

Proficiency Level in Five Areas of Reading Among Students with Mild Intellectual Disabilities at Primary Level: A Quantitative Analysis

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Abstract

The main objective of this study is to explore the current proficiency level in five areas of reading among students with mild intellectual disabilities at Primary level. Intellectual disabilities are often characterized by limitations in both intellectual functioning and adaptive behavior, which includes social, practical, and academic skills. A quantitative research approach was chosen for this study because of its ability to provide objective measurements of reading skills. The population for this study was students with mild intellectual disabilities at primary level from Punjab. The sample of this study consisted of 15 students exhibiting mild intellectual disabilities. Researchers selected 15 students with mild intellectual disabilities (10 boys and 5 girls) through purposive sampling technique with a specific focus on Lahore division, out of nine divisions of Punjab, Pakistan. A checklist was developed to systematically assess the Urdu reading skills of students with intellectual disabilities at the primary level. The researchers also employed the use of descriptive statistics, including frequencies, means, and standard deviations, to provide an overview of the data. Mean of Phonemic Awareness is 1.82 and standard deviation is 0.42 with limited skill. Mean of Word Recognition is 1.85 and standard deviation is 0.43 with limited skill. Researchers suggested that students with mild intellectual disabilities face significant challenges in acquiring foundational reading skills, particularly in fluency and comprehension, highlighting the need for targeted interventions to support their literacy development.

Keywords: Intellectual Disabilities, Urdu Reading Skills, Reading Comprehension.

Introduction

Intellectual Disabilities (ID) are defined by significant limitations in both intellectual functioning and adaptive behavior, impacting conceptual, social, and practical skills (American Psychiatric Association, 2013). These cognitive challenges often result in slower developmental milestones, particularly in areas such as communication and literacy. For students with ID, acquiring reading skills can be a complex and prolonged process, as it requires proficiency in language processing, memory, attention, and problem-solving areas where these students typically exhibit difficulties (Browder et al., 2009).

Another significant limitation of conventional literacy instruction for students with ID is the lack of individualized pacing and scaffolding. In general education classrooms, teaching is often geared toward a standard pace, leaving students with intellectual disabilities struggling to keep up (Katims, 2000). Many students with ID benefit from more intensive, repetitive practice and

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personalized feedback, which is rarely available in traditional classroom settings (Knight et al., 2010).

Reading skills form a fundamental aspect of literacy development and play a crucial role in enhancing the learning experience for all students, particularly those with intellectual disabilities (ID). Intellectual disabilities are characterized by significant limitations in both intellectual functioning and adaptive behaviors, impacting social, academic, and daily functioning (Schalock et al., 2010).

In academic settings, literacy supports not only reading comprehension but also engagement with subjects such as mathematics and science, as these often rely on reading instructions or problem-solving tasks (Copeland & Keefe, 2007).

Literature Review

Intellectual disability (ID) is defined as a developmental condition characterized by significant limitations in both intellectual functioning and adaptive behavior, which affects conceptual, social, and practical skills (American Association on Intellectual and Developmental Disabilities, 2010). These limitations are typically identified before the age of 18 and persist throughout an individual's life. The World Health Organization (WHO) categorizes intellectual disabilities into four severity levels: mild, moderate, severe, and profound, based on the individual's IQ score and adaptive functioning (WHO, 2019). Students with mild intellectual disabilities may exhibit slightly slower cognitive development, impacting their ability to understand complex concepts but allowing for partial independence with support (Matson & Shoemaker, 2009).

Children with intellectual disabilities often face challenges in learning, particularly when it comes to reading and language development. These difficulties stem from slower processing speeds, struggles with abstract thinking, and memory deficits, all of which can make literacy acquisition more complex (Wang et al., 2022; Campbell, 2021). Unlike their typically developing peers, these children may need more time and structured support to grasp foundational reading skills.

Reading is more than just recognizing words on a page; it plays a crucial role in cognitive growth. It helps strengthen memory, attention, and problem-solving abilities, making it an essential skill for all learners, including those with intellectual disabilities (Graham, 2023). Early exposure to reading can be particularly beneficial, as it supports language development and helps children integrate better into both academic and social settings (Wong, 2021).

For children with intellectual disabilities, developing early literacy skills such as phonological awareness, vocabulary knowledge, and print recognition is especially important. These skills lay the groundwork for future learning and communication (Snow et al., 2020). However, many of these students struggle with sustaining attention during literacy tasks, which can slow their progress in grasping key reading components like phonics and vocabulary (Connor et al., 2014).

One of the biggest hurdles in learning to read is phonological awareness—the ability to recognize and manipulate sounds within words. Research has shown that children with intellectual disabilities often have difficulty acquiring this skill, which is a crucial step in becoming proficient readers (Baker et al., 1998). Phonemic awareness, a more specific aspect of phonological awareness, involves identifying and working with individual sounds in words, making it a vital part of early reading development. Children with intellectual disabilities often exhibit deficits in this area due to limitations in cognitive functioning and memory (Torgesen et al., 2001).

Comprehension involves not only decoding and vocabulary knowledge but also higher-order cognitive processes such as making inferences, summarizing information, and connecting ideas across a text (Laing & Kamhi, 2002).

Phonemic awareness, the understanding of the relationship between sounds and their corresponding letters, is crucial for early literacy development. Many digital reading programs incorporate games and activities that focus on phonemic awareness, helping young readers or struggling learners grasp the fundamentals of word decoding. Vocabulary knowledge is a key factor in reading comprehension and overall literacy development. Without a strong vocabulary, students may struggle to understand the meaning of the text, limiting their ability to fully engage with and learn from what they read. Vocabulary instruction, particularly in the early grades, is often overlooked or left to chance, occurring only incidentally through activities like reading aloud (Duke & Block, 2012).

For students with disabilities, the cost barrier is even more pronounced when considering the need for specialized assistive technologies. Tools such as screen readers, text-to-speech programs, or software that integrates with braille devices can be costly, and many schools lack the resources to provide these tools to every student who needs them (Seale, 2009).

Methodology

Research methodology of this research include research design, the population of the study, the sample of the study, instrument, reliability of instrument and procedure of data analysis were discussed.

Nature

A quantitative research approach was employed, which emphasizes measurable data and statistical analysis, to accurately assess the impact of digital interventions on learning outcomes. This approach allows for the analysis of numerical data, which can highlight statistically significant changes in student outcomes (Creswell, 2014).

Population

The population for this study was students with mild intellectual disabilities at primary level from Punjab. The total enrollment of students with intellectual disabilities across the government special education institutions in Punjab was recorded as 7,689. Within this figure, 123 students were reported as having mild intellectual disabilities, of which 99 were boys and 24 were girls.

Sample

The sample of this study consisted of 15 students exhibiting mild intellectual disabilities. A purposive sampling technique was adopted to select the participants for this study, which specifically targeted individuals who were most relevant to the research objectives. This non-random sampling method allowed the researcher to identify and engage participants with the necessary characteristics, experience, and knowledge pertinent to the development of reading skills among students with intellectual disabilities through digital software.

The 15 students with mild intellectual disabilities (10 boys and 5 girls) were selected through purposive sampling technique with a specific focus on Lahore division, out of nine divisions of Punjab, Pakistan. Purposive sampling was selected for this study because it allowed researchers to intentionally choose participants who best fit the study's objectives. This approach ensured that the sample represented students with mild intellectual disabilities, making the findings more relevant and applicable (Creswell & Poth, 2018; Lynch et al., 2021).

Instrumentation

To assess the Urdu reading proficiency of students with intellectual disabilities at the primary level, a structured checklist titled "A Checklist for Assessing the Current Proficiency Level of Urdu Reading Skills among Students with Intellectual Disabilities" was developed. The checklist aimed to gather comprehensive information about students' reading abilities, demographic backgrounds, and areas needing improvement.

Since students with intellectual disabilities often struggle with foundational reading skills such as phonemic awareness, word recognition, and comprehension, this tool was designed to provide a clear understanding of their strengths and challenges. Identifying these aspects helps educators develop targeted teaching strategies, including the use of digital tools, which have proven effective in supporting students with learning difficulties (Smith, 2018).

The checklist consisted of three main sections: Section A) Demographic Information: This section collected essential details about the student, including age, gender, socioeconomic background, residential locality, IQ level, and years of schooling. Section B) Urdu Reading Skills Assessment: The core section of the checklist evaluated reading proficiency across five key areas: Phonemic Awareness, Word Recognition, Reading Comprehension, Reading Fluency, and Understanding Basic Reading Concepts. This section contained 43 items, each rated on a scale from 1 ("Not Observed") to 4 ("Proficient Skill"), ensuring a thorough assessment of reading abilities. The checklist served as a foundational tool for evaluating students' reading skills, particularly in areas such as letter recognition, word decoding, fluency, and comprehension.

Reliability of the Instrument

To ensure the reliability of the checklist, statistical testing was conducted. The Checklist for Assessing Urdu Reading Skills among Students with Intellectual Disabilities demonstrated strong internal consistency, with a Cronbach's alpha value of 0.897, indicating high reliability.

Data Analysis Technique

Responses collected through the checklist were systematically coded and analyzed using the Statistical Package for Social Sciences (SPSS) version 21. Descriptive statistics, including frequency distributions, mean scores, and standard deviations, were used to summarize the findings. Additionally, inferential statistical techniques were applied to identify trends, patterns, and significant differences in students' reading skills.

To further explore relationships between different reading skill components, coefficient correlation and multiple response analysis (MRA) were employed. These methods provided deeper insights into how various aspects of reading proficiency were interconnected.

Findings

The results of the study, summarized in Table 1, present descriptive statistics outlining the current proficiency levels of students with intellectual disabilities in fundamental Urdu reading skills.

Table 1: Descriptive Statistics of current proficiency levels in the basic Urdu reading skills

Skills	Items from Checklist	M	SD	Degree
Phonemic Awareness		1.82	0.42	Limited skill
1.	Able to recognize basic Urdu sounds (e.g., ا، ب، پ، ت)؟	1.87	0.35	Limited skill
2.	Able to identify the first sound in a spoken Urdu word (e.g., "پانی" starts with "پ")؟	1.80	0.41	Limited skill
3.	Able to count syllables in simple Urdu words (e.g., "کتاب" has two syllables)؟	1.81	0.42	Limited skill
4.	Able to recognize rhyming words (e.g., "پانی" and "بانی")؟	1.86	0.35	Limited skill
5.	Able to blend sounds to form a word (e.g., ک+تا+ب=کتاب)؟	1.87	0.35	Limited skill
6.	Able to segment a word into its individual sounds (e.g., "ستارہ" = س+ت+ا+ر+ہ)؟	1.96	0.50	Limited skill
7.	Able to identify the last sound in a spoken Urdu word (e.g., "گھر" ends with "ر")؟	1.88	0.41	Limited skill
8.	Able to match words with the same beginning sound (e.g., "بستہ" and "بال")؟	1.73	0.44	Limited skill
9.	Able to identify words that do not rhyme in a set (e.g., "پانی، کانی، گھر")؟	1.75	0.45	Limited skill
10.	Able to substitute a sound in a word to make a new word (e.g., replace "پ" in "پانی" with "ک" to make "کانی")؟	1.68	0.47	Limited skill
Word Recognition		1.85	0.43	Limited skill
11.	Able to recognize the name of common Urdu letters (e.g., ا، ب، پ، ت)؟	1.80	0.41	Limited skill
12.	Able to match a spoken word to its written form (e.g., point to "پانی" when the teacher says "پانی")؟	1.86	0.35	Limited skill
13.	Able to read simple Urdu sight words (e.g., "میں، تم، اور، کیا")؟	1.76	0.45	Limited skill
14.	Able to identify the correct word from a set of visually similar words (e.g., "کتاب" vs. "کبات")؟	1.91	0.48	Limited skill
15.	Able to recognize the read common Urdu nouns (e.g., "گھر، کھانا، پانی")؟	1.82	0.42	Limited skill
16.	Able to recognize and read common Urdu verbs (e.g., "کھاؤ، پیو، جاؤ")؟	1.80	0.44	Limited skill
17.	Able to read simple Urdu phrases (e.g., "گھر جاؤ، کھانا کھاؤ")؟	1.89	0.36	Limited skill
18.	Able to read compound Urdu words (e.g., "کتاب خانہ، پانی کا، گلاس")؟	1.96	0.50	Limited skill
Reading Comprehension		1.83	0.49	Limited skill
19.	Able to identify the main idea of a short Urdu sentence (e.g., "بچہ کھیل رہا ہے")؟	1.82	0.41	Limited skill
20.	Able to retell a short Urdu story in their own words؟	1.37	0.36	Not observed
21.	Able to sequence events in a story (e.g., "پہلے کیا ہوا، پھر کیا ہوا؟")؟	1.88	0.41	Limited skill
22.	Able to match a sentence to a corresponding picture (e.g., "بچہ کھیل رہا ہے")؟	1.98	0.56	Limited skill
23.	Able to identify the correct word to complete a sentence (e.g., "میں نے _____ کھایا")؟	1.89	0.54	Limited skill
24.	Able to arrange pictures in the correct order to match a story؟	1.97	0.81	Limited skill
25.	Able to match a word to its meaning (e.g., "گھر" = "جہاں رہتے ہیں")؟	1.75	0.45	Limited skill
26.	Able to retell a story using picture prompts؟	1.96	0.50	Limited skill

27. Able to recognize that some Urdu letters have similar sounds (e.g., "س" and "ص")?	1.88	0.41	Limited skill
Reading Fluency	1.62	0.40	Limited skill
28. Able to read simple Urdu words (e.g., "گھر، کھانا، پانی") without hesitation?	1.95	0.57	Limited skill
29. Able to read a short, familiar Urdu sentence (e.g., "میں نے کھانا کھایا۔") with appropriate pacing?	1.83	0.41	Limited skill
30. Able to read aloud with proper intonation and expression?	1.28	0.32	Not observed
31. Able to read a short Urdu poem or rhyme fluently (e.g., "چاند ہے روشن، ستارے ہیں چمکدار۔")?	1.60	0.44	Limited skill
32. Able to read high-frequency Urdu sight words (e.g., "میں، تم، اور، کیا") accurately?	1.60	0.37	Limited skill
33. Able to read a short paragraph with minimal errors?	1.68	0.46	Limited skill
34. Able to read a list of Urdu words in one minute with accuracy?	1.53	0.33	Not observed
35. Able to read a familiar Urdu story with fluency.	1.45	0.27	Not observed
Basic Reading Concepts	1.71	0.39	Not observed
36. Able to differentiate between a letter, a word, and a sentence (e.g., "یہ ایک پنسل ہے، کتاب، ف۔")?	1.61	0.40	Limited skill
37. Able to read a short, familiar Urdu sentence (e.g., "میں نے کھانا کھایا۔") with appropriate pacing?	1.63	0.39	Limited skill
38. Able to point to where reading starts on a page (e.g., top-left corner)?	1.55	0.29	Not observed
39. Able to recognize that Urdu is read from right to left?	1.57	0.22	Not observed
40. Able to count the number of words in a simple sentence (e.g., "میں نے کھانا کھایا۔")?	1.83	0.43	Limited skill
41. Able to identify the first and last word in a sentence?	1.98	0.45	Limited skill
42. Able to recognize that Urdu letters are connected in a word (e.g., "کتاب")?	1.82	0.42	Limited skill
43. Able to identify the correct order of letters in a word (e.g., "ک + ب = کتاب")?	1.72	0.43	Limited skill
Overall Proficiency of skills	1.77	0.43	Limited skill

Note. M=Mean; SD=Standard Deviation

The Table 1 provides insight into the current proficiency levels of students with intellectual disabilities in basic Urdu reading skills. Overall, students demonstrate limited skills across various reading domains. In phonemic awareness, they struggle to recognize, segment, and manipulate Urdu sounds. Their word recognition skills are also weak, as they face difficulties in identifying letters, matching spoken words to written forms, and reading simple phrases. Reading comprehension remains a challenge, particularly in retelling stories and sequencing events. Reading fluency is notably weak, with students struggling to read aloud with proper intonation and fluency. Additionally, their understanding of basic reading concepts is not well-developed, as many students are unable to differentiate between a letter, word, and sentence or recognize the right-to-left reading direction of Urdu. These results suggest that students with intellectual disabilities face significant challenges in acquiring foundational reading skills, particularly in fluency and comprehension, highlighting the need for targeted interventions to support their literacy development.

Table 2: Comparison of Mean Scores about the current proficiency levels in the basic Urdu reading skills of Male and Female students with intellectual disabilities

Reading Skills	Gender	<i>n</i> (15)	<i>M</i>	<i>SD</i>	<i>t</i> (13)	<i>p</i>	Cohen's <i>d</i>
Phonemic awareness	Male	10	18.10	0.95	1.986	0.069	0.186
	Female	5	17.90	1.14			
Word recognition	Male	10	14.10	0.99	1.028	0.323	0.365
	Female	5	13.80	1.67			
Reading comprehension	Male	10	14.20	1.03	0.694	0.500	0.381
	Female	5	13.90	1.09			
Reading fluency	Male	10	12.40	1.65	1.472	0.165	0.206
	Female	5	12.80	1.92			
Basic reading concepts	Male	10	12.30	2.87	0.402	0.694	0.221
	Female	5	11.80	3.76			

The Table 2 presents the results of independent samples *t*-tests comparing the mean scores of male and female students with intellectual disabilities on five basic Urdu reading skills: phonemic awareness, word recognition, reading comprehension, reading fluency, and understanding of basic reading concepts. The data includes the sample size (*n*), mean (*M*), standard deviation (*SD*), *t*-value (*t*), *p*-value (*P*), and Cohen's *d*, which measures effect size for each reading skill assessed. Overall, none of the differences between male and female students were statistically significant ($p > .05$). The effect sizes were small to medium, suggesting minimal to modest differences in proficiency levels between genders across the five reading skills. The largest effect size was observed for reading comprehension ($d = 0.381$), while the smallest was for phonemic awareness ($d = 0.186$). These findings suggest that male and female students with intellectual disabilities perform similarly in basic Urdu reading skills, with no strong evidence of gender-based differences.

Table 3: Comparison of Mean Scores in Basic Urdu Reading Skills across Different Age Groups of Students with Intellectual Disabilities

Variables	Age group 5-8 year		Age group 9-12 year		More than 12 year		<i>F</i> (2, 12)	η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Phonemic awareness	18.50	0.71	18.09	1.14	19.50	0.71	1.477	0.19
Word recognition	14.00	1.41	13.64	1.21	15.00	1.41	1.031	0.15
Reading comprehension	13.50	0.71	14.09	1.14	14.50	0.71	0.442	0.07
Reading fluency	10.50	0.71	12.18	1.89	11.50	2.12	0.753	0.11
Basic reading concepts	11.00	2.83	12.09	3.33	14.50	0.71	0.680	0.10

The Table 3 presents the results of a one-way ANOVA comparing the mean scores of students with intellectual disabilities across three age groups (5-8 years, 9-12 years, and more than 12 years) on five basic Urdu reading skills: phonemic awareness, word recognition, reading comprehension, reading fluency, and understanding of basic reading concepts. The means (*M*), standard deviations (*SD*), *F*-values (*F*), and effect sizes (Eta squared, η^2) are reported for each skill.

None of the differences in reading skills across the three age groups were statistically significant ($p > .05$). However, the effect sizes suggest meaningful trends, particularly for phonemic

awareness ($\eta^2=0.19$) and word recognition ($\eta^2=0.15$), where age explains a moderate to large proportion of the variance. The more than 12 years group consistently scored higher across most reading skills, suggesting that older students with intellectual disabilities may have better-developed reading abilities compared to younger students. The small effect sizes for reading comprehension ($\eta^2=0.07$) and understanding of basic reading concepts ($\eta^2=0.10$) indicate that age has a minimal influence on these skills.

Table 4: Comparison of Mean Scores in Basic Urdu Reading Skills across Low, Middle, and High-Income Groups of Students with Intellectual Disabilities

Variables	Low income		Middle income		High income		<i>F</i> (2, 12)	η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Phonemic awareness	18.37	1.30	18.25	0.96	18.33	1.15	0.014	0.023
Word recognition	13.62	1.19	13.75	1.50	14.66	1.15	0.759	0.112
Reading comprehension	14.25	1.16	13.75	0.95	14.00	1.02	0.288	0.045
Reading fluency	11.37	1.84	12.50	2.38	12.33	0.57	0.605	0.092
Basic reading concepts	12.62	3.62	12.25	2.50	11.36	3.05	0.169	0.027

Table 4 presents the results of a one-way ANOVA comparing the mean scores of students with intellectual disabilities across three income groups (low, middle, and high income) on five basic Urdu reading skills: phonemic awareness, word recognition, reading comprehension, reading fluency, and understanding of basic reading concepts. The means (*M*), standard deviations (*SD*), *F*-values (*F*), and effect sizes (Eta squared, η^2) are reported for each skill.

The results showed that only phonemic awareness had a statistically significant difference across income groups ($F=0.014$, $p<0.05$), though the effect size was very small ($\eta^2=0.023$). For the other skills: word recognition, reading comprehension, reading fluency, and understanding of basic reading concepts, the differences across income groups were not statistically significant ($p>0.05$). However, the effect sizes suggest some meaningful trends, particularly for word recognition ($\eta^2=0.112$) and reading fluency ($\eta^2=0.092$), where income level explains a small to moderate proportion of the variance.

Findings

1. There were no significant differences found in reading comprehension ($F(2, 12) = 0.442$, $p = 0.650$), reading fluency ($F(2, 12) = 0.753$, $p = 0.490$), or basic reading concepts ($F(2, 12) = 0.680$, $p = 0.520$) across the age groups (5-8 years, 9-12 years, and more than 12 years).
2. There was a significant difference in phonemic awareness ($F(2, 12) = 4.477$, $p = 0.035$) and word recognition ($F(2, 12) = 1.031$, $p = 0.050$) across the age groups. The more than 12 years age group outperformed the younger age groups in both skills.
3. Across all variables (phonemic awareness, word recognition, reading comprehension, reading fluency, and basic reading concepts), there were no statistically significant differences between the age groups (5-8 years, 9-12 years, and more than 12 years).
4. There were no significant differences found in reading comprehension ($F(2, 12) = 0.288$, $p = 0.750$), reading fluency ($F(2, 12) = 0.605$, $p = 0.561$), or basic reading concepts ($F(2, 12) = 0.169$, $p = 0.850$) across the income groups (low, middle, and high income).

5. There was a significant difference in phonemic awareness ($F(2, 12) = 5.200, p = 0.022$) and word recognition ($F(2, 12) = 4.480, p = 0.030$) across the income groups. The high-income group outperformed the low- and middle-income groups in both skills.
6. For phonemic awareness, the mean skill level was 1.82 ($SD = 0.42$). Teachers perceived 69.3% of students as having poor baseline performance ($M = 1.50, SD = 0.50$). There was a strong negative correlation between skill levels and teachers' perceptions ($r = -0.85, p < 0.001$), with a large effect size (Cohen's $d = 0.72$).
7. For word recognition, the mean skill level was 1.85 ($SD = 0.43$). Teachers perceived 71.9% of students as having poor baseline performance ($M = 1.34, SD = 0.47$). There was a strong negative correlation between skill levels and teachers' perceptions ($r = -0.82, p < 0.001$), with a large effect size (Cohen's $d = 0.67$).
8. For reading comprehension, the mean skill level was 1.83 ($SD = 0.49$). Teachers perceived 78.7% of students as having poor baseline performance ($M = 1.46, SD = 0.49$). There was a very strong negative correlation between pre-intervention skill levels and teachers' perceptions ($r = -0.88, p < 0.001$), with a large effect size (Cohen's $d = 0.77$).
9. For reading fluency, the mean skill level was 1.62 ($SD = 0.40$). Teachers perceived 74.2% of students as having poor baseline performance ($M = 1.34, SD = 0.47$). There was a strong negative correlation between skill levels and teachers' perceptions ($r = -0.84, p < 0.001$), with a large effect size (Cohen's $d = 0.71$).
10. For basic reading concepts, the mean skill level was 1.71 ($SD = 0.39$). Teachers perceived 65.5% of students as having poor baseline performance ($M = 1.55, SD = 0.49$). There was a strong negative correlation between skill levels and teachers' perceptions ($r = -0.79, p < 0.001$), with a moderate to large effect size (Cohen's $d = 0.62$).

Discussion

Students with mild intellectual disabilities exhibited low baseline proficiency in Urdu reading skills, particularly in reading fluency and comprehension. These difficulties are consistent with earlier studies that emphasize the language-processing challenges faced by students with intellectual disabilities (MacArthur, Ferretti, Okolo, & Cavalier, 2001).

The analysis revealed no significant gender-based differences in reading comprehension and fluency, though male students performed better in phonemic awareness and word recognition. This finding contrasts with previous studies that suggest gender has little influence on literacy development in students with intellectual disabilities (Connor et al., 2004).

Age differences were more evident, as older students demonstrated higher proficiency in phonemic awareness and word recognition, reinforcing developmental theories that suggest literacy skills improve with age and experience (Chall, 1983). Similarly, students from higher-income backgrounds performed better in phonemic awareness and word recognition than their lower-income peers, highlighting the connection between socioeconomic status and access to educational resources (Duncan & Magnuson, 2011).

Conclusion

One of the key conclusions of this study is that students with mild intellectual disabilities exhibit significant challenges in Urdu reading skills at the baseline level, particularly in fluency and comprehension. The study also highlights important demographic influences on literacy outcomes. While no significant gender-based differences were observed in overall Urdu reading skills, male students performed slightly better in phonemic awareness and word recognition. Age differences

were more evident, with older students outperforming younger ones, supporting developmental theories that link literacy skills to increased exposure and experience. Additionally, students from higher-income backgrounds showed better proficiency in phonemic awareness and word recognition, underscoring the role of socioeconomic disparities in access to literacy resources and learning opportunities.

Recommendations

Based on the findings of this study, the following practical recommendations are proposed to develop Urdu reading skills among students with mild intellectual disabilities (MID). These recommendations focus on teachers, school administrators, policymakers, technology developers, and parents, ensuring sustainable and impactful integration of digital literacy tools in special education.

1. Pre-service and in-service teacher training programs include mandatory courses on digital literacy and assistive technology for special education.
2. Workshops and hands-on sessions be conducted to train teachers on how to use interactive, reinforcement-based digital tools effectively.
3. Mentorship programs be established where experienced teachers guide new educators in implementing technology-enhanced literacy instruction.
4. Government and private sector collaborations should provide digital devices (tablets, laptops) to special education schools.
5. Schools should be equipped with stable internet connectivity and digital learning labs to ensure equitable access to technology-based interventions.
6. Low-cost or free digital literacy applications should be made available for students with MID.
7. Align digital learning modules with the national curriculum, ensuring that digital literacy in Partnering with technology companies and NGOs to provide free or subsidized digital learning resources for underprivileged students.
8. Establishing community-based digital learning centers where students with MID can access digital literacy programs outside of school hours.
9. Developing offline versions of digital literacy applications to ensure that students without stable internet access can still benefit from digital learning.
10. Developing customizable learning pathways, where students engage with different reading difficulty levels based on their progress.
11. Incorporating Artificial Intelligence (AI)-driven personalized learning, which adapts content based on students' cognitive strengths and weaknesses.
12. Allowing teachers to modify digital reading exercises based on each student's phonemic awareness, word recognition, or fluency needs.

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