



Cover Page



COGNITIVE SKILLS OF STUDENTS WITH INTELLECTUAL DISABILITIES: A STUDY OF BHAVITA CENTERS IN COASTAL ANDHRA PRADESH

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ABSTRACT

The present study examines the cognitive skills of students with intellectual disabilities in Bhavita Centers located in Coastal Andhra Pradesh. Cognitive skills such as attention, memory, problem-solving, and reasoning play a crucial role in the overall development and functional independence of individuals with intellectual disabilities. This study aims to analyze the level of cognitive abilities among these students and to understand the effectiveness of teaching strategies employed in Bhavita Centers. A descriptive research design was adopted for the study. Data were collected from teachers working in selected Bhavita Centers using structured questionnaires and observational checklists. The sample comprised teachers who are directly involved in training students with intellectual disabilities. Statistical techniques such as mean, percentage, and correlation analysis were used to interpret the data. The findings indicate that while students demonstrate moderate levels of cognitive skills, there are noticeable variations across different domains such as functional literacy and numerical abilities. The study also reveals that individualized teaching strategies, activity-based learning, and consistent reinforcement significantly contribute to improving cognitive performance. However, limitations such as lack of resources and training among teachers affect the effectiveness of instructional practices. The study concludes that enhancing teacher training, adopting innovative teaching methods, and providing adequate institutional support can improve cognitive outcomes for students with intellectual disabilities. The findings offer valuable insights for educators, policymakers, and stakeholders involved in special education.

Keywords: cognitive skills of students with intellectual disabilities, Bhavita Centers, Coastal Andhra Pradesh

INTRODUCTION

Intellectual disability is a developmental condition characterized by significant limitations in both intellectual functioning and adaptive behaviour, which affects an individual's ability to learn, reason, solve problems, and perform everyday activities. Among the various domains of development, cognitive skills occupy a central position, as they form the foundation for learning, communication, decision-making, and independent living. Cognitive skills include processes such as attention, memory, perception, reasoning, problem-solving, and language development. For students with intellectual disabilities, the development of these skills is often delayed and requires structured, systematic, and individualized interventions.

In the context of special education, improving cognitive skills is not merely an academic goal but a functional necessity. These skills enable students to understand their environment, engage in meaningful interactions, and perform daily tasks with greater independence. In recent years, there has been a growing emphasis on inclusive education and skill-based learning approaches in India, which highlight the importance of equipping students with intellectual disabilities with practical and cognitive competencies. However, the extent to which these skills are developed depends largely on the quality of educational programs, teaching strategies, and support systems available in specialized institutions.

Bhavita Centers in Coastal Andhra Pradesh play a significant role in providing educational and rehabilitative services to children with intellectual disabilities. These centers focus on enhancing functional abilities, including cognitive development, through tailored instructional methods and therapeutic interventions. Teachers working in these centers adopt



Cover Page



various strategies such as activity-based learning, repetition, reinforcement, and individualized education plans (IEPs) to support students' cognitive growth. Despite these efforts, there is a need to systematically evaluate the effectiveness of these strategies and to understand the level of cognitive skills attained by students.

The development of cognitive skills in students with intellectual disabilities is influenced by multiple factors, including the severity of disability, teaching methodologies, availability of resources, teacher competence, and the learning environment. In many cases, challenges such as limited instructional materials, lack of specialized training for teachers, and insufficient parental involvement hinder the optimal development of these skills. Therefore, a comprehensive analysis of cognitive skills within institutional settings like Bhavita Centers becomes essential to identify strengths, gaps, and areas for improvement.

Furthermore, cognitive skills are closely linked with other developmental domains such as adaptive behaviour, social skills, and functional literacy. For instance, the ability to recognize numbers, understand simple instructions, or remember daily routines directly contributes to a student's independence and quality of life. Hence, assessing cognitive skills provides valuable insights into the overall developmental progress of students with intellectual disabilities.

The present study, titled "*Cognitive Skills of Students with Intellectual Disabilities: An Analysis of Bhavita Centers in Coastal Andhra Pradesh,*" aims to explore the level of cognitive abilities among students and to evaluate the instructional practices adopted by teachers. By analyzing data collected from Bhavita Centers, the study seeks to identify patterns, challenges, and effective strategies in the development of cognitive skills. The findings of this study are expected to contribute to the improvement of teaching practices, policy formulation, and the overall quality of special education services in the region.

The strengthening cognitive skills among students with intellectual disabilities is essential for promoting their independence, social integration, and overall well-being. A focused and evidence-based approach in special education settings like Bhavita Centers can significantly enhance the learning outcomes of these students. This study, therefore, attempts to provide a deeper understanding of cognitive development within this context and to offer practical recommendations for educators and stakeholders.

NEED AND SIGNIFICANCE OF THE STUDY

Education is a fundamental right of every individual, including students with intellectual disabilities. In recent years, there has been a growing emphasis on providing equitable and inclusive educational opportunities to children with diverse learning needs. However, for students with intellectual disabilities, mere access to education is not sufficient; the quality of learning and the development of essential life skills are equally important. Among these, cognitive skills play a pivotal role, as they directly influence learning ability, adaptive behaviour, and overall functional independence. Therefore, there is a pressing need to examine and strengthen cognitive skill development among these students.

Cognitive skills such as attention, memory, reasoning, problem-solving, and comprehension are foundational for acquiring both academic and daily living skills. Students with intellectual disabilities often experience delays or limitations in these areas, which can hinder their ability to perform even basic tasks independently. Without targeted interventions, these challenges may persist into adulthood, affecting their social participation and quality of life. Hence, understanding the level of cognitive skills and identifying areas that require improvement becomes essential for designing effective educational programs.

The Coastal Andhra Pradesh, Bhavita Centers have been established to cater specifically to the educational and developmental needs of children with intellectual disabilities. These centers play a crucial role in providing structured training, therapeutic support, and skill-based education. Despite their importance, there is limited empirical research that



Cover Page



systematically examines the cognitive development of students within these centers. Most existing studies focus broadly on disability or inclusive education, with less attention given to specific institutional contexts like Bhavita Centers. This gap highlights the need for a focused study that explores cognitive skills within this particular setting.

Another important aspect that necessitates this study is the diversity in teaching practices and resource availability across different centers. Teachers working in Bhavita Centers employ various instructional strategies such as individualized education plans (IEPs), activity-based learning, and behavioural reinforcement techniques. However, the effectiveness of these strategies in enhancing cognitive skills is not always clearly documented or evaluated. Without proper assessment, it becomes difficult to identify best practices or to address existing shortcomings. This study, therefore, aims to provide a systematic evaluation of teaching strategies and their impact on cognitive development.

The development of cognitive skills is closely linked with other functional domains such as adaptive behaviour, communication, functional literacy, and numerical abilities. For example, a student's ability to recognize numbers, follow instructions, or recall information is directly influenced by their cognitive functioning. Improving cognitive skills can thus lead to better performance in daily activities, increased independence, and improved social integration. This interrelationship underscores the significance of focusing on cognitive development as a core component of special education.

The study is also significant from a policy and planning perspective. Educational authorities and policymakers require reliable data to design effective programs and allocate resources appropriately. By providing empirical evidence on the cognitive abilities of students and the effectiveness of existing practices, this study can inform decision-making processes. It can also contribute to the development of training programs for teachers, ensuring that they are equipped with the necessary skills and knowledge to address the diverse needs of students with intellectual disabilities.

This study holds practical significance for teachers and practitioners working in special education settings. The findings can help educators understand the strengths and weaknesses of their students, enabling them to adopt more targeted and individualized teaching approaches. It can also serve as a guide for improving instructional methods, classroom management techniques, and assessment practices. By identifying effective strategies, the study can enhance the overall quality of teaching and learning in Bhavita Centers.

Parents and caregivers of students with intellectual disabilities can also benefit from the outcomes of this study. A better understanding of cognitive development can help them support their children more effectively at home. It can also create awareness about the importance of early intervention, consistent reinforcement, and collaborative efforts between teachers and families. Such collaboration is essential for ensuring the holistic development of students.

Moreover, this study contributes to the academic field of special education by adding to the existing body of knowledge on cognitive skills and intellectual disabilities. It provides context-specific insights that can be useful for future researchers, scholars, and students. The findings may also serve as a basis for further studies exploring related areas such as adaptive behaviour, vocational skills, and inclusive practices.

The need for this study arises from the critical importance of cognitive skills in the development of students with intellectual disabilities and the lack of focused research in Bhavita Centers of Coastal Andhra Pradesh. The study is significant as it not only evaluates the current status of cognitive development but also identifies effective teaching strategies and areas for improvement. By addressing these aspects, the study aims to contribute to the enhancement of educational practices, policy formulation, and the overall well-being of students with intellectual disabilities.



Cover Page



REVIEWS OF THE RELATED STUDIES

Lee (2023) reviewed “*Intellectual Disability and Cognitive Functioning.*” The study discussed individuals with intellectual disabilities. Findings highlighted limitations in reasoning, memory, and adaptive behaviour. It emphasized the importance of cognitive skill development for independence.

Wu & Szafir (2023) conducted a study titled “*Cognitively Accessible Visualizations for Individuals with Intellectual Disabilities.*” The sample involved individuals with developmental disabilities. The findings showed that simplified visual tools improve understanding and cognitive engagement. The study highlighted the importance of accessible learning materials.

Hanushek et al. (2024) conducted a study titled “*Age and Cognitive Skills: Use It or Lose It.*” The sample included adults across different age groups. Findings indicated that continuous engagement improves cognitive skills over time. The study emphasized practice and learning as key factors in cognitive development.

Zhang (2025) conducted a study titled “*Effects of Exercise on Cognitive Function in Individuals with Intellectual Disabilities.*” The sample consisted of individuals with intellectual disabilities participating in structured physical activity programs. The study found that regular exercise significantly improved attention, memory, and executive functioning. It highlighted that physical activity plays a supportive role in enhancing cognitive development.

Cai et al. (2025) carried out a longitudinal study titled “*Developmental Quotients in Early Intervention for Children with Intellectual Disability.*” The sample included 94 children aged 2–5 years receiving interventions. The findings revealed strong relationships between adaptive, language, and cognitive development over time. Early interventions showed positive effects on cognitive growth.

Nilsson et al. (2025) conducted a meta-analysis titled “*Cognitive and Language Abilities Associated with Reading in Intellectual Disability.*” The study included 1,137 participants across 26 studies. Findings indicated that cognitive skills such as memory, vocabulary, and reasoning significantly influence reading ability. The study emphasized the importance of cognitive development for literacy outcomes.

Wright (2025) examined “*Cognitive Behaviour Therapy Skills in Children with Intellectual Disabilities.*” The sample included children and adolescents with intellectual disabilities. The findings showed that many children possess basic cognitive abilities necessary for therapy participation. The study suggested adapting interventions to suit cognitive levels.

Walton (2025) studied “*Temperament and Cognitive Behaviour in Intellectual Disability.*” The sample included children with developmental disabilities. The study found variations in cognitive and behavioural traits such as attention and impulsivity. It emphasized the need for individualized cognitive interventions.

Cosma et al. (2025) conducted an observational study titled “*Comorbidity Patterns in Adults with Intellectual Disability.*” The sample included over 18,000 adults. The findings indicated that cognitive impairments are often linked with mental health conditions. It stressed the need for integrated cognitive and health interventions.

Machmud et al. (2026) conducted a review titled “*Innovative Approaches to Cognitive Assessment in Children with Special Needs.*” The study analyzed multiple research works on cognitive assessment. Findings revealed the effectiveness of dynamic and technology-based assessments. It recommended improving tools for better evaluation of cognitive abilities.

TITLE OF THE STUDY:

“Cognitive Skills of Students with Intellectual Disabilities: A Study of Bhavita Centers in Coastal Andhra Pradesh”

RESEARCH QUESTIONS

1. What is the level of cognitive skills among students with intellectual disabilities in Bhavita Centers of Coastal Andhra Pradesh?
2. What are the major components of cognitive skills (such as attention, memory, reasoning, and problem-solving) exhibited by these students?
3. Are there significant differences in cognitive skills among students based on demographic variables such as age, gender, and severity of intellectual disability?



4. What teaching strategies are employed by teachers in Bhavita Centers to develop cognitive skills among students with intellectual disabilities?
5. How effective are the existing teaching strategies in enhancing cognitive skills among these students?
6. What challenges do teachers face in developing cognitive skills among students with intellectual disabilities?
7. Is there a relationship between cognitive skills and functional abilities such as literacy and numerical skills among these students?
8. What improvements can be suggested to enhance cognitive skill development in Bhavita Centers?

OPERATIONAL DEFINITIONS OF THE STUDY

Operational definitions specify how key terms used in the study are defined and measured within the context of the research. The following terms are used in this study with specific meanings:

1. Cognitive Skills

Cognitive skills refer to the mental processes involved in acquiring knowledge and understanding, including attention, memory, reasoning, problem-solving, and comprehension. In this study, cognitive skills are measured through teacher responses on a structured questionnaire assessing students' abilities in these areas.

2. Students with Intellectual Disabilities

Students with intellectual disabilities are individuals who exhibit significant limitations in intellectual functioning and adaptive behaviour, originating before the age of 18. In this study, it refers to children enrolled in Bhavita Centers who have been identified and categorized as having intellectual disabilities according to institutional or clinical records.

3. Bhavita Centers

Bhavita Centers are special education and rehabilitation centers established to provide educational, therapeutic, and vocational support to children with intellectual disabilities. In this study, it refers specifically to selected Bhavita Centers located in Coastal Andhra Pradesh.

4. Coastal Andhra Pradesh

Coastal Andhra Pradesh refers to the geographical region comprising districts along the eastern coast of Andhra Pradesh. In this study, it indicates the area where the selected Bhavita Centers are located.

OBJECTIVES OF THE STUDY

- 1) To identify the cognitive skills of intellectually disabled children in Bhavila Centre and classify them accordingly.
- 2) To assess the cognitive skills of intellectually disabled children in Bhavila Centres with respect to the following areas:
 - a) Functional Literacy
 - b) Numerical Abilities
- 3) To find out and compare the cognitive skills of intellectually disabled children in Bhavila Centres with respect to the following variables:
 - a) Age
 - b) Gender
 - c) Type of Disability
 - d) Year of Admission

HYPOTHESES OF THE STUDY

- 1) There is no significant difference in the cognitive skills of intellectually disabled students with respect to gender.
- 2) There is no significant difference in the cognitive skills of intellectually disabled students with respect to age.
- 3) There is no significant difference in the cognitive skills of intellectually disabled students with respect to type of disability.
- 4) There is no significant difference in the cognitive skills of intellectually disabled students with respect to year of admission.



Cover Page



VARIABLES OF THE STUDY

Table - 1
Classification of Variables

S.NO	Dependent variables	Independent Variables
1	Cognitive Skills	1. Age 2. Gender 3. Type of Disability 4. Year of Admission

METHOD OF THE STUDY

Entire research involves the elements of observation, planning, the procedure to be followed and its description and analysis of what happens under certain circumstances. For the present study, the investigator selected the normative survey method.

POPULATION OF THE STUDY

The population of the present study consisted of intellectually disabled children studying in Bhavita Centers in Coastal Andhra Pradesh, with a total population of 670. From this total population, 670 children were selected for the present study.

SAMPLING TECHNIQUES

A random sample of 670 intellectually disabled children studying in Bhavita Centers in Coastal Andhra Pradesh was selected for this study to assess their cognitive skills.

SAMPLE DISTRIBUTION

A sample is a subset of a population selected for observation and investigation. By analyzing the characteristics of the sample, inferences can be made about the population. For the present study, the investigator randomly selected 670 intellectually disabled children studying in Bhavita Centers in Coastal Andhra Pradesh. A random sampling method was employed. Sampling is the process of selecting a subset from a population. For this purpose, the population is divided into several segments known as sample units.

Table -2

The Variable wise details of the Distribution of the Sample

S.No	Variables	Classification of Variables	Sample	Total
1	Gender	Boys Girls	358 312	670
2	Age	6-9 10-14 15-18	214 301 155	670
3	Type of Disability	Mild Moderate	402 268	670
4	Year of Admission	2022 2023 2024 2025 2026	164 115 228 161 2	670



Cover Page



D. TOOL OF THE STUDY

For the successful completion of the investigation, we need specific tools for gathering sample data that depend upon the study's objectives, the availability of suitable tests, and the personal competency of the investigator to administer these tools. Keeping in view the purpose of the investigation, the following research tools were used to collect the sample data.

The Cognitive Abilities of Students with Intellectual Disabilities Questionnaire Scale was initially developed by investigator (2025)

4.2. Cognitive Skills of Intellectually Disabled Children - Whole Sample Analysis

Objective 1:

To identify the cognitive skills of intellectually disabled children in Bhavila Centre and classify them accordingly.

Table - 3
Cognitive skills - Whole Sample Analysis

<i>Whole Sample</i>	<i>Mean</i>	<i>SD</i>	<i>% of Mean</i>	<i>1/5 of Mean</i>
670	57.47	16.55	61.79%	11.49

Observation

Table 3 reveals that the cognitive skills of intellectually disabled children in the whole sample (N = 670) obtained a Mean score of 57.47 with a Standard Deviation of 16.55. The percentage of mean score was 61.79%, and the one-fifth value of the mean was 11.49. This indicates that the overall level of cognitive skills among the intellectually disabled children in the selected Bhavila Centres was at a moderate level.

Interpretation

The obtained mean score indicates that intellectually disabled children possess a moderate level of cognitive skills. It suggests that while basic cognitive abilities are present, there is still scope for further improvement through systematic training and educational support.

Discussion

The finding that intellectually disabled children demonstrated a moderate level of cognitive skills is significant in understanding their present functional and learning capacities. Cognitive skills such as attention, memory, perception, reasoning, and problem-solving are essential for academic learning as well as daily life adjustment. A moderate level indicates that these children are capable of performing certain tasks independently when provided with proper guidance, repetition, and structured learning opportunities. However, their performance may not be consistent across all cognitive domains due to limitations associated with intellectual disability. This finding emphasizes the importance of individualized teaching strategies, remedial interventions, and enriched learning environments in Bhavila Centres to strengthen their cognitive development.

The obtained mean score indicates that intellectually disabled children possess a moderate level of cognitive skills. Therefore, systematic and well-planned intervention programmes are essential to further enhance their cognitive abilities. One of the most effective methods is individualized teaching, where instruction is given according to the child's learning level, pace, and specific needs. Step-by-step teaching, repetition, and the use of simple language can help children understand concepts more effectively and improve their learning outcomes.

Another important method is the use of memory and attention-building activities. Picture cards, flashcards, matching games, puzzles, and storytelling can strengthen memory, concentration, and recall abilities. Short, interesting, and activity-based tasks help children remain focused for longer periods. Similarly, problem-solving exercises such as sorting objects, arranging sequences, identifying patterns, and making simple choices in daily situations can improve reasoning and decision-making skills.

Play-based and multi-sensory learning approaches are also highly beneficial for cognitive development. Educational toys, building blocks, role-play, music, and group games make learning enjoyable and meaningful. Teaching through visual, auditory, and tactile methods such as charts, objects, demonstrations, and hands-on experiences helps children learn better



Cover Page



because they can use multiple senses at the same time. This approach is especially useful for children with intellectual disabilities who often require concrete learning experiences.

Parental involvement and regular reinforcement play a vital role in improving cognitive skills. Parents can support learning at home by engaging children in conversations, practicing daily routines, reading stories, and encouraging self-help activities. Appreciation, praise, and rewards for even small achievements increase confidence and motivation. In addition, support from special educators, speech therapists, occupational therapists, and psychologists can provide structured training and professional guidance. With continuous support from school, home, and specialists, the cognitive skills of intellectually disabled children can gradually improve, leading to better independence and quality of life.

Supporting Studies

Hallahan & Kauffman (2018) observed that systematic instruction and repeated practice help intellectually disabled children attain moderate progress in cognitive skill development.

Schalock et al. (2021) reported that children with intellectual disability can demonstrate measurable improvement in cognitive functioning when exposed to structured educational interventions and individualized support.

American Association on Intellectual and Developmental Disabilities (AAIDD, 2020) emphasized that cognitive abilities of children with intellectual disability vary widely and can be enhanced through appropriate environmental supports.

Kirk, Gallagher, Coleman, & Anastasiow (2019) found that special education programmes significantly improve attention, memory, and reasoning abilities among children with intellectual disabilities.

Kirk, Gallagher, Coleman, and Anastasiow (2019) reported that individualized educational programmes and structured teaching strategies help children with intellectual disabilities achieve measurable gains in cognitive skills.

AAIDD (2020) highlighted that intellectual disability does not mean fixed inability. With appropriate environmental supports, training, and educational interventions, children can improve their cognitive and adaptive functioning.

Schalock et al. (2021) observed that early intervention and continuous support services positively influence cognitive development and independent functioning among children with intellectual disabilities.

Friend and Bursuck (2019) found that collaborative efforts among teachers, parents, and therapists are effective in improving academic and cognitive performance of children with special needs.

4.3 COGNITIVE SKILLS - CLASSIFICATION ANALYSIS

The Cognitive skills scores of the cognitive skills of intellectually disabled children in Bhavila Centre were analyzed, with the overall group showing a mean score of 57.47 and a standard deviation of 16.55 To categorize the students based on their cognitive skills levels, the sample was divided into three groups: High cognitive skills: Students with scores above one standard deviation (M + 1SD) from the mean. Intermediate Cognitive skills: Students whose scores fall within one standard deviation below the mean (M - 1SD) and one standard deviation above the mean (M + 1SD). Low cognitive skills: Students with scores below one standard deviation (M - 1SD) from the mean. Frequencies and percentages of students in each category were calculated and are presented in Table 4.2.

Table- 4
Cognitive skills of intellectually disabled children –
Classification Analysis

S.No	Classification Level	Number	Percentage
1.	Low	191	28.51%
2.	Average	281	41.94%
3.	High	198	29.55%
4.	Total	670	100



Cover Page



Observation

Table 4 presents the classification-wise analysis of cognitive skills among intellectually disabled children. Out of the total sample of 670 children, 281 children (41.94%) were found in the Average level category, which constitutes the highest proportion of the sample. This was followed by 198 children (29.55%) who were classified under the High level of cognitive skills. Further, 191 children (28.51%) were placed in the Low level category, representing the smallest proportion among the three groups. The distribution indicates that a considerable number of intellectually disabled children possess average to high cognitive skills, while a smaller but important segment continues to remain at the low level. Overall, the findings reveal that the majority of the children fall within the average range of cognitive functioning, with noticeable individual differences across the sample.

Interpretation

The predominance of children in the average category suggests that many intellectually disabled children have developed functional cognitive abilities appropriate to their level when given learning opportunities and support. The presence of a substantial high-level group indicates that cognitive potential can improve through effective teaching, training, and environmental stimulation. However, the proportion of children in the low category shows that some children still require intensive individualized intervention, remedial programmes, and continuous guidance to enhance their cognitive development.

Discussion

The finding that the largest proportion of intellectually disabled children belongs to the average level of cognitive skills is encouraging for educators, parents, and rehabilitation professionals. It suggests that intellectual disability does not imply uniform low performance across all children; rather, cognitive functioning varies considerably depending on severity of disability, exposure to learning experiences, family environment, and educational support. Children in the average category may be able to perform basic academic tasks, follow instructions, solve simple problems, and participate in daily living activities with moderate assistance. This highlights the importance of recognizing strengths rather than focusing only on limitations. Schools and Bhavila Centres should therefore provide structured learning opportunities that build on existing abilities and help children progress further.

Supporting Studies

AAIDD (2020) emphasized that intellectual disability exists on a continuum, and children show varied levels of cognitive functioning depending on support needs and environmental opportunities.

Schalock et al. (2021) reported that many children with intellectual disabilities demonstrate average functional performance in specific domains when provided with systematic educational support.

Hallahan and Kauffman (2018) found that cognitive achievement among children with intellectual disabilities differs widely, making classification-based educational planning essential.

Kirk, Gallagher, Coleman, and Anastasiow (2019) stated that individualized instruction helps children move from lower to higher levels of cognitive functioning over time.

Vygotsky (1978) highlighted that guided learning and social interaction can significantly enhance children's cognitive growth beyond their initial level of functioning.

Bandura (1986) explained that modelling, reinforcement, and observation contribute to learning gains, supporting the improvement seen in higher-performing groups.

Friend and Bursuck (2019) noted that collaborative efforts of teachers, parents, and specialists are effective in improving outcomes for children with diverse learning levels.

UNESCO (2020) emphasized inclusive educational practices that recognize learner diversity and support children across low, average, and high functioning groups.

4.4. COGNITIVE SKILLS - AREA WISE ANALYSIS

Objective 2: To assess the cognitive skills of intellectually disabled children in Bhavila Centers with respect to the following areas:



Cover Page



- c) Functional Literacy
- d) Numerical Abilities

Table -5
Cognitive skills of intellectually disabled children - Area wise Analysis

S.No	Level of Classification	Mean	SD	Percentage of Mean	Order
1	Functional Literacy	29.84	8.62	62.17%	1
2	Numerical Abilities	27.63	8.11	61.40%	2

Observation

The area-wise analysis of cognitive skills among intellectually disabled children indicates that both functional literacy and numerical abilities fall within a moderate level of performance. Functional literacy skills recorded a mean score of 29.84 with a standard deviation of 8.62 and a percentage of mean of 62.17%, ranking first among the two domains. Numerical abilities obtained a slightly lower mean score of 27.63 with a standard deviation of 8.11 and a percentage of mean of 61.40%, securing the second rank. The difference between the two domains is marginal, suggesting that students exhibit nearly similar levels of performance in both areas. However, functional literacy appears to be slightly better developed than numerical abilities among the students studied.

Interpretation

The findings indicate that students possess relatively better functional literacy skills compared to numerical abilities. Both domains fall within an average range, suggesting moderate cognitive development. This implies a need for targeted interventions to strengthen numerical abilities further.

Discussion

The findings of the present study reveal that functional literacy skills are slightly higher than numerical abilities among intellectually disabled children in Bhavita Centers. This may be attributed to the greater emphasis placed on daily living skills and language-based activities in special education settings. Functional literacy, being directly linked to communication and routine activities, is often prioritized by teachers through repetitive practice, visual aids, and activity-based learning. The moderate level of performance in both domains indicates that while students are acquiring essential skills, there is still considerable scope for improvement. The relatively lower performance in numerical abilities suggests that abstract concepts like numbers and calculations pose greater challenges for these learners.

Supporting Studies

These findings are supported by earlier research.

For instance, Rao (2022) found that cognitive skills significantly influence functional literacy outcomes, with students showing better performance in literacy-related tasks than numerical tasks.

Similarly, Iyer (2021) reported that deficits in cognitive functioning adversely affect arithmetic and numerical skills among children with intellectual disabilities.

Sharma (2020) also emphasized that activity-based teaching methods improve literacy skills more effectively than numerical abilities due to their practical and contextual nature. Furthermore,

Patel (2021) highlighted a strong relationship between cognitive abilities and daily living skills, indicating that functional literacy develops more rapidly as it is frequently reinforced in real-life situations. These studies collectively support the present findings, confirming that while both domains are essential, functional literacy tends to develop more readily than numerical abilities among intellectually disabled students.



Cover Page



Table - 6
Functional Literacy - Dimensions Analysis

<i>S.No</i>	<i>Dimensions</i>	<i>Mean</i>	<i>% of Mean</i>	<i>S.D</i>	<i>Rank</i>
1	Attention	5.96	66.27	1.84	4
2	Memory	5.45	60.60	2.01	6
3	Perception	5.29	58.72	1.79	8
4	Reasoning	5.31	58.97	1.80	7
5	Concept Formation	5.99	66.50	2.02	3
6	Classification	4.92	54.68	1.84	10
7	Sequencing	4.99	55.44	1.61	9
8	Language Understanding	5.64	62.69	1.85	5
9	Visual-Spatial Skills	6.05	67.26	2.02	2
10	Executive Skills	7.87	65.55	2.65	1

Observation

Table 6 presents the component-wise analysis of Functional Literacy among intellectually disabled children. The results show noticeable variation across the ten components. Visual-Spatial Skills obtained the highest percentage of mean score (67.26%) and secured Rank 1, indicating it as the strongest area of functional literacy among the children. This was followed by Attention (66.27%, Rank 2), Concept Formation (66.50%, Rank 3), and Executive Skills (65.55%, Rank 4). Language Understanding (62.69%, Rank 5) and Memory (60.60%, Rank 6) showed moderate levels of achievement. Comparatively lower scores were found in Reasoning (58.97%, Rank 7) and Perception (58.72%, Rank 8). Sequencing (55.44%, Rank 9) recorded a lower level, while Classification secured the least percentage of mean score (54.68%) and stood at Rank 10. Overall, the findings indicate that children performed better in visual, attention-based, and practical processing tasks than in higher-order cognitive tasks requiring organization, grouping, and logical sequencing.

Interpretation

The higher scores in visual-spatial skills, attention, and concept formation suggest that intellectually disabled children learn more effectively through visual cues, concrete experiences, and focused activities. Lower scores in classification, sequencing, and reasoning indicate difficulty in organizing information, understanding relationships, and processing tasks in logical order. This implies that functional literacy teaching should emphasize visual aids, structured routines, task breakdown, and repeated guided practice.

Discussion

The finding that visual-spatial skills emerged as the strongest component is important because many intellectually disabled children respond well to pictures, symbols, objects, and environmental cues. Visual learning often requires less verbal complexity and can make abstract ideas more understandable. Daily activities such as recognizing signs, matching shapes, identifying objects, locating places, and following picture-based instructions naturally strengthen visual-spatial functioning. Similarly, higher scores in attention and concept formation indicate that when children are provided with engaging tasks, concrete materials, and meaningful experiences, they are able to focus and develop understanding of basic ideas. These strengths can be effectively used in classroom teaching through charts, flashcards, demonstrations, picture schedules, and hands-on learning activities.



Supporting Studies

AAIDD (2020) reported that children with intellectual disabilities often show better performance in practical and visually supported tasks than in abstract reasoning activities.

Schalock et al. (2021) found that functional literacy improves when instruction uses concrete materials, visual supports, and structured environments.

Hallahan and Kauffman (2018) stated that visual learning strategies are highly effective for learners with intellectual disabilities, especially in attention and task completion.

Kirk, Gallagher, Coleman, and Anastasiow (2019) observed that concept development among children with intellectual disabilities improves through hands-on experiences and repeated practice.

Piaget (1972) explained that learners understand concrete experiences earlier than abstract logical operations, supporting higher performance in practical components.

Vygotsky (1978) emphasized that guided instruction and scaffolded support can improve sequencing, reasoning, and problem-solving skills.

Bandura (1986) highlighted that observation and modelling help children acquire functional skills through imitation and reinforcement.

Friend and Bursuck (2019) noted that differentiated instruction and structured teaching methods improve learning outcomes for children with special needs.

Mangal (2015) stated that attention, memory, and perception can be strengthened through regular cognitive exercises and environmental stimulation.

UNESCO (2020) recommended inclusive literacy programmes using visual and adaptive teaching strategies for children with disabilities.

Table -7
Numerical Abilities Components Analysis

S.No	Components	Mean	% of Mean	S.D	Rank
1	Number Recognition	6.42	71.33	1.96	2
2	Counting Skills	6.15	68.33	1.88	4
3	Number Writing	5.87	65.22	2.04	6
4	Number Comparison	5.76	64.00	1.91	7
5	Basic Addition	6.01	66.78	1.95	5
6	Basic Subtraction	5.45	60.56	2.12	9
7	Measurement Skills	5.31	59.00	2.08	10
8	Money Concept	6.58	73.11	1.87	1
9	Time Understanding	6.29	69.89	1.99	3
10	Problem Solving in Daily Life	5.61	62.33	2.01	8



Cover Page



Observation

Table -7 presents the component-wise analysis of Numerical Abilities among intellectually disabled children. The results reveal clear differences across the ten components. Money Concept secured the highest percentage of mean score (73.11%) and obtained Rank 1, indicating it as the strongest numerical skill among the children. This was followed by Number Recognition (71.33%, Rank 2), Time Understanding (69.89%, Rank 3), and Counting Skills (68.33%, Rank 4). Basic Addition (66.78%, Rank 5) and Number Writing (65.22%, Rank 6) also showed comparatively satisfactory performance. Moderate scores were found in Number Comparison (64.00%, Rank 7) and Problem Solving in Numerical Tasks (62.33%, Rank 8). Lower performance was observed in Basic Subtraction (60.56%, Rank 9), while Measurement Skills recorded the least percentage of mean score (59.00%) and stood at Rank 10. Overall, the findings indicate that children performed better in practical and familiar numerical tasks than in abstract or conceptually demanding mathematical operations.

Interpretation

The higher scores in money concept, number recognition, and time understanding suggest that intellectually disabled children learn better in functional numerical areas connected with daily life experiences. Lower scores in subtraction, measurement, and problem-solving indicate difficulty in abstract reasoning, sequential operations, and applying concepts in unfamiliar situations. This implies that numerical instruction should focus on concrete materials, real-life practice, repetition, and step-by-step teaching strategies.

Discussion

The finding that money concept emerged as the highest-ranked component is highly meaningful because money handling is a practical skill frequently used in everyday life. Children are often exposed to buying items, identifying coins or notes, and observing transactions in homes, markets, and community settings. Such repeated real-life exposure naturally strengthens understanding of value, exchange, and simple calculations related to money. Similarly, high performance in number recognition and time understanding suggests that children acquire numerical concepts more effectively when they are visible, routine-based, and repeatedly practiced in natural environments. Numbers seen on clocks, calendars, mobile phones, buses, and classroom charts may reinforce learning through constant environmental stimulation. These results indicate that functional numeracy develops more readily when learning is meaningful and directly connected to daily living activities.

Supporting Studies

AAIDD (2020) emphasized that children with intellectual disabilities often perform better in functional academic skills that are directly related to everyday life, such as money use and time concepts.

Schalock et al. (2021) reported that practical numeracy skills improve significantly when children receive community-based and life-skill oriented instruction.

Hallahan and Kauffman (2018) found that concrete mathematical tasks are learned more successfully than abstract operations among children with intellectual disabilities.

Kirk, Gallagher, Coleman, and Anastasiow (2019) stated that the use of manipulatives and real-life examples enhances number learning, counting, and basic arithmetic skills.

Piaget (1972) explained that children first understand concrete concepts before mastering abstract reasoning, supporting higher scores in practical numerical areas.

Vygotsky (1978) highlighted that guided support and scaffolded teaching improve children's ability to solve more complex mathematical tasks.

Mangal (2015) observed that repeated practice and environmental exposure strengthen recognition, counting, and everyday quantitative understanding.

Best and Miller (2010) reported that tasks requiring working memory and executive control, such as subtraction and problem-solving, are often more challenging for learners with developmental difficulties.

UNESCO (2020) recommended functional mathematics programmes that prioritize daily living numeracy skills for learners with disabilities.

Friend and Bursuck (2019) noted that individualized and activity-based mathematics instruction leads to better learning outcomes for children with diverse educational needs.



4.5 COGNITIVE SKILLS - VARIABLE WISE ANALYSIS

Objective 3: To find out and compare the cognitive skills of intellectually disabled children in Bhavila Centres with respect to the following variables:

- e) Gender
- f) Age
- g) Type of Disability
- h) Year of Admission

I- Hypotheses related to Cognitive skills of students

Hypothesis 1: There is no significant difference in the cognitive skills of intellectually disabled students with respect to gender.

*Table -8
Cognitive skills of intellectually disabled children - Gender Analysis*

Gender	N	Mean	% of Mean	S.D.	SED	't' Value
Boys	358	58.21	62.59%	16.42	1.28	1.16 ^{NS}
Girls	312	56.39	60.63%	16.68		

*Not Significant at 0.05 level &
Table values 1.96 at 0.05 and 2.58 at 0.01 level.*

Observation

Table -8 presents the gender-wise analysis of cognitive skills among intellectually disabled children. The sample consisted of 358 boys and 312 girls. The mean cognitive skill score of boys was 58.21, which is slightly higher than the mean score of girls (56.39). In terms of percentage of mean, boys obtained 62.59%, whereas girls obtained 60.63%, showing only a marginal difference of 1.96%. The standard deviation values for boys (16.42) and girls (16.68) indicate that the variability of scores in both groups is almost similar, suggesting consistency in the spread of cognitive performance across genders. The calculated *t*-value was 1.16, which is lower than the table value of 1.96 at the 0.05 level of significance and 2.58 at the 0.01 level. Therefore, the difference between boys and girls in cognitive skills is statistically not significant. This indicates that gender does not create a meaningful variation in the cognitive skill levels of intellectually disabled children in the present sample.

Interpretation

Boys obtained a slightly higher mean score than girls, but the difference is too small to be considered statistically meaningful. The obtained *t*-value confirms that cognitive skills of intellectually disabled children are not significantly influenced by gender. Hence, both boys and girls demonstrate comparable levels of cognitive functioning, suggesting equal developmental needs and educational support.

Discussion

To develop the cognitive skills of intellectually disabled children in Bhavita Centers of Coastal Andhra Pradesh, the centers should provide structured, activity-based, and individualized learning experiences according to each child's ability level. Teachers can use simple games, puzzles, picture matching, storytelling, flashcards, sorting activities, and memory exercises to improve attention, perception, memory, reasoning, and problem-solving skills. Repetition, step-by-step instruction, and positive reinforcement are especially effective for these children. Research reviews show that systematic instruction, embedded teaching, and cognitive skill training can significantly improve academic and functional learning outcomes for children with intellectual disabilities.

Supporting Studies

This result is supported by previous studies in special education and developmental psychology. Studies by



Hallahan, Kauffman, and Pullen (2019) reported that children with intellectual disabilities generally show similar cognitive learning patterns across genders when exposed to equivalent educational environments. Schalock et al. (2021) also emphasized that adaptive and cognitive development in intellectually disabled individuals is influenced more by social support systems, family involvement, and instructional practices than by gender differences. American Association on Intellectual and Developmental Disabilities (AAIDD, 2020) noted that intellectual disability affects both boys and girls in comparable ways, and gender-based differences are usually minimal when appropriate interventions are provided. These supporting studies strengthen the present finding that gender is not a determining factor in the cognitive skills of intellectually disabled children.

Hypothesis 2: There is no significant difference in the cognitive skills of intellectually disabled students with respect to age.

Table -9
Cognitive skills of intellectually disabled children - Age Analysis

Age	Sample size	Mean	% of Mean	SD	df	SSM	SSW	'F' value
6-9	214	54.86	58.99%	15.94	667	1248.37	182145.62	2.29 ^{NS}
10-14	301	58.41	62.81%	16.31				
15-18	155	59.12	63.57%	17.06				

*Not Significant at 0.05 level &
Table values 3.00 at 0.05 and 4.61 at 0.01 level.*

Table 4.8
Cognitive skills of intellectually disabled children – Age Analysis

Source of Variation	SS	df	MS	F	F Critical ratio
Between Groups	1248.37	2	624.19	14.67	2.29 ^{NS}
Within Groups	182145.62	667	273.08		
Total	183393.99	669			

Observation

Table -9 presents the age-wise analysis of cognitive skills among intellectually disabled children grouped into three categories: 6–9 years, 10–14 years, and 15–18 years. The sample included 214 children in the 6–9 years group, 301 children in the 10–14 years group, and 155 children in the 15–18 years group. The mean cognitive skill scores show a gradual increase with age: 54.86 for 6–9 years, 58.41 for 10–14 years, and 59.12 for 15–18 years. Similarly, the percentage of mean scores increased from 58.99% in the youngest group to 62.81% in the middle group and 63.57% in the oldest group. The standard deviation values (15.94, 16.31, and 17.06 respectively) indicate a fairly similar spread of scores across all age groups, though slightly higher variability was observed in the oldest group. The analysis of variance yielded an obtained F-value of 2.29, which was reported as not significant at the 0.05 level. Therefore, the observed differences in mean scores across age groups are not statistically significant. This indicates that although older children obtained slightly higher cognitive scores, age did not produce a meaningful difference in the cognitive skills of intellectually disabled children in the present study.

Interpretation

Cognitive skill scores showed a mild upward trend with increasing age, but the differences were not statistically significant. The obtained F-value confirms that age is not a determining factor in the cognitive skills of intellectually



disabled children. Therefore, children across different age groups demonstrate broadly comparable cognitive functioning and require continuous developmental support.

Discussion

To develop the cognitive skills of intellectually disabled children in Bhavita Centers of Coastal Andhra Pradesh based on age group, intervention should be planned according to developmental readiness rather than age alone, while still using age-appropriate activities. For children aged 6–9 years, emphasis should be on foundational cognitive skills such as attention, sensory discrimination, language readiness, object recognition, matching, sequencing, memory games, and simple problem-solving through play-based learning. Activities like picture cards, block building, rhymes, storytelling, color and shape sorting, and guided imitation can strengthen early thinking skills. For the 10–14 years group, instruction can focus on functional academics, reasoning, and classification, following multi-step instructions, communication, and social understanding. Teachers may use number games, daily routine charts, role play, puzzles, community vocabulary, and task-based learning in Telugu to improve comprehension and independent thinking.

This finding is supported by several studies in the field of special education and developmental psychology. Schalock et al. (2021) emphasized that adaptive and cognitive progress in persons with intellectual disabilities depends more on supports and environmental opportunities than on chronological age. Hallahan, Kauffman, and Pullen (2019) also noted that students with intellectual disabilities often demonstrate uneven developmental progress, where gains are better predicted by individualized intervention than by age progression. American Association on Intellectual and Developmental Disabilities (AAIDD, 2020) highlighted that developmental outcomes improve when evidence-based supports, structured teaching, and family participation are provided consistently across age stages. These studies reinforce the present result that age alone is not a significant variable in explaining cognitive skill differences among intellectually disabled children. Hallahan, Kauffman, and Pullen (2019) stated that developmental progress in students with intellectual disabilities varies significantly according to individualized teaching strategies rather than age progression alone. Schalock et al. (2021) emphasized that cognitive and adaptive development improves when appropriate supports, therapies, and environmental opportunities are consistently provided across the lifespan. American Association on Intellectual and Developmental Disabilities (AAIDD, 2020) reported that functioning outcomes depend more on support intensity, learning opportunities, and contextual factors than on chronological age. These studies support the present finding that cognitive skill development among intellectually disabled children should be approached through individualized and continuous intervention rather than age-based assumptions.

Hypothesis 2: There is no significant difference in the cognitive skills of intellectually disabled students with respect to type of disability.

Table -10
Cognitive skills of Intellectually Disabled Children –
Type of Disability Analysis

Type of Disability	N	Mean	% of Mean	S.D.	SED	‘t’ Value
Mild	402	61.28	65.89%	15.37	1.35	5.84**
Moderate	268	51.75	55.65%	17.08		

*Significant at 0.05 level &
 Table values 1.96 at 0.05 and 2.58 at 0.01 level*



Cover Page



Observation

Table -10 presents the comparison of cognitive skills of intellectually disabled children based on type of disability, namely mild and moderate. The data reveal that children with mild intellectual disability (N = 402) obtained a higher mean score of 61.28, which represents 65.89% of the mean score, whereas children with moderate intellectual disability (N = 268) secured a lower mean score of 51.75, corresponding to 55.65% of the mean score. The standard deviation values indicate some variability in both groups, with moderate disability (SD = 17.08) showing slightly greater dispersion than mild disability (SD = 15.37). The calculated SED value is 1.35, and the obtained *t* value is 5.84, which is statistically significant at the 0.01 level, as it exceeds the critical table value of 2.58. This clearly indicates a substantial difference between the two groups, with children having mild intellectual disability demonstrating significantly better cognitive skills than those with moderate intellectual disability.

Interpretation

The findings indicate that the level of intellectual disability significantly influences cognitive skill development among children. Children with mild intellectual disability possess stronger cognitive functioning, enabling better performance in memory, attention, reasoning, and problem-solving tasks compared to children with moderate intellectual disability. Hence, the null hypothesis stating that there is no significant difference in cognitive skills with respect to type of disability is rejected.

Discussion

Students with mild intellectual disability can improve cognitive skills effectively through structured, activity-based, and repetitive learning methods. Teachers should use short and clear instructions, break complex tasks into smaller steps, and provide regular practice in memory, attention, and problem-solving activities. Visual aids such as pictures, charts, flashcards, puzzles, and matching games help students understand concepts more easily and retain information longer. Multi-sensory teaching methods that combine seeing, hearing, speaking, and doing are especially useful because they engage different areas of learning. Regular reinforcement through praise, rewards, and encouragement can increase motivation and confidence, leading to better classroom participation and stronger cognitive performance.

Support Studies

Several earlier studies support the present finding.

Schalock et al. (2021) reported that cognitive functioning and adaptive behavior outcomes are significantly associated with severity levels of intellectual disability, with children in the mild range consistently outperforming those in the moderate range across learning tasks.

American Psychiatric Association (2022) diagnostic updates also noted that increasing severity of intellectual disability is linked with greater limitations in reasoning, problem-solving, planning, abstract thinking, and academic learning.

Wehmeyer and Shogren (2020) found that students with mild intellectual disability showed stronger self-regulation, conceptual learning, and classroom participation than students with moderate intellectual disability.

Smith and Tyler (2019) further observed that learners with moderate disability benefit more from intensive scaffolding and functional curriculum approaches, while those with mild disability can engage more effectively in standard academic tasks.

These studies collectively reinforce the present result that type and severity of disability significantly affect cognitive skill development.

Hypothesis 4: There is no significant difference in the cognitive skills of intellectually disabled students with respect to year of admission.

Table -11
Cognitive skills of intellectually disabled children –
Year of Admission Analysis

Year of Admission	Sample size	Mean	% of Mean	SD	df	SSM	SSW	'F' value
2022	164	56.74	61.01%	16.22	665	1589.46	181804.53	1.45 ^{NS}
2023	115	55.98	60.19%	15.84				
2024	228	58.92	63.35%	16.71				



2025	161	57.83	62.18%	16.43				
2026	2	54.50	58.60%	7.78				

*Not Significant at 0.05 level &
Table values 2.38 at 0.05 and 3.32 at 0.01 level.*

Table 4.11
Cognitive skills of intellectually disabled children –
Year of Admission Analysis

Source of Variation	SS	df	MS	F
Between Groups	1589.46	4	397.37	1.45
Within Groups	181804.53	665	273.39	
Total	183393.99	669		

Observation

Table -11 presents the analysis of cognitive skills of intellectually disabled children with respect to year of admission (2022–2026). The mean scores show slight variation across different admission years. Students admitted in 2024 (N = 228) obtained the highest mean score of 58.92 (63.35%), followed by those admitted in 2025 (N = 161) with a mean of 57.83 (62.18%), 2022 (N = 164) with a mean of 56.74 (61.01%), 2023 (N = 115) with a mean of 55.98 (60.19%), and 2026 (N = 2) with the lowest mean of 54.50 (58.60%). The standard deviation values range from 7.78 to 16.71, indicating moderate variability in scores across groups. The ANOVA results reveal a between-group sum of squares (SSM) of 1589.46 and within-group sum of squares (SSW) of 181804.53 with df = 665. The obtained F value of 1.45 is marked as non-significant, indicating that the observed differences in mean scores across admission years are not statistically significant. Hence, cognitive skills of intellectually disabled children do not differ meaningfully on the basis of year of admission.

Interpretation

The findings indicate that year of admission has no significant influence on the cognitive skills of intellectually disabled children. Although minor differences in mean scores are visible across admission years, these variations are due to chance rather than systematic effects. Therefore, the null hypothesis stating that there is no significant difference in cognitive skills with respect to year of admission is accepted.

Discussion

The present finding suggests that the cognitive skill levels of intellectually disabled children remain relatively stable across different admission cohorts. Admission year alone may not be a determining factor in cognitive development because cognitive skills are more strongly influenced by individual characteristics such as severity of disability, learning opportunities, family support, intervention quality, and personal readiness rather than the calendar year in which the child entered the institution. Even though students admitted in 2024 showed the highest mean score and those admitted in 2026 showed the lowest, these differences were not large enough to reach statistical significance. This indicates consistency in the student population across years.

Support Studies

Several studies are consistent with the present finding.

Schalock et al. (2021) noted that cognitive outcomes in children with intellectual disability are more closely associated with support needs, adaptive functioning, and intervention quality than with administrative variables such as admission cohort or enrollment year.

Wehmeyer and Shogren (2020) reported that student progress in special education depends largely on individualized instruction, self-determination opportunities, and environmental supports rather than the year in which services began.

Similarly, American Association on Intellectual and Developmental Disabilities (AAIDD, 2021) emphasized that functioning outcomes are shaped by the interaction between personal abilities and support systems, not by chronological enrollment categories.



Cover Page



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Smith and Tyler (2019) also found that consistency in curriculum delivery and teacher expectations across school years often results in similar academic and cognitive outcomes among students with disabilities. These studies support the present conclusion that year of admission does not produce significant differences in cognitive skills.

Major Findings

1. The obtained mean score indicates that intellectually disabled children possess a moderate level of cognitive skills. This suggests that while basic cognitive abilities are present, there is considerable scope for further improvement through systematic training and appropriate educational support.
2. The predominance of children in the average category indicates that many intellectually disabled children have developed functional cognitive abilities appropriate to their level when provided with adequate learning opportunities and support.
3. The findings reveal that students demonstrate relatively better functional literacy skills than numerical abilities. However, both domains fall within the average range, indicating an overall moderate level of cognitive development.
4. Higher scores in visual-spatial skills, attention, and concept formation suggest that intellectually disabled children learn more effectively through visual aids, concrete experiences, and structured activities. In contrast, lower scores in classification, sequencing, and reasoning indicate difficulties in organizing information, understanding relationships, and processing tasks logically.
5. The higher scores in money concepts, number recognition, and time understanding indicate that children perform better in functional numerical areas related to daily life. Lower scores in subtraction, measurement, and problem-solving reflect challenges in abstract thinking, sequential processing, and applying knowledge in unfamiliar situations.
6. Boys obtained slightly higher mean scores than girls; however, the difference is not statistically significant. The obtained *t-value* confirms that gender does not significantly influence cognitive skills. Thus, both boys and girls exhibit comparable levels of cognitive functioning and require similar educational support.
7. Although cognitive skill scores show a slight increase with age, the differences are not statistically significant. The obtained *F-value* indicates that age is not a major determining factor in the cognitive skills of intellectually disabled children.
8. The level of intellectual disability has a significant influence on cognitive skill development. Children with mild intellectual disability demonstrate better cognitive functioning such as memory, attention, reasoning, and problem-solving compared to those with moderate intellectual disability.
9. The findings indicate that the year of admission does not significantly influence cognitive skills. Although minor variations in mean scores are observed, these differences are not statistically significant and may be attributed to chance.

DISCUSSION OF MAJOR FINDINGS

1. Moderate Level of Cognitive Skills

The finding that intellectually disabled children possess a moderate level of cognitive skills indicates that they have acquired basic mental abilities such as attention, memory, and understanding, but have not yet reached optimal levels of functioning. This moderate performance may be attributed to the nature of intellectual disability, which inherently limits cognitive processing speed and capacity. However, the presence of these basic skills suggests that with structured instruction, individualized education plans (IEPs), and continuous reinforcement, further improvement is achievable. Special education programs in Bhavita Centers appear to provide a foundational level of cognitive development, but the results highlight the need for more intensive, skill-specific interventions to enhance higher-order thinking abilities.

2. Predominance of Average Category

The concentration of students in the average category reflects that most intellectually disabled children are capable of achieving functional cognitive competence when provided with supportive learning environments. This suggests that



Cover Page



exposure to consistent teaching methods, guided practice, and individualized attention enables children to develop skills appropriate to their level. It also indicates that Bhavita Centers are playing a significant role in facilitating cognitive development. However, the absence of a large proportion of students in the higher category may point to limitations in advanced instructional strategies or resources. This emphasizes the importance of differentiated instruction and enrichment programs to further elevate cognitive performance beyond the average level.

3. Better Functional Literacy than Numerical Abilities

The finding that functional literacy skills are relatively better developed than numerical abilities highlights the tendency of intellectually disabled children to perform better in language-based and daily life-related tasks. Functional literacy, being closely associated with communication and routine activities, is frequently practiced and reinforced both in school and at home. In contrast, numerical abilities often involve abstract concepts, sequencing, and logical reasoning, which are more challenging for these learners. This disparity suggests the need for innovative teaching strategies, such as the use of manipulatives, real-life examples, and visual supports, to make numerical learning more concrete and accessible.

4. Strength in Visual-Spatial Skills and Weakness in Reasoning

The higher performance in visual-spatial skills, attention, and concept formation indicates that intellectually disabled children benefit significantly from visual and experiential learning methods. These children tend to understand and retain information better when it is presented through pictures, demonstrations, and hands-on activities. On the other hand, lower scores in classification, sequencing, and reasoning reveal difficulties in organizing information, identifying patterns, and applying logical processes. This suggests that abstract thinking and higher-order cognitive functions require more focused intervention. Educators should therefore emphasize structured teaching approaches, step-by-step instruction, and repeated practice to strengthen these weaker areas.

5. Better Performance in Functional Numerical Areas

The finding that children perform better in practical numerical skills such as money concepts, number recognition, and time understanding indicates that learning is more effective when it is directly linked to real-life experiences. These skills are often taught through daily activities and repeated exposure, making them easier to grasp. In contrast, lower performance in subtraction, measurement, and problem-solving reflects the challenges associated with abstract reasoning and multi-step operations. This highlights the need for contextualized teaching methods that integrate real-life applications with mathematical concepts, thereby bridging the gap between concrete and abstract learning.

6. No Significant Gender Difference

The absence of a significant difference in cognitive skills between boys and girls suggests that gender does not play a determining role in the cognitive development of intellectually disabled children. Both groups exhibit similar learning capacities and challenges, indicating that cognitive development is more influenced by factors such as instructional quality, environmental support, and individual differences rather than gender. This finding reinforces the importance of providing equal educational opportunities and resources to all students, regardless of gender, and focusing on individualized needs rather than demographic characteristics.

7. No Significant Influence of Age

Although a slight increase in cognitive skills with age was observed, the lack of statistical significance indicates that age alone is not a strong predictor of cognitive development in intellectually disabled children. This suggests that cognitive growth in this population is not strictly age-dependent but is influenced more by the quality and consistency of educational interventions. It highlights the importance of early and continuous intervention, as well as the need for age-appropriate yet flexible teaching strategies that cater to individual learning pace rather than chronological age.

8. Influence of Level of Intellectual Disability

The significant difference in cognitive skills based on the level of intellectual disability underscores the impact of severity on learning outcomes. Children with mild intellectual disability demonstrate relatively higher levels of cognitive functioning because they have fewer limitations in intellectual processing. In contrast, children with moderate intellectual disability face greater challenges in areas such as memory, reasoning, and problem-solving. This finding emphasizes the necessity of differentiated instruction, where teaching strategies are tailored according to the severity of disability. It also highlights the importance of specialized support and individualized learning plans to address diverse needs effectively.



Cover Page



9. No Significant Influence of Year of Admission

The finding that the year of admission does not significantly affect cognitive skills suggests that the duration of enrollment alone does not guarantee improvement in cognitive functioning. This may indicate that the quality of instruction, teaching methods, and individual engagement play a more crucial role than the length of time spent in the institution. It also implies that consistent and effective intervention strategies are required regardless of when the child is admitted. This finding calls for continuous monitoring and evaluation of teaching practices to ensure that all students benefit equally over time.

EDUCATIONAL IMPLICATIONS

1. The moderate level of cognitive skills among intellectually disabled children indicates the need for structured and intensive teaching programs to enhance higher-order thinking abilities.
2. Since most students fall in the average category, schools should focus on strengthening existing functional skills while gradually introducing advanced cognitive tasks.
3. The better performance in functional literacy suggests that language-based and daily-life oriented teaching methods should be emphasized in curriculum planning.
4. The comparatively lower numerical abilities highlight the need for innovative mathematics teaching strategies, such as using concrete materials, visual aids, and real-life examples.
5. The strength in visual-spatial skills implies that teachers should adopt visual and activity-based learning approaches, including charts, pictures, and hands-on activities.
6. Weakness in reasoning, classification, and sequencing suggests the importance of step-by-step instruction, repetition, and guided practice to develop logical thinking skills.
7. Since children perform better in functional numerical areas, educators should integrate practical applications of mathematics like money handling, time management, and daily transactions into teaching.
8. The absence of gender differences indicates that equal educational opportunities and teaching strategies should be provided to both boys and girls without bias.
9. As age is not a significant factor, emphasis should be placed on individualized learning pace rather than age-based instruction, ensuring personalized education plans.
10. The influence of the level of intellectual disability highlights the need for differentiated instruction and Individualized Education Programs (IEPs) tailored to each child's abilities.
11. Since duration of admission does not significantly impact cognitive development, schools must ensure quality teaching methods and continuous evaluation rather than relying on time spent in the institution.
12. Teachers should receive special training in inclusive and special education strategies to effectively address diverse cognitive needs.
13. There is a need to incorporate multisensory teaching techniques to enhance learning retention and engagement among intellectually disabled children.
14. Regular assessment and feedback mechanisms should be implemented to monitor progress and modify teaching strategies accordingly.
15. Collaboration between teachers, parents, and therapists is essential to provide consistent reinforcement of skills in both school and home environments.

CONCLUSION

The study concludes that intellectually disabled children possess a moderate level of cognitive skills, indicating the presence of basic mental abilities with scope for further development through appropriate educational interventions. The predominance of students in the average category reflects that, with supportive learning environments and structured teaching, many children can achieve functional cognitive competence. The findings also reveal that functional literacy skills are relatively stronger than numerical abilities, emphasizing the importance of practical, language-based learning experiences. Strengths in visual-spatial skills and functional numerical concepts suggest that these children benefit more from concrete, activity-based instruction, while difficulties in reasoning and abstract thinking highlight the need for systematic and individualized teaching approaches. Furthermore, the absence of significant differences based on gender, age, and year of admission indicates that cognitive development is largely influenced by the quality of instruction and



Cover Page



individualized support rather than demographic factors. However, the level of intellectual disability plays a crucial role, underscoring the necessity for differentiated instruction and tailored educational programs to meet diverse learning needs effectively.

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