Integrating Information Communication Technology in Special Education: Evaluating The Effectiveness of Video-Based Academic Instruction

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Abstract

The integration of Information and Communication Technology (ICT) in education has emerged as a promising approach for addressing the learning challenges faced by children with intellectual disabilities (ID). This pilot study investigates the effectiveness of video-based instruction, including Video Modeling (VM), Video Prompting (VP), and Video-Based Instruction (VBI), in developing academic skills among children with ID. Utilizing a quasi-experimental pre-test/post-test design, the study involved ten participants divided equally into control and experimental groups. The findings revealed that video clips significantly enhance learner engagement, academic performance, and communication skills. The results showed a significant improvement ($p = .034$), with a mean difference of -1.167. The increase from pre-test ($M = 1.83$) to post-test ($M = 3.00$) indicates a notable enhancement. Some skills, such as sensory processing and emotional expression, showed mean improvements but lacked statistical significance ($p > .05$). High correlations for adaptability ($r = .857$, $p = .029$) and communication skills ($r = .882$, $p = .020$) indicate strong relationships between pre- and post-assessment measures, demonstrating consistency and reliable progress. Participants showed the most improvement in cognitive areas such as critical thinking and math problem-solving, followed by gains in social-emotional skills like collaboration. The findings support integrating video instruction in special education for its individualized, visual approach, and call for teacher training and customized content development.

Keywords: Video Clips, Intellectual Disabilities, Academic Skills, Video-Based Instruction.

Introduction

The integration of Information and Communication Technology (ICT) in education has gained recognition for its potential to support learners with intellectual disabilities (ID). According to the World Health Organization (2021), approximately 1–3% of the global population is affected by intellectual disability, with a significant proportion being children of school-going age who require specialized educational interventions. Since the 1980s, ICT tools, particularly video-based instructional methods, have shown promise in improving both academic performance and social integration (Alexopoulou et al., 2021).

Despite the promise of inclusive education, UNESCO (2020) reports that children with disabilities are still 49% more likely to have never attended school compared to their peers without disabilities, especially in low- and middle-income countries such as Pakistan. Within

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this context, video-based instruction has emerged as a practical and scalable strategy. Studies indicate that the use of video modeling, prompting, and self-instruction can lead to a 30–50% improvement in functional academic skills and task independence among children with ID (Wynkoop et al., 2018; Yeong et al., 2023).

Children with ID often experience challenges in acquiring academic skills due to cognitive limitations, language delays, and difficulties in social communication. Conventional teaching methods frequently fail to meet these diverse needs. Video clips, incorporating both visual and auditory elements, serve as effective instructional tools for learners with ID by enhancing engagement, supporting step-by-step learning, and promoting independence. Video Modeling (VM), Video Prompting (VP), and Video-Based Instruction (VBI) are especially effective in developing functional academic skills such as literacy, communication, and daily living tasks (Wynkoop et al., 2018). These strategies also help improve motivation and mimicry, which are essential in overcoming deficits in speech and communication, especially among children with severe to profound ID (Bunning et al., 2013).

Emerging technologies, such as tablets and eBooks, further enhance the accessibility and applicability of video-based instruction for this population (Yeong et al., 2023). Evidence from recent studies underscores the importance of personalized, repeatable, and visually enriched content that aligns with the learning styles of children with ID. In Pakistan, where the availability of specialized instructional materials remains limited, digital interventions offer a promising alternative to conventional pedagogies. Therefore, this study seeks to explore the effectiveness of video clips in enhancing academic skills among children with intellectual disabilities, offering evidence-based insights for inclusive teaching practices.

Literature Review

Hart and Whalon (2012) reported improvements in unprompted responses in a secondary student with ASD and ID during science tasks. Alexopoulou et al. (2021) confirmed the effectiveness of ICT-based interventions, including VBI and VP, in fostering adaptive skills and independence. Hammond et al. (2010) demonstrated how VM effectively teaches iPod navigation to middle schoolers with moderate mental health challenges. The approach proved beneficial, although some tasks required refreshers for long-term retention. Fazil et al. (2022) evaluated YouTube video lessons during COVID-19 for children with IDD and found positive perceptions among parents regarding cognitive, practical, and behavioral skill development.

Yeong et al. (2023) also supported iPad and eBook use for adolescents with ASD and ID in acquiring daily living skills. The small sample showed increased task independence and digital literacy. Bunning et al. (2013) examined communication levels in students with S-PMID, highlighting the positive impact of structured video-facilitated interactions. Similarly, Cannella et al. (2006) revealed that video prompting, with its step-by-step guidance, was more effective than video modeling for adults learning daily living skills.

At a broader level, Zucker et al. (2017) emphasized the importance of culturally sensitive and evidence-based video interventions for students with developmental disabilities. Roldán Álvarez et al. (2021) explored how iPads and VSM enhanced job readiness, collaboration, and motivation among students with educational disabilities.

Avcioglu (2013) found that video modeling effectively taught greeting behaviors, with students generalizing the skill across settings. Sigafoos et al. (2007) and Goodson et al. (2007) evaluated video prompting and error correction strategies, reporting skill acquisition in domestic tasks but highlighting risks of prompt dependency without gradual fading.

Stauch et al. (2018) applied video-based group instruction to improve social perception in adolescents with ASD and ID. Though effective within training settings, generalization to other environments was limited. Shahin (2022) affirmed that short videos (e.g., TikTok) significantly enhanced receptive and expressive language in children with MID.

Kagohara et al. (2013) reviewed iPod/iPad interventions and noted widespread success across academic, leisure, and communication domains. Gardner and Wolfe (2015) also supported point-of-view video prompting combined with error correction to teach daily living skills. Lund (2013) found video prompting useful for vocational woodworking tasks, though maintenance of complex skills varied.

Avenell (2012) combined video modeling with role-play to foster social skills in middle schoolers with ID. Results showed improved communication and sustained social behavior. Lastly, Wynkoop et al. (2018) reviewed interventions for employment readiness and highlighted technology-based methods, especially video modeling, as effective in supporting students with IDD.

While extensive research supports the use of video modeling, video prompting, and video-based instruction in developing functional and academic skills among individuals with intellectual and developmental disabilities, most studies have focused on older students or specific domains such as vocational training and social interaction. There remains a notable gap in the literature regarding the application of these techniques for younger children with intellectual disabilities in structured academic contexts, particularly within the Pakistani educational setting. Moreover, existing studies often lack localized evidence that reflects the cultural, institutional, and resource-specific challenges faced by special education classrooms in developing countries. This study aims to address this gap by evaluating the effectiveness of video clips as instructional tools for improving core academic skills, such as reading, writing, and problem-solving, among children with intellectual disabilities in a Pakistani context. By doing so, it contributes contextually relevant evidence to support inclusive and technology-enhanced teaching practices.

Statement of the Problem

Children with intellectual disabilities (ID) often face persistent challenges in acquiring academic skills due to cognitive and communication deficits. Traditional teaching methods are frequently insufficient in addressing their unique learning needs. While video clips, as part of ICT-based instruction, have shown potential to enhance engagement, independence, and skill acquisition, empirical evidence on their effectiveness remains limited. There is a need to explore whether short, visually enriched instructional videos can improve academic performance and support meaningful learning outcomes in children with ID. This study seeks to evaluate the educational impact of video clips as an instructional tool in promoting academic skills among this population.

Objectives of the Study

Study objectives have been presented below:

1. To examine the use of video clips as an instructional tool for children with intellectual disabilities.
2. To explore how video clips can enhance academic skills, particularly in subjects requiring visual and auditory learning.
3. To evaluate the relationship between engagement with video clips and the development of academic skills in children with intellectual disabilities.
4. To assess the overall effectiveness of video clips as a teaching tool in fostering academic and social skills among children with intellectual disabilities.

Research Questions

These are as follows:

1. What novel contributions does this study offer regarding the use of video clips?

2. What strategies can be employed to enhance academic skills using video clips for children with intellectual disabilities?
3. What is the relationship between engagement with video clips and the development of academic skills?
4. How effective are video clips as a teaching tool for developing academic skills in children with intellectual disabilities?

Significance of the Study

This study contributes to the growing body of research on ICT-based instruction for learners with intellectual disabilities by evaluating the effectiveness of video clips in developing academic skills. It aims to inform educators, curriculum developers, and policymakers about the potential of video-based tools to enhance engagement, independence, and academic performance. The findings may guide the integration of technology into inclusive teaching practices, promote the development of tailored instructional materials, and support improved educational outcomes and social inclusion for children with intellectual disabilities.

Methodology

Research Design

This study employed a quasi-experimental pre-test/post-test control group design to evaluate the impact of video clips on the development of academic skills in children with intellectual disabilities (ID). The experimental group received instructional content through video-based methods, while the control group received traditional instruction. This design allowed for the comparison of learning outcomes before and after the intervention, attributing any differences in performance to the experimental treatment.

Population and Sampling

The target population consisted of children diagnosed with mild to moderate intellectual disabilities, aged between 7 and 12 years, enrolled in special education institutions in Faisalabad, Pakistan. Using simple random sampling, ten participants were selected using a lottery method and equally assigned to two groups, five in the experimental group and five in the control group. Due to contextual constraints and the specific population, the sample size was limited to ten participants. While this limits generalizability, the study serves as a preliminary exploration to inform future research.

Inclusion Criteria

1. Diagnosed with mild to moderate ID.
2. Enrolled in a special education program.
3. Aged between 7 and 12 years.
4. Parental/guardian consent obtained.
5. Ability to participate in both assessment and intervention activities.

Research Instruments

The research instruments were selected based on their relevance to the study's objectives and the cognitive abilities of the target population. The pre- and post-test assessments were adapted from standardized academic skill checklists commonly used in special education settings, ensuring alignment with key learning domains such as literacy, numeracy, and communication. The structured questionnaire using a five-point Likert scale was developed to capture observable behavioral changes, including engagement, attention, and participation, essential indicators of effective learning in children with intellectual disabilities. These instruments were chosen for their simplicity, cultural appropriateness, and ease of administration by special

education teachers in the local context. Therefore, following instruments were used to assess the effectiveness of the intervention.

Pre-test and Post-test Assessments
Standardized academic skill assessments were administered to both groups before and after the intervention to evaluate changes in performance.

Structured Questionnaire
A five-point Likert scale was developed to measure student engagement, responsiveness, and skill acquisition through video instruction.

Background Form
Collected demographic information of participants including age, grade level, and diagnosis.

Consent Forms
Separate consent forms were provided to parents/guardians and teachers to ensure voluntary participation in accordance with ethical guidelines.

Intervention Procedure
The intervention utilized 2 to 5-minute instructional video clips designed to teach foundational academic skills like number recognition, simple addition, letter formation, word reading, and sentence construction. Developed in collaboration with special education professionals and multimedia designers, the videos were age-appropriate, curriculum-aligned, and met pedagogical and accessibility standards. Featuring clear verbal instructions, animations, real-life demonstrations, repetition, and visual cues, the intervention was implemented over a four-week period. The procedure included the following phases:

Baseline Assessment
Initial measurement of academic and behavioral skills using pre-tests.

Implementation of Video-Based Instruction (Experimental Group)
Participants received instruction through carefully selected and age-appropriate video clips targeting academic skills such as reading, writing, problem-solving, and communication.

Traditional Instruction (Control Group)
Participants received instruction through conventional teacher-led methods without any video aids.

Post-Intervention Assessment
After the intervention, both groups were reassessed using the same instruments to evaluate progress.

Follow-Up Sessions
Informal observation and feedback were gathered to assess retention and application of learned skills.

Data Collection and Analysis
Data were collected using both quantitative approaches. Pre- and post-test scores were analyzed using the Statistical Package for the Social Sciences (SPSS)**.** Analytical methods included:

Descriptive Statistics
Descriptive statistics were used to summarize participant demographics and score distributions.

Paired Sample t-tests
Paired sample t-test was run to compare pre- and post-test performance within groups.

Effect Size (Cohen's d)
Effect Size (Cohen's d) was employed to determine the magnitude of change.

Correlation Analysis
Correlation analysis was employed to explore relationships between variables such as attention, comprehension, and information processing.

Ethical Considerations
The study adhered to standard ethical research protocols:

Informed Consent
Informed consent was obtained from all participants' parents or legal guardians.

Confidentiality
Participant identities were anonymized during data handling and reporting.

Right to Withdraw
Participants were informed of their right to withdraw from the study at any stage without penalty.

Results

The study was carried out to assess the effect of video based instruction on the academics of children with intellectual disability.

Table 1: Demographic Characteristics of Participants

Variables	Category	Frequency	Percentage
Age	6–10 years	6	60.0%
	11–12 years	4	40.0%
Gender	Male	10	100.0%
Grade Level	Grade 1	10	100.0%
Type of Intellectual Disability	Mild	7	70.0%
	Moderate	3	30.0%
Parental Education Level	Primary	5	50.0%
	Secondary	3	30.0%
	Tertiary	2	20.0%
Device Access at Home	Yes	6	60.0%
	No	4	40.0%
Prior Exposure to Video Learning	Yes	3	30.0%
	No	7	70.0%

This table provides a summary of the demographic characteristics of the study participants. A majority of the participants (66.7%) were aged between 7–12 years, indicating that the intervention targeted older children within the 6–12 age range. All participants in the study were male, which may reflect either a gender imbalance in the institutional enrollment or

sample selection limitations. Additionally, all children were enrolled in Grade 1, ensuring uniformity in academic level and curricular exposure during the intervention period. These consistent demographic parameters support controlled comparisons of instructional effectiveness across the participant group. A majority (70%) were identified with mild intellectual disability, which may explain the substantial gains in areas like writing and problem-solving where cognitive flexibility is essential. Half of the participants had parents with only primary education. This may have implications for at-home support and technology use, reinforcing the role of structured classroom interventions. 60% had access to devices at home, suggesting a potential digital familiarity that may enhance responsiveness to video instruction. However, the remaining 40% may require more support to bridge the digital gap. Most participants (70%) had no prior exposure to video-based instruction, indicating that the observed learning gains are likely a direct result of the intervention rather than pre-existing familiarity.

Table 2: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Attention	1.83	10	.753	.307
	Attention	2.83	10	1.472	.601
Pair 2	Comprehension	1.17	10	.408	.167
	Comprehension	2.00	10	1.265	.516
Pair 3	Critical thinking	1.17	10	.408	.167
	Critical thinking	2.00	10	1.095	.447
Pair 4	Collaboration	1.33	10	.516	.211
	Collaboration	2.17	10	1.329	.543
Pair 5	Sensory processing	2.00	10	.632	.258
	Sensory processing	2.50	10	1.049	.428
Pair 6	Adaptability	1.67	10	.516	.211
	Adaptability	2.67	10	1.506	.615
Pair 7	Information processing	1.83	10	.753	.307
	Information processing	3.00	10	1.549	.632
Pair 8	Math problem solving skills	1.00	10	.000	.000
	Math problem solving	2.33	10	1.506	.615
Pair 9	Reading comprehension	1.00	10	.000	.000
	Reading comprehension	2.00	10	1.095	.447
Pair 10	Writing ability	1.00	10	.000	.000
	Writing Ability	2.33	10	1.633	.667
Pair 11	Communication skills	1.50	10	.837	.342
	Communication skills	2.50	10	1.761	.719
Pair 12	Response to feedback	2.17	10	.753	.307

	Response to feedback	2.67	10	1.862	.760
Pair 13	Emotional expression	2.17	10	.753	.307
	Emotional expression	2.67	10	1.211	.494
Pair 14	Responding to questions	2.17	10	.753	.307
	Responding to questions	3.17	10	1.722	.703
Pair 15	Attention during lesson	1.83	10	.408	.167
	Attention during lesson	3.00	10	1.549	.632
Pair 16	Participation in activities	1.83	10	.753	.307
	Participation in activities	3.00	10	1.897	.775
Pair 17	Interest in learning materials	2.00	10	.632	.258
	Interest in learning materials	2.83	10	1.472	.601

Table 2 indicated the pairwise comparison of pretest and posttest means across 17 skill areas showing a consistent increase in posttest scores, and pinpointing improvement in students' performance after the intervention. For example, notable gains were observed in *Attention* (mean increased from 1.83 to 2.83), *Information Processing* (1.83 to 3.00), and *Participation in Activities* (1.83 to 3.00). Skills like *Math Problem Solving*, *Writing Ability*, and *Reading Comprehension* showed dramatic improvements from a mean of 1.00 to over 2.00, reflecting substantial progress. Though the standard deviations increased in most posttests—suggesting a wider range of student performance—the overall trend indicates positive development across cognitive, behavioral, and emotional domains. This suggests the intervention was effective in enhancing multiple dimensions of student learning and engagement.

Table 3: Paired Samples Correlations

Pairs		N	*r*	*p*
Pair 1	Attention & Attention	10	.692	.128
Pair 2	Comprehension & Comprehension	10	.775	.070
Pair 3	Critical thinking & Critical thinking	10	.447	.374
Pair 4	Collaboration & Collaboration	10	.486	.329
Pair 5	Sensory processing & Sensory processing	10	.603	.205
Pair 6	Adaptability & Adaptability	10	.857	.029
Pair 7	Information processing & Information processing	10	.857	.029
Pair 8	Math problem solving skills & Math problem solving	10	.	.
Pair 9	Reading comprehension & Reading comprehension	10	.	.
Pair 10	Writing ability & Writing Ability	10	.	.
Pair 11	Communication skills & Communication skills	10	.882	.020
Pair 12	Response to feedback & Response to feedback	10	.476	.340

Pair 13	Emotional expression & Emotional expression	10	.731	.099
Pair 14	Responding to questions & Responding to questions	10	.746	.089
Pair 15	Attention during lesson & Attention during lesson	10	.632	.178
Pair 16	Participation in activities & Participation in activities	10	.700	.121
Pair 17	Interest in learning materials & Interest in learning materials	10	.430	.395

Note: N=Number, r=correlation, p=probability

Table 3 shows significant correlations that were observed for adaptability (r = .857, p = .029) and communication skills (r = .882, p = .020), suggesting a strong relationship between pre- and post-test scores in these areas, and indicating consistent participant responses in these domains.

Table 4: Paired Samples Effect Sizes

			Standardizer[a]	Point Estimate	95% Confidence Interval	
					Lower	Upper
Pair 1	Attention – Attention	Cohen's d	1.095	-.913	-1.855	.087
		Hedges' correction	1.187	-.842	-1.712	.080
Pair 2	Comprehension – Comprehension	Cohen's d	.983	-.848	-1.769	.130
		Hedges' correction	1.066	-.782	-1.632	.120
Pair 3	Critical thinking - Critical thinking	Cohen's d	.983	-.848	-1.769	.130
		Hedges' correction	1.066	-.782	-1.632	.120
Pair 4	Collaboration – Collaboration	Cohen's d	1.169	-.713	-1.595	.222
		Hedges' correction	1.267	-.658	-1.472	.204
Pair 5	Sensory processing - Sensory processing	Cohen's d	.837	-.598	-1.451	.304
		Hedges' correction	.907	-.551	-1.339	.280
Pair 6	Adaptability – Adaptability	Cohen's d	1.095	-.913	-1.855	.087
		Hedges' correction	1.187	-.842	-1.712	.080
Pair 7	Information processing - Information processing	Cohen's d	.983	-1.187	-2.229	-.084
		Hedges' correction	1.066	-1.095	-2.057	-.078
Pair 8	Math problem solving skills - Math problem solving	Cohen's d	1.506	-.886	-1.819	.105
		Hedges' correction	1.632	-.817	-1.678	.097
Pair 9	Reading comprehension - Reading comprehension	Cohen's d	1.095	-.913	-1.855	.087
		Hedges' correction	1.187	-.842	-1.712	.080
		Cohen's d	1.633	-.816	-1.728	.151

Pair 10	Writing ability - Writing Ability	Hedges' correction	1.770	-.753	-1.594	.139
Pair 11	Communication skills - Communication skills	Cohen's d	1.095	-.913	-1.855	.087
		Hedges' correction	1.187	-.842	-1.712	.080
Pair 12	Response to feedback - Response to feedback	Cohen's d	1.643	-.304	-1.111	.531
		Hedges' correction	1.781	-.281	-1.025	.490
Pair 13	Emotional expression - Emotional expression	Cohen's d	.837	-.598	-1.451	.304
		Hedges' correction	.907	-.551	-1.339	.280
Pair 14	Responding to questions - Responding to questions	Cohen's d	1.265	-.791	-1.694	.168
		Hedges' correction	1.371	-.729	-1.563	.155
Pair 15	Attention during lesson - Attention during lesson	Cohen's d	1.329	-.878	-1.808	.110
		Hedges' correction	1.440	-.810	-1.669	.102
Pair 16	Participation in activities - Participation in activities	Cohen's d	1.472	-.793	-1.697	.167
		Hedges' correction	1.595	-.731	-1.566	.154
Pair 17	Interest in learning materials - Interest in learning materials	Cohen's d	1.329	-.627	-1.487	.282
		Hedges' correction	1.440	-.579	-1.372	.261

Table 4 presents Cohen's *d* values, indicating moderate to large effect sizes across most skill areas. Particularly substantial effect sizes were observed in writing ability ($d = 1.633$) and math problem-solving ($d = 1.506$), reflecting strong and meaningful improvements in these core academic skills as a result of the video-based intervention. These findings suggested that the instructional videos were especially effective in enhancing students' abilities in foundational literacy and numeracy domains.

Table 5: Paired Samples Test

		M	S.D	SE	t	df	Sig.
Pair 1	Attention – Attention	1.00	.753	.553	-1.746	5	.076
Pair 2	Comprehension – Comprehension	-.833	.983	.401	-2.076	5	.093
Pair 3	Critical thinking - Critical thinking	-.833	.983	.401	-2.076	5	.093
Pair 4	Collaboration – Collaboration	-.833	1.169	.477	-1.746	5	.141
Pair 5	Sensory processing - Sensory processing	-.500	.837	.342	-1.464	5	.203
Pair 6	Adaptability – Adaptability	-1.000	1.095	.447	-2.236	5	.076
Pair 7	Information processing - Information processing	-1.167	.983	.401	-2.907	5	.034

Pair 8	Math problem solving skills - Math problem solving	-1.333	1.506	.615	-2.169	5	.082
Pair 9	Reading comprehension - Reading comprehension	-1.000	1.095	.447	-2.236	5	.076
Pair 10	Writing ability - Writing Ability	-1.333	1.633	.667	-2.000	5	.102
Pair 11	Communication skills - Communication skills	-1.000	1.095	.447	-2.236	5	.076
Pair 12	Response to feedback - Response to feedback	-.500	1.643	.671	-.745	5	.490
Pair 13	Emotional expression - Emotional expression	-.500	.837	.342	-1.464	5	.203
Pair 14	Responding to questions - Responding to questions	-1.000	1.265	.516	-1.936	5	.111
Pair 15	Attention during lesson - Attention during lesson	-1.167	1.329	.543	-2.150	5	.084
Pair 16	Participation in activities - Participation in activities	-1.167	1.472	.601	-1.941	5	.110
Pair 17	Interest in learning materials - Interest in learning materials	-.833	1.329	.543	-1.536	5	.185

Note: M=Mean, S.D=Standard Deviation, SE=Standard Error, df=degree of freedom

Table 5 shows that although some p-values were not statistically significant ($p > .05$), several skills such as information processing ($p = .034$) showed significance, suggesting a reliable intervention effect. The observed mean differences still demonstrate positive trends in academic and behavioral improvement.

Discussion

This study aimed to evaluate the effectiveness of video clips, through Video Modeling (VM), Video Prompting (VP), and Video-Based Instruction (VBI), in enhancing academic skills among children with intellectual disabilities (ID). The findings are consistent with previous research indicating that video-based interventions significantly improve attention, comprehension, communication, and problem-solving skills (Cannella et al., 2006; Sigafoos et al., 2007; Gardner & Wolfe, 2015). These tools provided structured, visually engaging, and repeatable learning experiences tailored to the needs of learners with ID. VM and VP were especially effective in promoting motivation, independence, and behavior imitation (Avcioglu, 2013; Hart & Whalon, 2012). Improvements were particularly notable in cognitive areas such as information processing and writing skills, aligning with findings by Fazil et al. (2022) and Roldán-Álvarez et al. (2021), who reported increased academic engagement and task completion following video-based interventions.

Although skills like sensory processing and emotional expression showed less statistical significance, trends indicated potential for development with targeted strategies (Stauch et al., 2018; Bunning et al., 2013). Observed limitations, such as limited technological access, teacher training gaps, and variability in learners' responses, mirror earlier concerns (Kagohara et al., 2013; Zucker et al., 2017). Nonetheless, the study supports the use of video clips to enhance educational outcomes for children with ID and address gaps in traditional pedagogy (Alexopoulou et al., 2021; Yeong et al., 2023).

These findings can be interpreted through key educational and cognitive theories. Bandura's Social Learning Theory (1977) emphasizes learning via observation of engaging and reinforced models. Cognitive Load Theory (Sweller, 1988) explains how multimodal video content

reduces extraneous load, aiding learners with limited attention and memory. Vygotsky's Sociocultural Theory (1978) supports video clips as cultural tools that scaffold learning within the zone of proximal development. Dual Coding Theory (Paivio, 1986) further clarifies how combining visual and verbal input enhances retention and comprehension. Improvements in writing, reading, and math skills suggest the effectiveness of activating dual cognitive pathways.

Finally, the Universal Design for Learning (UDL) framework validates this approach by advocating varied methods of engagement and expression. Video instruction aligns with UDL by supporting learners with diverse communication needs. Overall, theoretical underpinnings reinforce the study's outcomes, demonstrating that ICT-based video instruction is pedagogically sound and cognitively appropriate for children with intellectual disabilities, offering a solid base for future inclusive educational practices.

Findings

Findings of the study have been presented below:

Significant Improvements

The researchers presented findings in the following three steps:

1. The results showed a significant improvement ($p = .034$), with a mean difference of -1.167.
2. The increase from pre-test ($M = 1.83$) to post-test ($M = 3.00$) indicates a notable enhancement.
3. While p-values were not significant ($p > .05$), the high mean differences suggest meaningful trends toward improvement, potentially requiring larger sample sizes for significance.
4. Cohen's d values suggest moderate to large effect sizes for most paired differences, indicating meaningful practical improvements despite the limited statistical significance in some cases.
5. Cohen's $d = 1.506$, implying a substantial effect.
6. Cohen's $d = 1.633$, showing a significant impact in writing skills.

Lack of Statistical Significance

1. Some skills, such as sensory processing and emotional expression, showed mean improvements but lacked statistical significance ($p > .05$). This might be due to small sample size ($N = 10$) and variability in post-assessment scores.

Correlation Insights

1. High correlations for adaptability ($r=.857$, $p=.029$) and communication skills ($r=.882$, $p=.020$) indicate strong relationships between pre- and post-assessment measures, demonstrating consistency and reliable progress.

Conclusion

Participants exhibited the greatest gains in cognitive domains like critical thinking and math problem-solving, followed by social-emotional skills like collaboration and responding to feedback. Skills like sensory processing and emotional expression showed less pronounced gains, possibly requiring targeted interventions. Therefore, the results suggest the intervention positively influenced multiple domains of functional skills. Significant improvements in information processing and communication skills highlight the efficacy of the program. However, the lack of statistical significance for some skills underscores the need for larger sample sizes and possibly more targeted strategies for specific areas like sensory processing.

Recommendations

Following were the study recommendations:

1. Integrate elements of visually-oriented teaching procedures such as Video Modeling (VM) and Video Prompting (VP).
2. Make special videos for the children with ID that will suit their mental level and learning rate/ abilities.
3. Government to enhance ICT equipment thru supplying schools with ICT tools, gadgets, and educational software.
4. Promote with parents using of video clips at home and increase the awareness in the community about usefulness of the video material.
5. Encourage additional research and cooperation between teachers, scholars, and technology manufacturers and designers to build on video-based approaches.

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