EFFECT OF GAME BASED LEARNING ON ACADEMIC AND SOCIAL SKILLS OF STUDENTS WITH LEARNING DISABILITIES AT SECONDARY LEVEL

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Abstract

This study investigates the efficacy of Game-Based Learning (GBL) as a transformative pedagogical intervention for enhancing the social and academic competencies of secondary-level students with Intellectual Disabilities (ID). Recognizing the high global prevalence of ID, particularly in India, and the systemic barriers to inclusive education, the research employs a structured framework involving collaborative learning and role-play. Using a pre-test/post-test experimental design at St. Joseph Special School, Madurai, the study assessed six students (aged 7–14) across key domains, including emotional regulation, non-verbal communication, and functional literacy. Statistical analysis using t-tests revealed a highly significant positive correlation between the GBL intervention and skill acquisition, with post-test scores showing marked improvements (e.g., mean increases from approximately 25% to over 85%). These findings underscore the reciprocal relationship between social stability and academic success, suggesting that play-supported environments mitigate anxiety and foster self-advocacy. The study concludes that systemic integration of GBL, supported by specialized teacher training and parent-school synergy, is essential for promoting the long-term independence and community participation of learners with ID.

Keywords: Intellectual Disabilities (ID), Game-Based Learning (GBL), Functional Academics, Social Skills Training, Special Education in India, Collaborative Learning

Introduction

Education is a purposeful and structured endeavour designed to cultivate a comprehensive learning environment where individuals can actively develop their inherent potential. This deliberate process aims to equip learners with the internal resources necessary for navigating life, specifically fostering spiritual strength, religious conviction, self-control, a stable personality, sharp intelligence, noble character, and the practical skills essential for personal fulfilment and contribution to society. It is the fundamental means by which an individual's latent capabilities are recognized and brought to fruition.

In this present study, the implementation of a Game-Based Learning approach will utilize structured Collaborative Learning where pupils work in small groups, ensuring active and mandatory participation from every member. Within these groups, students may engage in either reciprocal or complementary tasks that collectively contribute to a singular overall

learning outcome. A pedagogical component is the use of structured Role-Play, a strategy designed to promote autonomous learning by granting students greater control and ownership over their learning process. This collaborative, game-supported environment at the secondary level is specifically designed to maximize discussion among students, thereby encouraging the frequent practice and development of essential social and academic skills required for success in the broader education system and beyond.

Importance of Special Education

The importance of special education in India is centrally affirmed by key national bodies like the National Council of Educational Research and Training (NCERT) and the Rehabilitation Council of India (RCI), serving the twin goals of Equity of Access and Holistic Development.

Social and Academic Skills for Intellectual Disabilities

Addressing the multifaceted needs of individuals with Intellectual Disabilities (ID) requires a deliberate focus on both Social Skills and Academic Skills, as success in one domain profoundly influences the other. For learners with ID, deficits in these two areas often create the primary barriers to inclusion and independence. While academic instruction targets cognitive acquisition, social skills training focuses on the adaptive behaviours necessary to navigate complex social environments. Effective intervention, therefore, must treat these two skill sets not as separate curricula, but as interconnected components of a holistic educational plan aimed at maximizing quality of life and community participation.

The mastery of foundational social skills is critical for students with Intellectual Disabilities, as these skills govern their ability to interact meaningfully within the school and community. Key skills include initiating and maintaining conversations, understanding nonverbal cues (like body language and facial expressions), practicing appropriate personal space, and demonstrating basic emotional regulation. These abilities are often taught through structured methods like Social Stories and direct instruction using Role-Play, which break down complex interactions into manageable steps. For instance, a student might practice asking a peer to play or accepting a change in routine. Developing these skills directly impacts academic success by improving peer relationships, reducing behavioural disruptions in the classroom, and enabling effective collaboration in group work. As educators, our goal isn't just to teach compliance, but to empower students to build genuine, reciprocal social connections.

Academic instruction for individuals with Intellectual Disabilities must pivot away from rote memorization of abstract concepts toward functional and concrete application to ensure relevance and generalization. While literacy and numeracy remain essential, the focus shifts to functional academics, which are skills needed for independent living and work. This

includes reading sight words on common signs (e.g., "Exit," "Restroom"), calculating change, managing a budget, and understanding a daily schedule. Instructional strategies must be highly systematic and explicit, often utilizing methods like Task Analysis, which breaks a skill into sequential steps, and Direct Instruction, where the teacher models the skill explicitly. The use of visual aids, manipulative, and real-world materials (like grocery flyers or bus schedules) makes learning tangible, significantly enhancing comprehension and long-term retention of critical life skills.

A critical understanding in special education is the reciprocal relationship between social and academic skills. A student who struggles socially may experience anxiety, which impairs their working memory and attention, thus hindering academic performance. Conversely, a student who is academically successful but lacks appropriate social skills may still face isolation, impacting their motivation and self-esteem. Interventions like peer tutoring and cooperative learning groups serve as powerful platforms where both skill sets are simultaneously practiced. In these settings, students must use academic skills (e.g., solving a math problem) while utilizing social skills (e.g., negotiating roles, giving constructive feedback). This integration is crucial, as it trains the student to apply both sets of skills simultaneously in authentic, challenging, and supportive contexts that mimic real-life demands.

The ultimate goal of instruction in both social and academic domains is to foster Self-Advocacy and the Generalization of Skills to adult life. Self-advocacy involves a student's ability to understand their own disability, communicate their needs, and assert their rights—skills that are a synthesis of social confidence and academic knowledge about their personal plan (IEP). Effective special education programming must include explicit instruction in self-advocacy to prepare students for college transition, employment interviews, and interacting with service providers. By ensuring that both social and academic lessons are taught in multiple settings, with diverse people, and across varied tasks, educators increase the likelihood that the student will successfully generalize their learned competencies, leading to greater employment, community involvement, and independent living outcomes.

Review of Related Literature

Powell, S. R., et al. (2025), Counting-Focused Intervention Effects for Students with Mathematics Difficulty: A Research Synthesis. This research synthesis analysed 17 studies on counting-focused interventions for preschool and kindergarten students with mathematics difficulty (or at-risk). The interventions, which address components of counting such as stable order and one-to-one correspondence, are foundational to success with mathematics. This work suggests explicit, targeted counting instruction is an effective early intervention for improving mathematics skills.

Biasi, V., et al. (2024), Specific learning disabilities and associated emotional-motivational profiles: a study in Italian university students. This study explores the emotional and motivational aspects of university students with Specific Learning Disorders (SLD) in Italy. The results highlight that individuals with SLD exhibit significantly higher levels of anxiety and depression and lower resilience compared to a control group. Promoting academic success requires strengthening foundational skills alongside fostering the development of self-esteem, self-efficacy, a healthy motivational style, and anxiety management.

Cabrera, I., et al. (2024), Innovative Learning Environments and spaces of belonging for students with disability in mainstream settings. The findings of this review highlight that belonging for students with disabilities is facilitated across academic, social, and emotional domains within mainstream schools. Skilful Innovative Learning Environment (ILE) design is shown to promote the inclusion of students with disability and support both academic and social outcomes, creating a sense of connectedness to the school environment.

Kumaresan Cithambaram, et al. (2024), India has a significant prevalence of people with intellectual disabilities. Despite their higher prevalence, they receive poor support. Therefore, this review aims to explore the experiences of family carers in providing care for children with intellectual disabilities in India. A qualitative evidence synthesis was undertaken, searching databases such as MEDLINE, CINAHL, Web of Science, and PsycInfo up to October 2023. Grey literature was also searched for unpublished studies, with two reviewers assessing methodological quality. Eleven eligible studies, mostly qualitative in design, were included in the review. The data synthesis followed a thematic approach.

Manisha Nair, Mythili Hazarika, M. Thomas Kishore, et al. (2023), Children with intellectual disability (ID) has a significantly higher risk of long-term health problems in adulthood. India has the highest prevalence of ID globally, with an estimated 1.6 million children under five living with the condition. Despite this high population burden, this neglected group is often excluded from mainstream disease prevention and health promotion programs, contributing to widespread health inequalities. The findings are co-produced conceptual framework outlines an approach for a cross-sectorial, family-cantered, needs-based inclusive intervention designed to improve health outcomes for children with ID. The accompanying Theory of Change model delineates a pathway that prioritizes: 1) empowering parents/families with knowledge and skills; 2) building the capacity of health and education professionals; and 3) creating supportive community and policy environments. Feedback from the third round of consultations validated the models' relevance and acceptability, while also identifying structural and social barriers (like stigma and lack of institutional support) that must be addressed for successful integration with existing health systems.

Firafis Dereje & Sileshi Zeleke (2023), Individuals with intellectual disability (ID) often encounter significant difficulties across several areas of functioning due to deficits in skills (e.g., cognitive, adaptive, and social skills) and/or the presence of problem behaviours (e.g., hyperactivity and irritability). Numerous researchers have attempted to address these challenges through various interventions. This paper presents a systematic review of the literature on commonly used interventions and their relative effectiveness for children with ID. He review identified a variety of interventions commonly employed to help improve the conditions of students with ID. These included:

- Play therapy
- Physical exercise
- Training
- Video modelling
- Computer-based cognitive training
- Peer tutoring
- Storytelling
- Portage early intervention training program
- Comprehensive reading intervention
- Emotional intelligence-based intervention

The synthesis revealed that play therapy was the most frequently employed intervention to address target behaviours across several areas (including adaptive behaviour, social skills, self-esteem, and problem behaviours). Furthermore, while the effectiveness of the interventions ranged from small to large effects, only one produced very small or negligible effects. Notably, all the interventions that utilized play therapy had effects of large magnitude.

P. S. S. Russell, S. C. Shrivastava (2022), intellectual disability (ID) significantly contributes to the global burden of disease, and the collective prevalence data in India has historically been limited to narrative reviews, leading to wide variations in estimates. There is an urgent need to document a reliable summary prevalence for informed policymaking, national programs, and resource allocation. The summary prevalence of ID was 2% (95% CI: 2%, 3%) with substantial heterogeneity (I2=98%). Concerns regarding publication bias were noted. Using the trim-and-fill method to adjust for this bias, the adjusted summary prevalence was 1.4%. Meta-regression analysis demonstrated that the age of participants was statistically significantly related to the prevalence, while other factors did not influence heterogeneity.

Methodology

Population

In this present study, Children with Intellectual Disability (ID) refers to individuals aged 7 to 14 years who are officially certified with Intellectual Disability and are currently enrolled at St. Joseph Special School, Madurai, Tamil Nadu.

Sample and Sample Technique

A systematic procedure was applied to carry out the current study so that objective can be achieved meaningfully. Once the conceptual framework was prepared, the objectives were finalized. As per the objective the suitable research participants for research were identified, Social skills were selected based on the baseline data of the selected sample in academic. The effect of the intervention was measured by comparing the pre-test and post-test scores of the sample.

For the present study the researcher has selected samples from Special school with prior permission from the head of the school. After orientation, the researcher has conducted pre-test for the samples. Based on pre-test scores treatment was provided by the researcher. The researcher administered treatment for one hour for each sample, after which post test was conducted with same tool to know the improvement in the performance of the sample after the treatment.

Objectives of the Study

- To find out the effect of developing social and academic skill among Children with Intellectual Disabilities
- To find out the effect of Game-Based Learning on academic skills among secondary level Students.
- To compare Post-test scores on academic skills among secondary level Students

Statistical Analysis

Descriptive Statistics

Descriptive statistics like mean and standard deviation were calculated to ascertain the nature of the distribution of scores on the Academic and Social Skills Improvement System (SAIS).

Inferential Statistics

The Effect of Game Based Learning on Academic and Social Skills used by t- test, Correlation and Regression Analysis.

Hypothesis of the Study

- There is no significant difference between the pre-test and post-test scores of DH with reference to social and academic skills
- There is no significant difference between the pre-test and post-test scores of AS with reference to social and academic skills
- There is no significant difference between the pre-test and post-test scores of KA with reference to social and academic skills
- There is no significant difference between the pre-test and post-test scores of BO with reference to social and academic skills
- There is no significant difference between the pre-test and post-test scores of SA with reference to social and academic skills
- There is no significant difference between the pre-test and post-test scores of SD with reference to social and academic skills

Analysis

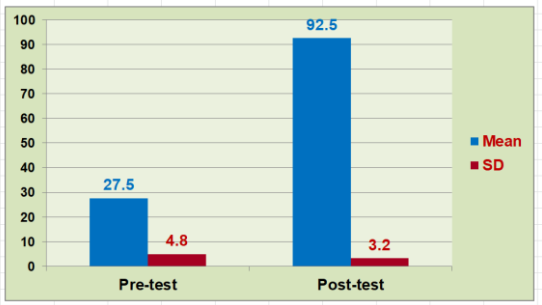
Table 1 Mean Scores of DH Based On Social and Academic Skill with Reference to Pre Test and Post

Sample		Mean	S.D	No	't' value
DH	Pre Test	27.50	4.80	6	44.91
	Post Test	92.50	3.20	6	

From the above table (), it could be concluded that the calculated t value (44.91) is higher than the table value at 0.05 level of significance. The intervention had a **highly significant positive effect** on the Social and Academic Skill mean scores of the DH.

The null hypothesis "There is no significant difference between the pre-test and post-test scores of DH with reference to social and academic skills" is rejected.

Graph 1 Mean Scores of DH Based on Social and Academic Skill with Reference to Pre Test and Post Test



1. There is no significant difference between the pre-test and post-test scores of AS with reference to social and academic skills

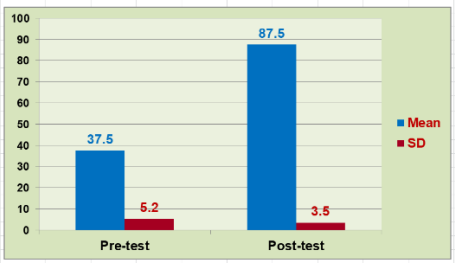
Table 2 Mean Scores of As Based on Social and Academic Skill with Reference to Pre Test and Post

Sample		Mean	S.D	No	't' value
AS	Pre Test	37.50	5.20	6	39.46
	Post Test	87.50	3.50	6	

From the above table (), it could be concluded that the calculated t value (39.46) is higher than the table value at 0.05 level of significance. The intervention had a **highly significant positive effect** on the Social and Academic Skill mean scores of the AS.

The null hypothesis "There is no significant difference between the pre-test and post-test scores of AS with reference to social and academic skills" is rejected.

Graph 2 Mean Scores of as Based on Social and Academic Skill With Reference to Pre Test and Post



2. There is no significant difference between the pre-test and post-test scores of KA with reference to social and academic skills

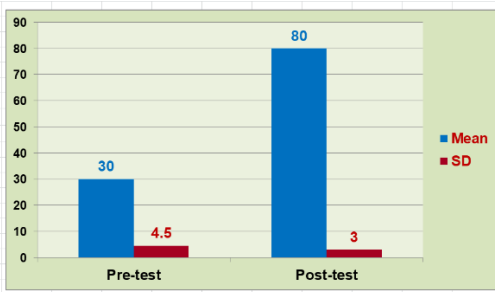
Table 3 Mean Scores of KA Based on Social and Academic Skill with Reference to Pre Test and Post

Sample		Mean	S.D	No	't' value
KA	Pre Test	30.00	4.50	6	38.30
	Post Test	80.00	3.00	6	

From the above table (), it could be concluded that the calculated t value (38.30) is higher than the table value at 0.05 level of significance. The intervention had a **highly significant positive effect** on the Social and Academic Skill mean scores of the KA.

The null hypothesis "There is no significant difference between the pre-test and post-test scores of KA with reference to social and academic skills" is rejected.

Graph 3 Mean Scores of KA Based on Social and Academic Skill with Reference to Pre Test and Post



3. There is no significant difference between the pre-test and post-test scores of BO with reference to social and academic skills

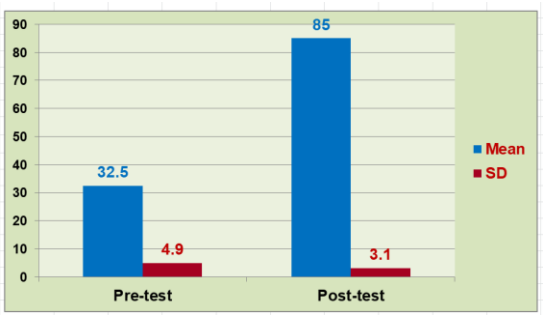
Table 4 Mean Scores of BO Based on Social and Academic Skill with Reference to Pre Test and Post

Sample		Mean	S.D	No	't' value
BO	Pre Test	32.50	4.90	6	38.86
	Post Test	85.00	3.10	6	

From the above table (), it could be concluded that the calculated t value (38.86) is higher than the table value at 0.05 level of significance. The intervention had a **highly significant positive effect** on the Social and Academic Skill mean scores of the BO.

The null hypothesis "There is no significant difference between the pre-test and post-test scores of BO with reference to social and academic skills" is rejected.

Graph 4 Mean Scores of BO Based on Social and Academic Skill with Reference to Pre Test and Post



4. There is no significant difference between the pre-test and post-test scores of SA with reference to social and academic skills

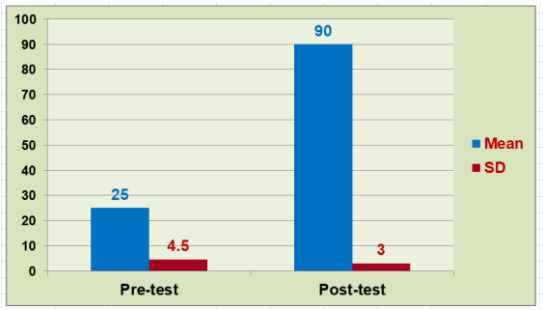
Table 5 Mean Scores of SA Based on Social and Academic Skill with Reference to Pre Test and Post

Sample		Mean	S.D	No	't' value
SA	Pre Test	25.00	4.50	6	45.45
	Post Test	90.00	3.00	6	

From the above table (), it could be concluded that the calculated t value (45.45) is higher than the table value at 0.05 level of significance. The intervention had a **highly significant positive effect** on the Social and Academic Skill mean scores of the SA.

The null hypothesis "There is no significant difference between the pre-test and post-test scores of SA with reference to social and academic skills" is rejected.

Graph 5 Mean Scores of SA based on Social and Academic Skill with Reference to Pre Test and Post



5. There is no significant difference between the pre-test and post-test scores of SD with reference to social and academic skills.

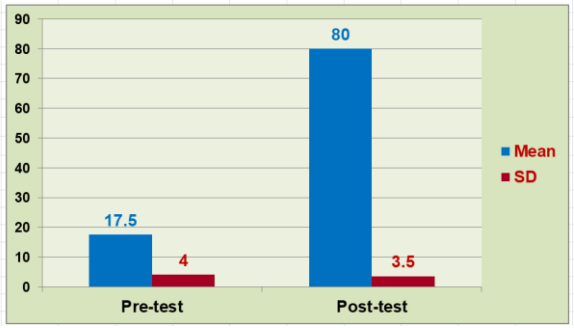
Table 6 Mean Scores of SD Based on Social and Academic Skill With Reference to Pre Test and Post

Sample		Mean	S.D	No	't' value
SD	Pre Test	17.50	4.00	6	42.42
	Post Test	80.00	3.50	6	

From the above table (), it could be concluded that the calculated t value (42.42) is higher than the table value at 0.05 level of significance. The intervention had a **highly significant positive effect** on the Social and Academic Skill mean scores of the SD.

The null hypothesis "There is no significant difference between the pre-test and post-test scores of SD with reference to social and academic skills" is rejected.

Graph 6 Mean Scores of SD Based on Social and Academic Skill with Reference to Pre Test and Post



Findings

- The post test scores of DH were 92.5% as against the pre-test scores of 27.5%. It indicates that there is positive improvement in developing social and academic skills through games. The increase in post test score indicates that the intervention on the sample was much effective.
- The post test scores of AS was 87.5% as against the pre-test scores of 37.5%. It indicates that there is positive improvement in developing social and academic skills through games. The increase in post test score indicates that the intervention on the sample was much effective.
- The post test scores of KA were 80% as against the pre-test scores of 30%. It indicates that there is positive improvement in developing social and academic skills through games. The increase in post test score indicates that the intervention on the sample was much effective.
- The post test scores of BO were 85% as against the pre-test scores of 32.5%. It indicates that there is positive improvement in developing social and academic skills through games. The increase in post test score indicates that the intervention on the sample was much effective.
- The post test scores of SA were 90% as against the pre-test scores of 25%. It indicates that there is positive improvement in developing social and academic skills through games. The increase in post test score indicates that the intervention on the sample was much effective.
- The post test scores of LA were 80%as against the pre-test scores of 17.5%. It indicates that there is positive improvement in developing social and academic skills through games. The increase in post test score indicates that the intervention on the sample was much effective.

Educational Implications

- Teachers can match specific GBL games to a student's Learning Disability (LD) profile for best learning results.
- Schools should invest in the best teacher training (like coaching) to make staff experts at using GBL.
- Teachers can use GBL to boost student motivation and help them use their new skills in real-life situations.
- Setting up regular parent-school talk about GBL will create a consistent environment, helping students use their skills at home and in the community.

Conclusion

This experimental study, conducted on students with Intellectual Disability (ID) at the secondary level, strongly supports the efficacy of the Game-Based Learning (GBL) Intervention Method in significantly improving both academic and social skills. Driven by the need for scalable and structured instruction within the constraints of the Indian classroom, the research demonstrated a significant positive difference between the pre-test and post-test scores across all samples, confirming that the intervention was highly effective. The GBL approach successfully leveraged students' natural interest in play to address core deficits in concentration and communication. Socially, the role-play games provided a vital, low-anxiety environment for the functional application of behaviours like sharing, greeting, and emotional regulation. Academically, embedding tasks like writing and naming within the game context turned abstract concepts into concrete, motivating activities. These findings not only validate GBL as a robust strategy for fostering independence and autonomy in students with ID but also call for systemic changes, including formalizing GBL policies, investing in teacher training, and strengthening parent-school communication to maximize the transfer of skills into real-life settings.

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