher Education for Persons with Special Needs (HEPSN) in 1999-2000 intending to develop courses for special teachers and counselors as well as providing facilities in various forms for people with disabilities. In 2005, the Indian government formulated the "Action Plan for Inclusive Education of Children and Youth with Disabilities (IECYD)".This action plan emphasizes SWDs pursuing higher education (Jameel, 2011; Mistry, 2012; Ahmad, 2018).The PWDs Act 1995 was replaced by the Government of India with a new Act called the Rights of Persons with Disabilities Act, 2016,to give effect to principles of the United Nations Convention on Rights of Persons with Disabilities (UNCRPDs 2007) in India and further strengthen to the RPWDs Act of 1995. In this Act, the reservation policy for PWDs in higher education has been increased from 3% to 5% and in employment to 4%, and types of disabilities was expanded from 7 to 21 types (RPWDs Act, 2016).

Despite this, they still face many barriers such as architectural, infrastructural, lack of accessible study materials, attitudinal barriers, including lack of understanding and cooperation from administration, faculty, staff and students without disabilities, and support barriers (Preeti & Kiran, 2012).

REVIEW LITERATURE

Education for persons with disabilities (PWDs) has been a significant concern in India and worldwide for decades (Ahmad, 2018).It is a global environment in which only a little attention has been paid to the concerns of access, development, and engagement of students with disabilities (SWDs) in higher education institutions. As stated in the Sustainable Development Goals (S.D.Gs), the education of students with disabilities has become a critical theme in academic circles worldwide (Jahan, 2015). Similarly, the Incheon manifesto stipulates that educational goals should not be accomplished until everyone has reached them. Therefore, it is pledged that the marginalized section of society, especially those with disabilities, will be the main focus of all education policies (UNESCO, World Education Forum 2015).

Alqaryouti conducted a study on "Inclusion the Disabled Students in Higher Education in Oman," including 28 physically and visually disabled students in Sultan Qaboos University (S.Q.U.) in 2010.The results of the study revealed that compared with physically challenged students, the visually disabled had social difficulties. This may be due to their inability to communicate with others, feelings of abandonment, or a lack of activities that allow visually impaired students to interact with their peers normally inside the

university, all of which have led to the distance would have increased. Pivik et al. (2000) conducted a study on "Barriers and Facilitators to Inclusive Education," and they found that the SWDs face four kinds of difficulties in the education institution i.e., physical difficulties (such as narrow doorways or ramps); purposeful psychological/attitudinal difficulties (such as bullying or isolation); unintentional psychological/attitudinal difficulties (such as a lack of knowledge, understanding, or awareness about the sense of disability); and finally, physical obstacles (such as difficulty with manual dexterity). According to Mistry's (2012) study, SWD sat their universities did not have easy access to classrooms, libraries, academic buildings, or administrative offices. In addition, they were not given any educational resources, including assistive technology, to use in their studies. Bano et al. (2013) conducted a study on "Analysis of educational facilities and opportunities for students with special needs at the University of the Punjab, Pakistan."The result revealed that SWDs encounter various problems at higher education institutions, including improper curricula, learning challenges, flawed teaching practices, and a lack of equipment, which significantly affects their performance in a normal or inclusive setting. According to the findings of the research conducted by Ganapathy (2014), SWDs put in a more significant amount of effort to keep

up with the requirements of their studies, took part in fewer social and extra-curricular activities, and relied more heavily on study aids, fewer instances involving computers and other information technology.

METHODS OF THE STUDY

The present study was conducted on visually impaired students studying in higher education at Aligarh Muslim University (A.M.U.) from March to April 2022. For this study, 20 students, including 15 (75%) males and 5 (25%) females, were accessed based on availability for the interview. Out of the total respondents, 9 (45%) reported themselves as an undergraduate (U.G.), 7 (35%) postgraduate (P.G.), and 4 (20%) respondents said themselves as Ph.D. students. All of these respondents are from social science and art streams.

For data collection, a semi-structured interview schedule was prepared. Before conducting the interview, the researcher contacted the interviewer to schedule the time and place of the interview. And therefore, the researcher interviewed by reaching the place and time specified by the interviewer. For the analysis of data, the Statistical Package of Social Sciences (SPSS) was used for the best results and interpretation.

Challenges/Barriers Faced by Students with Visual Impairment in the University

The word barrier-free refers to a setting where all users have access to the required services regardless of their disability. The need for a barrier-free environment will be unparalleled in terms of infrastructure to ensure the convenience, safety, and independence of PWDs. During the construction of buildings, special attention should be paid to certifying that PWDs have access to the same facilities as students without disabilities have. As mentioned above, the Government of India has enacted various laws prohibiting barriers against persons with disabilities to promote full and equal participation in all aspects of their lives, including higher education, through which they can explore the possibilities of their life.

Nevertheless, despite this, disabled students continue to face different challenges in the study and acquisition of knowledge and hurdles to access and use of infrastructure.

These obstacles and barriers come in various forms and vary by institution. In this study, three significant barriers experienced by visually impaired students at A.M.U., have been found which are as follows.

1. Availability, accessibility, and barriers to infrastructural facilities

2. Availability and barriers to accessing the study material

3. Accessibilities and barriers in classroom learning

Availability and Accessibility of Infrastructural Facilities

During the infrastructural investigation in the university, it was found that the university has such infrastructural facilities, i.e., Classroom, Seminar room, Library, Administrative Offices, Hostel, Dining Hall, Washroom, Canteen, and Commonplaces (i.e., common room and playground) for all students including visually impaired students. The accessibility of these infrastructural facilities for visually impaired students is presented in Table 1.

Table 1 - Easy Access to Infrastructure of the University

Easy Access to Infrastructure	Yes	No	Total
Classroom	11 (55 %)	9 (45 %)	20 (100 %)
Seminar room	12 (60 %)	8 (40 %)	20 (100 %)
Braille Library	13 (65 %)	7 (35 %)	20 (100 %)
Administrative Offices	10 (50 %)	10 (50 %)	20 (100 %)
Hostel	17 (85 %)	3 (15 %)	20 (100 %)
Dining Hall	18 (90 %)	2 (10 %)	20 (100 %)

Washroom	18 (90 %)	2 (10 %)	20 (100 %)
Canteen	16 (80 %)	4 (20%)	20 (100 %)
Common Places	13 (65 %)	7 (35 %)	20 (100 %)
Average Ratio	71.11%	28.89%	100 %

Table 1 shows that out of the total respondents, on average, 71.11% have easy access to the infrastructures of the university. Among them, dining halls and washrooms are the most easily accessible, i.e., (90%), followed by hostels (85%) and canteen (80%), whereas the lowest accessibility rates can be seen in administrative offices and classrooms, with 55% and 50%, respectively.

Accessibilities and Barriers to Architectural facilities

The researcher also observed that the university infrastructure has special facilities, such as a lift with audio and Braille text, stairs, railings, and ramps as architectural facilities for visually impaired students. Although the availability of tactile walkways in academic buildings, hostels, and administrative buildings is extremely significant, the university does not have this facility for its visually impaired students. The accessibility of these architectural facilities to visually impaired students is presented in Table 2.

Table 2 - Represents the accessibility of the architectural facilities

	Gender	Completely Accessible	Partially Accessible	Not Accessible	Total
Male	N	10	4	1	15
	% within Gender	66.7	26.7	6.7	100.0
Female	N	2	3	0	5
	% within Gender	40.0	60.0	0.0	100.0
Total	N	12	7	1	20
	% within Gender	60.0	35.0	5.0	100.0

The above table shows that 60% of the respondents have complete access to the architectural facilities of the university, like lifts, stairs, railings, and ramps. In comparison, 35% of the respondents say that these architectural facilities are partially accessible to them, only 1 (5%) respondents reported that these are not accessible. To better understand the accessibility of the university's architectural facilities.

Availability and Barriers to access the Study Material

According to visually impaired students, the Braille library only has audio books, and to some extent, the facility of e-books is also available. Still, there is no additional material that is available in Braille script. However, this study material is not sufficient for them. It is essential to make it clear that these respondents do not use the university's central library because there aren't any resources available for their learning process as per visually impaired students. Due to the lack of adequate study materials in both the central and Braille libraries, these students confront various obstacles. In this connection, the table below represents the barriers visually impaired students face in accessing the study materials.

Table 3 - Represents the barriers faced by visually impaired students in accessing the study materials

Gender		Barriers to accessing the study materials		Total
		Yes	**No**	
Male	N	8	7	15
	% within Gender	53.3	46.7	100.0
Female	N	1	4	5
	% within Gender	20.0	80.0	100.0
Total	N	9	11	20
	% within Gender	45.0	55.0	100.0

As mentioned above, the Central and Braille Library of the University has a scarcity of study material in an accessible format for visually impaired students, due to which they face various difficulties in accessing the study material. Table 3 demonstrates that 45% of the respondents have problems obtaining access to the study materials following their course curricula whereas the majority, i.e., 55% respondents mentioned that they have no problems in accessing the materials.

Accessibilities and barriers in classroom learning

Visually impaired students of the university also face barriers in classroom learning. The data of respondents facing barriers in classroom learning is shown in Table 4.

Table 4 - Showing the Barriers in Accessing the Study Materials

Gender		Barriers in Classroom		Total
		Yes	**No**	
Male	Count	7	8	15
	% within Gender	46.7	53.3	100.0

Female	Count	2	3	5
	% within Gender	40.0	60.0	100.0
Total	Count	9	11	20
	% within Gender	45.0	55.0	100.0

The above table shows that only 45% of respondents face barriers in classroom learning when teachers deliver lectures, of which 46.7% are male and 40% are female students. However, the majority of 55% of respondents do not encounter any obstacles in classroom learning.

MAJOR FINDINGS AND DISCUSSION

The researcher's investigation reveals that the university has all of the infrastructural facilities; however, it does not have the necessary fundamental architectural facilities, such as tactile walkways, sound signals, the number of rooms written in Braille text, and so on. Consequently, visually impaired students have to contend with a certain degree of difficulty when attempting to access the university's architectural and infrastructure resources. Whereas it is prescribed in the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD 2007) and Rights of Persons with Disabilities(RPWDs) Act, 2016 that every public and private institution should have the disabled-friendly infrastructure and architectural facilities.

This study also reveals that the Central and Braille Library of the University has a scarcity of study material in an accessible format for visually impaired students, whereas only few study materials are available in audio and e-book formats in the Braille library is insufficient to them. Because of this, visually impaired students face many challenges in getting the study material as per their requirements. Whereas, following several conventions, treaties, and the RPWDs Act 2016, it is of utmost importance for the institute to provide study material to every student in an accessible format as per their requirements.

It is found that visually impaired students face challenges in the classroom for various reasons, including the fact that their teachers are unable to satisfactorily explain the concepts written on the whiteboard during lectures because they lack the necessary training. These students also experience feelings of exclusion from their peers who are sighted because they are not talking appropriately. To ensure that students with disabilities are not hampered in their academic progress, it is mandated by many conventions and the RPWDs Act of 2016that institutions should apportion qualified and trained teachers to teach these students.

CONCLUSION

This study shows that the visually impaired students of the university face three major types of difficulties such as accessibility to infrastructure, study material, and barriers in classroom learning. These difficulties arise from various reasons such as the university buildings do not have tactile walkways nor any indication to access the classrooms and other necessary office rooms. Additionally, visually impaired students also have to face difficulties due to a lack of study material in accessible formats and trained teachers. Because of these difficulties, the university needs to take a substantial step toward ensuring that visually impaired students can participate in all aspects of the university's activity to their full potential. Therefore, it requires the awareness of the teaching, non-teaching staff, and students without disabilities about the special needs of visually impaired students.

RECOMMENDATIONS

- The university should conduct periodic surveys of physical access to visually impaired students and other facilities, such as the availability of study materials in accessible formats, modern assistive technologies/devices, etc. so that these deficiencies can be identified and addressed.
- The university must provide study materials in accessible formats to visually impaired students, such as Braille books, audio-books, or as per the requirement of their needs.
- Visually impaired students need additional technology to access materials such as screen readers, text-to-speech apps, Braille material, and video magnification, which make their learning more accessible.
- The professors should provide a copy of the lecture to the visually impaired students. Because visually impaired students are unable to view PowerPoint or other lecture visuals. The materials should be delivered in Braille or as a digital copy that students can view on their devices during the lecture.
- The university should appoint trained teachers to teach visually impaired students.
- Both teachers and peers need to be aware of the condition of visually impaired students to make the classroom disabled-friendly, and they do not feel that they are being excluded.

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