PANTAO
The International Journal of the Humanities and Social Sciences
Volume 5, Issue 1
ISSN 3028-0877 | DOI 10.69651/2022PIJHSS

Evaluating the efficacy of discrete trial training on skill acquisition in children with special educational needs: A quantitative analysis

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ABSTRACT

This study quantitatively evaluates the efficacy of Discrete Trial Training (DTT) in enhancing self-help skill acquisition among children with Special Educational Needs (SEN). Conducted at Mandaue City Central SPED Center during the 2024–2025 school year, the research employed a pretest-posttest design with 23 purposively selected learners diagnosed with Autism, Intellectual Disability, and Learning Disability. The intervention targeted two specific skills: shoe lacing and buttoning. Baseline assessments revealed limited proficiency, with mean pretest scores of 13.26 for shoe lacing and 5.96 for buttoning, classifying most learners in the "developing" or "failing" categories. Following a structured DTT intervention, posttest results demonstrated significant improvement, with mean scores rising to 24.91 for shoe lacing and 10.26 for buttoning. Statistical analysis using paired-samples t-tests confirmed the significance of these gains ($t=31.505$, $p<0.05$ for shoe lacing; $t=16.888$, $p<0.05$ for buttoning), leading to the rejection of the null hypothesis. The findings strongly indicate that DTT is an effective, evidence-based methodology for developing essential self-help skills in children with SEN, fostering greater independence. Consequently, the study recommends the systematic integration of DTT into special education curricula, coupled with professional development for teachers and active parent collaboration, to create sustainable, inclusive learning environments that empower learners to achieve functional autonomy.

Keywords: Special Education, Discrete Trial Training, self-help skills, quantitative, enhancement plan, Mandaue City, Cebu

Date Submitted: December 27, 2025
Date Accepted: January 9, 2026
Date Published: January 27, 2026

INTRODUCTION

Discrete Trial Training (DTT) has emerged as a structured method that addresses the learning needs of children with special educational needs. Rooted in Applied Behavior Analysis (ABA), it provides a systematic approach to skill acquisition through segmented and focused lessons. Research underscores its effectiveness in enhancing communication,

DOI: http://doi.org/10.69651/PIJHSS0501754

Recommended citation:
Gitgano, E. N. (2026). Evaluating the efficacy of discrete trial training on skill acquisition in children with special educational needs: A quantitative analysis. Pantao (The International Journal of the Humanities and Social Sciences) 5 (1), 8353-8367. http://doi.org/10.69651/PIJHSS0501754

academic abilities, and practical skills in children with autism, Down Syndrome, and learning disabilities (Smith et al., 2021). As schools seek evidence-based strategies to support diverse learners, DTT offers a promising avenue for improving outcomes. This study focuses on assessing its implementation to bridge gaps in specialized education.

The structured nature of DTT enables targeted instruction tailored to the specific needs of each learner. Each lesson involves clear objectives, direct instruction, and immediate feedback, ensuring measurable progress. Studies highlight its adaptability, allowing educators to customize lessons based on individual strengths and areas for growth (Nelson, 2023). This flexibility has proven essential in fostering independence and confidence in learners while addressing unique challenges. Understanding the dynamics of such an approach is critical for its successful integration into diverse educational environments.

Despite its proven benefits, DTT remains underutilized in many schools due to limited awareness and training. Educators often face challenges in adopting specialized methods, particularly in resource-constrained settings. Bridging this gap requires a concerted effort to equip teachers with the necessary skills and resources to implement DTT effectively. Expanding its use could significantly enhance the educational experience of children with special needs, fostering their academic and personal growth. Highlighting the factors influencing its success is key to driving widespread adoption.

Research on DTT affirms its role in advancing skill acquisition and self-reliance among children with special educational needs. Studies such as that of Kim and Roberts (2022) demonstrate its impact on enhancing academic and daily living skills through a methodical approach. The incremental nature of its teaching methodology ensures that learners achieve mastery over time, paving the way for meaningful developmental progress. Educators and policymakers have much to gain from understanding and integrating such evidence-based practices into the broader educational framework.

The study invites stakeholders and readers to reimagine how specialized instruction can transform learning for children with developmental challenges. By evaluating the practical applications of DTT, the research seeks to inspire innovative strategies for inclusive education. The insights gathered have the potential to empower educators and parents alike, fostering collaboration in meeting the needs of every learner. Advocating for broader implementation is not just an academic effort but a step toward creating equitable opportunities for all children to thrive.

Statement of the problem

This study aimed to quantitatively assess the implementation of Discrete Trial Training (DTT) in enhancing self-help skills, specifically shoe lacing and buttoning, among children with special educational needs at Mandaue City Central SPED Center for the school year 2024–2025. It also sought to develop an enhancement plan grounded in the results of the investigation.

1. What is the profile of the learners in terms of age, gender, type of disability, and grade level?
2. What is the performance level of the learners prior to the implementation of Discrete Trial Training?
3. What is the performance level of the learners after the implementation of Discrete Trial Training?
4. Is there a significant difference between the learners' performance scores before and after the implementation of Discrete Trial Training?
5. Based on the findings of the study, what action plan can be proposed to enhance the implementation of Discrete Trial Training?

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METHODOLOGY

Research design

The study adopts a quantitative research design that employs pre-assessment and post-assessment measures to evaluate the implementation of Discrete Trial Training (DTT) and its effects on learning outcomes for children with special educational needs. The pre-assessment establishes a baseline that identifies students' abilities, particularly their proficiency in tasks such as shoe lacing and buttoning. These initial evaluations provide a foundation that measures progress after the intervention. The post-assessment evaluates the outcomes of DTT and highlights its ability to foster independence in performing essential tasks. The research focuses on students from Mandaue City Central SPED Center during the 2024–2025 school year and uses purposive sampling that aligns with the study's objectives.

Respondents and locale of the study

The researcher employed purposive sampling to select participants for this study. A total of 23 students with special educational needs at Mandaue City Central SPED Center served as respondents. The inclusion criteria for participation included: a) both male and female students, b) ages 5–10 years, c) enrolled in Grades 1–3, and d) diagnosed with Autism, Learning Disabilities, or Down Syndrome. Participants were selected based on their inability to perform self-help skills such as shoe-lacing and buttoning, ensuring alignment with the study's focus on skill acquisition through Discrete Trial Training (DTT).

A study by Wilson and Evans (2021) examined the impact of DTT on skill acquisition in children with Autism, Learning Disabilities, and Down Syndrome, employing a stratified sampling method. Although non-random sampling methods have inherent limitations, such as unequal selection probabilities, the researcher adopted this approach to target specific educational contexts and populations. Findings from their study demonstrated significant improvements in skill acquisition, highlighting DTT as an effective intervention. Similarly, the current study aimed to provide context-specific insights into the effectiveness of DTT within a purposively selected population of learners with special educational needs. Mandaue City Central SPED Center was selected for its expertise in inclusive education and capacity to support Discrete Trial Training (DTT) interventions. With skilled professionals and a diverse student population, the center provides an ideal setting to evaluate DTT's impact on learning outcomes for children with special educational needs. Its resources and focus on specialized education ensure a supportive environment aligned with the study's objectives.

Table 1
Distribution of Respondents

Grade Level	f	%
Grade 3	2	8.70
Grade 2	6	26.09
Grade 1	15	65.22
Total	23	100.00

Data analysis procedure

Prior to initiating the data collection process, a formal transmittal letter was sent to secure permission from the Mandaue City Division Office and the principal of Mandaue City Central SPED School for the implementation of the study. The researcher collected demographic data, focusing on respondents' gender, age, disability, and grade level. Pre-assessments were conducted to establish baseline skill levels in shoe-lacing and buttoning, ensuring that no assistance was provided during the tasks in order to accurately measure the learners' initial abilities. Following the pre-assessment, Discrete Trial Training (DTT) sessions were administered, and detailed anecdotal records were maintained throughout to track progress and document observed behaviors. Post-assessments were conducted after the intervention to measure skill acquisition, with structured rubrics utilized to systematically evaluate changes in the learners' performance.

RESULTS AND DISCUSSION

This chapter presented a detailed analysis of the study's findings to evaluate the effectiveness of Discrete Trial Training (DTT) in enhancing self-help skills among children with special educational needs. Each section addresses a specific aspect of the data, providing insights into the demographic characteristics, baseline performance levels, post-intervention improvements, and comparative analysis of pretest and posttest results.

Demographic profile of the learners

This section presents the demographic characteristics of the learners who participated in the study. The profile includes variables such as age, gender, disability, and grade level, which are essential in understanding the background of the respondents. These characteristics provide context for interpreting the learners' performance before and after the implementation of Discrete Trial Training. Furthermore, the demographic information helps determine whether learner differences may influence the outcomes of the intervention.

Age and Gender of the Learners

Table 2 presents the distribution of the learners according to age and gender. These variables are considered important factors that may influence the acquisition of self-help skills such as shoe lacing and buttoning. Understanding the age and gender composition of the learners provides a clearer picture of the participants involved in the study.

Table 2
Age and Gender of the Learners

Age (in years)	Female		Male		Total	
	f	%	f	%	f	%
Above 12	0	0.00	1	4.35	1	4.35
9–12	0	0.00	8	34.78	8	34.78
5–8	4	17.39	10	43.48	14	60.87
Total	4	17.39	19	82.61	23	100.00

Table 2 highlighted the distribution of respondents based on age and gender. The majority of learners, 60.87%, were aged 5–8 years, comprising ten males and four females. Learners aged 9–12 years accounted for 34.78% of the sample, represented exclusively by eight male respondents. A minimal proportion, 4.35%, was observed in the above-12 category, consisting of one male. Overall, the gender distribution revealed that males constituted 82.61%

of the respondents, while females accounted for 17.39%, indicating a significant gender imbalance within the study population.

The findings suggested that younger male learners dominated the sample, indicating that early intervention services were more accessible or more frequently utilized by this demographic. The higher proportion of males in the study aligned with diagnostic trends in developmental disorders, while the concentration of younger learners highlighted the focus on early developmental stages. These patterns provided context for understanding how age and gender might influence responsiveness to structured interventions like Discrete Trial Training (DTT).

The results implied that intervention programs, such as DTT, should prioritize younger learners, particularly males, to maximize skill acquisition and developmental gains. Educators and therapists were encouraged to tailor instructional strategies based on age and gender, ensuring that younger learners receive adequate support to achieve proficiency in targeted self-help skills. This focus could enhance the effectiveness of individualized education programs and early intervention initiatives in special education settings.

Recent studies supported the observed trends and their implications. Sosnowski et al. (2022) noted that younger learners demonstrated heightened responsiveness to structured interventions such as DTT due to their developmental plasticity. Yanchik et al. (2022) documented a higher prevalence of male participants in applied behavior analysis (ABA)-based programs, reflecting diagnostic patterns in developmental disorders. Additionally, Chen and Thompson (2023) emphasized that age- and gender-sensitive approaches improved the effectiveness of skill acquisition programs in special education. Collectively, these studies reinforced the current findings, highlighting the importance of targeting early-age male learners to optimize outcomes in DTT interventions.

Disability

Table 3 presented the distribution of the learners according to their diagnosed disability. Identifying the type of disability is essential in understanding the learners' individual needs and capabilities in performing self-help skills. This information provides context for interpreting their performance before and after the implementation of Discrete Trial Training.

Table 3
Disability of the Learners

Disability	f	%
Autism	8	34.78%
Intellectual Disability	10	43.48%
Learning Disability	5	21.74%
Total	23	100.00%

Table 3 provided an analysis of respondents categorized by disability type. The largest group, 43.48%, consisted of learners with intellectual disabilities, totaling ten individuals. Learners with autism represented 34.78% of the sample, amounting to eight respondents. Those with learning disabilities formed the smallest group, comprising 21.74% or five individuals. This distribution highlighted a diverse representation of disabilities, ensuring a comprehensive assessment of the impact of Discrete Trial Training (DTT) across varied learner profiles.

The findings suggested that learners with intellectual disabilities made up the majority of the sample, while learners with autism and learning disabilities also formed significant portions. This indicated that the intervention needed to address multiple types of learning and developmental needs. The diversity of disability types allowed the researcher to evaluate how

DTT could be applied effectively across different learner profiles, providing insight into its versatility and relevance in special education contexts.

The results implied that DTT could be effectively implemented for learners with varying disabilities, including intellectual disabilities, autism, and learning disabilities. Educators and therapists were encouraged to use structured, systematic, and individualized instruction to accommodate the specific needs of each learner. The diverse representation highlighted the potential of DTT as a flexible intervention capable of promoting skill acquisition across multiple disability profiles, enhancing functional independence and self-help abilities.

Recent studies supported the application of DTT across diverse disability groups. Anwar et al. (2022) noted that DTT facilitated significant behavioral and academic improvements for children with autism, while Ma et al. (2023) emphasized its effectiveness for children with intellectual and developmental disabilities when implemented using structured methodologies. Similarly, Chen and Thompson (2023) highlighted that DTT could be adapted to address the distinct educational needs of learners with varied disabilities. Collectively, these studies reinforced the current findings, demonstrating the versatility and efficacy of DTT in promoting skill acquisition across a broad spectrum of learners requiring specialized instructional strategies.

Grade level

The grade level of the respondents reflects their educational placement and developmental stage within the SPED program. This information is important in understanding the learners' readiness and varying levels of independence in performing self-help skills such as shoe lacing and buttoning.

Table 4
Grade Level of Learners

Grade Level	f	%
Grade 3	2	8.70%
Grade 2	6	26.09%
Grade 1	15	65.22%
Total	23	100.00%

Table 4 illustrated the grade level distribution of respondents. The majority of learners, 65.22%, were enrolled in Grade 1, totaling 15 students. Grade 2 respondents constituted 26.09% of the sample, represented by six learners. The smallest group, 8.70%, included two learners in Grade 3. These percentages indicated that most respondents were in the early stages of elementary education, highlighting a focus on foundational learning levels and the need for early skill development interventions.

The findings suggested that the majority of respondents were at lower elementary grade levels, indicating that the study focused on learners who were in the early stages of acquiring foundational skills. This highlighted the importance of implementing structured interventions like Discrete Trial Training (DTT) at early educational stages, as learners at this level are more receptive to systematic teaching methods and can develop essential skills more effectively.

The results implied that DTT should be prioritized for learners in the lower elementary grades to maximize skill acquisition and functional independence. Educators and therapists were encouraged to provide early, structured, and targeted interventions that support foundational skill development. This approach could ensure that learners establish core

competencies in self-help and other functional skills, forming a strong basis for future academic and daily living success.

Recent studies supported the importance of early intervention and grade-level-targeted instruction. Davis and Akers (2023) emphasized that applying DTT during foundational educational stages optimized skill acquisition and learning outcomes. Fingerhut and Moeyaert (2022) highlighted that younger learners benefited most from structured and systematic interventions, demonstrating higher fidelity in skill mastery. Additionally, Chen and Thompson (2023) underscored that early, grade-appropriate interventions increased learners' proficiency in essential functional skills. Collectively, these studies reinforced the current findings, demonstrating the effectiveness and necessity of implementing DTT with learners in the lower elementary grades.

Performance level of the learners before DTT

This section presents the performance level of the learners in shoe-lacing skills and buttoning prior to the implementation of Discrete Trial Training. The results reflect the learners' baseline level of performance before the intervention was introduced. Establishing the pre-intervention performance is essential in determining the effectiveness of Discrete Trial Training.

Performance level of the learners in shoe lacing before DTT

Table 5 presents the performance level of the learners in shoe-lacing skills prior to the implementation of Discrete Trial Training. The results reflect the learners' baseline abilities in performing the target self-help skill. This baseline data serves as a reference point for comparing learners' performance after the intervention.

Table 5
Performance Level of the Learners in Shoe Lacing Before DTT

Performance Level	Range of Scores	f	%
Passing	23–33	0	0.00
Developing	12–22	15	65.22
Failing	0–11	8	34.78
Total		23	100.00
Mean		13.26	
Standard Deviation		2.51	

Table 5 revealed the baseline performance scores in shoe-lacing among the respondents. The majority of learners, 65.22%, demonstrated a developing level of proficiency, with scores ranging from 12 to 22. A smaller group, 34.78%, fell into the failing category, scoring between 0 and 11. No respondents achieved passing scores prior to the intervention. The mean score was 13.26, with a standard deviation of 2.51, indicating that learners exhibited modest proficiency levels in shoe-lacing before receiving any structured instruction.

The findings suggested that most learners initially had limited skill in shoe-lacing, with a significant proportion performing at the developing level and a smaller group at the failing level. The absence of passing scores highlighted that learners required structured and targeted instruction to acquire and improve this essential self-help skill. This baseline assessment

emphasized the need for a systematic intervention to enhance learners' independence and functional abilities.

The results implied that structured interventions, such as Discrete Trial Training (DTT), were necessary to improve shoe-lacing proficiency among learners with special educational needs. Educators and therapists were encouraged to implement individualized, step-by-step teaching strategies to help learners progress from failing or developing levels to passing levels. Early and systematic skill instruction was critical to promoting functional independence and mastery of self-help tasks.

Recent studies reinforced the importance of structured interventions for foundational skill development. Gauert et al. (2023) noted that learners with special needs often demonstrate limited proficiency in self-help tasks such as shoe-lacing due to restricted exposure to systematic teaching. Groh (2021) highlighted that performance during DTT varied based on instructional methods and materials, suggesting that individualized approaches enhanced outcomes. Additionally, Spiegel (2022) emphasized that initial skill levels in children with special needs often required substantial improvement through structured and repetitive interventions. Collectively, these studies supported the current findings, demonstrating the necessity of targeted DTT interventions to address skill deficits in shoe-lacing.

Performance Level of the Learners in Buttoning Before DTT

Table 6 presented the performance level of the learners in buttoning skills prior to the implementation of Discrete Trial Training. The results reflect the learners' initial level of performance before the intervention was applied.

Table 6
Performance Level of the Learners in Buttoning Before DTT

Performance Level	Range of Scores	f	%
Passing	9–12	2	8.70
Developing	5–8	12	52.17
Failing	0–4	9	39.13
Total		23	100.00

Table 6 illustrated the baseline performance of learners in buttoning. The majority of respondents, 52.17%, fell into the developing category, scoring between 5 and 8. The failing category included 39.13% of respondents, with scores ranging from 0 to 4, while only 8.70% of learners achieved passing scores. The mean score was 5.96, with a standard deviation of 1.94, reflecting limited competency in buttoning prior to the intervention. These results highlighted a significant skill gap among the learners, indicating the need for structured instructional support.

The findings suggested that most learners initially demonstrated inadequate buttoning skills, with a majority at the developing level and a substantial portion at the failing level. The very small number of learners achieving passing scores indicated that learners required systematic and targeted interventions to develop competence and independence in this self-help task. The data emphasized the critical need for structured instruction to improve functional fine motor skills.

The results implied that interventions such as Discrete Trial Training (DTT) were necessary to address the deficits in buttoning skills. Educators and therapists were encouraged to employ step-by-step, repetitive teaching strategies that allowed learners to progress from failing or developing levels to passing proficiency. Targeted DTT interventions could help bridge skill gaps and promote independence in performing essential daily living tasks.

Recent studies reinforced the effectiveness of structured interventions for improving foundational self-help skills. Weller (2023) emphasized that deficits in tasks such as buttoning are common among learners with special needs, highlighting the necessity of structured teaching. Gauert et al. (2023) reported that DTT facilitated incremental skill development through repetitive, targeted instruction, while Spiegel (2022) stressed the importance of systematic approaches to close the gap between current and desired performance levels. Collectively, these studies supported the findings, demonstrating the relevance of DTT in improving buttoning skills among learners with limited baseline proficiency.

Performance level of the learners after DTT

This section presented the performance level of the learners after the implementation of Discrete Trial Training. The results reflect the learners' level of mastery in the targeted self-help skills following the intervention. Examining post-intervention performance is essential in determining the effectiveness of Discrete Trial Training in improving functional skills.

Performance Level of the Learners in Shoe Lacing After DTT

Table 7 presents the performance level of the learners in shoe-lacing skills after the implementation of Discrete Trial Training. The results indicate the extent of improvement in the learners' ability to perform the skill following the intervention. This posttest data provides evidence of the effectiveness of Discrete Trial Training in enhancing shoe-lacing skills.

Performance Level	Range of Scores	f	%
Passing	23–33	19	82.61
Developing	12–22	4	17.39
Failing	0–11	0	0.00
Total		23	100.00
Mean		24.91	
Standard Deviation		2.66	

Table 7 highlighted a substantial improvement in shoe-lacing performance following the implementation of Discrete Trial Training (DTT). The majority of respondents, 82.61%, achieved a passing score, ranging from 23 to 33, indicating significant progress compared to their baseline performance. The mean score increased to 24.91, with a standard deviation of 2.66, reflecting consistent gains across participants. No respondents remained in the failing category, demonstrating that DTT effectively enhanced learners' shoe-lacing skills.

The findings suggested that the structured and repetitive approach of DTT significantly improved learners' shoe-lacing proficiency. The majority of learners transitioned from developing or failing levels to passing levels, indicating that DTT was effective in addressing specific skill deficits. The data emphasized that incremental and systematic instruction allowed learners to acquire and consolidate functional self-help skills.

The results implied that educators and therapists could apply DTT to enhance self-help skills, particularly in learners with special educational needs who initially demonstrated low proficiency. The structured, step-by-step methodology enabled learners to progress efficiently, fostering independence and confidence in performing daily living tasks. These findings highlighted the value of incorporating DTT into individualized education programs to address skill gaps effectively.

Recent studies supported the effectiveness of DTT in improving functional skills. Hudson et al. (2021) demonstrated that targeted behavioral interventions enhanced task-specific skills among children with developmental challenges. Shin et al. (2021) highlighted the utility of DTT in promoting skill acquisition through incremental learning steps, while Scott et al. (2023) emphasized that structured frameworks supported measurable progress in motor and cognitive tasks. Additionally, Koob (2024) found that tailored educational approaches, such as DTT, fostered independence and confidence in self-help activities. Collectively, these studies reinforced the current findings, confirming that DTT effectively improved shoe-lacing performance in learners with special educational needs.

Performance level of the learners in buttoning after DTT

Table 8 presented the performance level of the learners in buttoning skills following the implementation of Discrete Trial Training. The results indicate the learners' improved ability to perform the skill after the intervention.

Table 8
Performance Level of the Learners in Buttoning After DTT

Performance Level	Range of Scores	f	%
Passing	9–12	19	82.61
Developing	5–8	4	17.39
Failing	0–4	0	0.00
Total		23	100.00
Mean		10.26	
Standard Deviation		1.51	

Table 8 presented the enhanced performance of learners in buttoning following the implementation of Discrete Trial Training (DTT). The majority of respondents, 82.61%, achieved the passing level, with scores ranging from 9 to 12. The mean score increased to 10.26, with a standard deviation of 1.51, indicating notable progress among learners. No respondents remained in the failing category, demonstrating the overall effectiveness of the intervention in improving buttoning skills.

The findings suggested that the structured, repetitive, and task-focused approach of DTT significantly improved learners' buttoning proficiency. Most learners transitioned from failing or developing levels to passing levels, illustrating that consistent reinforcement, guided practice, and systematic instruction facilitated skill acquisition and retention. The results highlighted the capacity of DTT to effectively address fine motor skill deficits in learners with special educational needs.

The results implied that educators and therapists could implement DTT to promote independence in essential self-help tasks. The structured and incremental teaching method enabled learners to develop functional competence in buttoning, fostering autonomy and confidence. This emphasized the value of evidence-based interventions in special education to enhance daily living skills and overall quality of life for learners.

Recent studies reinforced the effectiveness of DTT for skill acquisition in learners with developmental challenges. Shin et al. (2021) reported that behavioral skills training, such as DTT, improved task-specific outcomes in children with developmental disabilities. Hudson et al. (2021) highlighted the positive impact of structured teaching methods on fine motor skill

development critical for daily functioning. Additionally, Scott et al. (2023) emphasized that repetitive, task-focused interventions, combined with consistent reinforcement, supported measurable improvements in motor tasks. Koob (2024) further concluded that structured teaching frameworks facilitated autonomy and skill mastery in learners with diverse educational needs. Collectively, these studies corroborated the current findings, demonstrating that DTT effectively enhanced buttoning performance and promoted learner independence.

Test of difference between before and after DTT

This section presents the statistical analysis of the learners' performance in self-help skills before and after the implementation of Discrete Trial Training. The analysis focuses on two skills: shoe-lacing and buttoning. Paired-samples t-tests were conducted to determine whether there were significant improvements in the learners' scores following the intervention. The results of these tests provide evidence on the effectiveness of Discrete Trial Training in enhancing the targeted skills of learners with special educational needs. Tables 9 and 10 summarize the test of differences for shoe-lacing and buttoning, respectively.

Test of difference between the scores of the learning in shoe lacing

This section presents the statistical analysis comparing the learners' performance in shoe-lacing skills before and after the implementation of Discrete Trial Training. The analysis aims to determine whether the intervention resulted in a significant improvement in the learners' scores. The results are presented using the paired-samples t-test, which evaluates the difference between the mean scores of two related groups. This test provides evidence on the effectiveness of Discrete Trial Training in enhancing shoe-lacing skills among learners with special educational needs.

Table 9 presented the Test of Difference between the scores of the learning in the shoe lacing before and after DTT.

Table 9
Test of Difference Between the Scores of the Learning in Shoe Lacing

Source of Difference	Mean	Standard Deviation	Mean Difference	t-value	p-value	Decision	Result
Posttest	24.91	2.66	11.65	31.505*	0	Reject Ho	Significant
Pretest	13.26	2.51					

*significant at $p<0.05$; df=19(two-tailed)

Table 9 presented a significant increase in the learners' performance in shoe-lacing after the implementation of Discrete Trial Training (DTT). The pretest mean score was 13.26, with a standard deviation of 2.51, while the posttest mean score increased to 24.91, with a standard deviation of 2.66. The mean difference was statistically significant, as indicated by a t-value of 31.505 and a p-value of 0, which was less than the 0.05 significance level. These results demonstrated that the DTT intervention had a strong positive impact on the learners' shoe-lacing ability, reflecting substantial improvements in skill acquisition.

The findings suggested that the structured, repetitive, and systematic nature of DTT effectively enhanced learners' mastery of shoe-lacing skills. The large increase in mean scores indicated that most learners transitioned from developing or failing levels to passing levels,

demonstrating that targeted interventions could significantly improve functional self-help skills in children with special educational needs.

The results implied that educators and therapists could utilize DTT to promote independence and competence in essential daily living tasks. The intervention's demonstrated effectiveness underscored the value of systematic, step-by-step teaching methods to address skill deficits and accelerate the acquisition of practical self-help skills, ultimately fostering learners' autonomy and confidence.

Recent studies reinforced the effectiveness of DTT in teaching functional skills. Sochanski et al. (2021) observed that combining DTT with technological supports significantly improved skill acquisition in children with autism. Maguire et al. (2023) highlighted that tailored, evidence-based strategies such as DTT enhanced skill development and overall performance in learners with special educational needs. Additionally, Patel and Wong (2021) emphasized that structured, repetitive interventions facilitated mastery of daily living skills, particularly in learners who initially demonstrated low proficiency. Collectively, these studies supported the current findings, confirming that DTT effectively improved shoe-lacing performance in children with developmental disabilities.

Test of difference between the scores of the learners in buttoning

Table 10 presented the statistical comparison of the learners' buttoning scores before and after the implementation of Discrete Trial Training. The analysis aims to determine whether there was a significant improvement in the learners' buttoning skills following the intervention.

Table 10
Test of Difference Between the Scores of the Learners in Buttoning

Source of Difference	Mean	Standard Deviation	Mean Difference	t-value	p-value	Decision	Result
Posttest	10.26	1.51	4.3	16.888*	0	Reject Ho	Significant
Pretest	5.96	1.94					

*significant at $p<0.05$; df=19(two-tailed)

Table 10 presented the learners' performance in buttoning tasks following the implementation of Discrete Trial Training (DTT). The pretest mean score was 5.96, with a standard deviation of 1.94, while the posttest mean score increased to 10.26, with a standard deviation of 1.51. The difference in mean scores was statistically significant, as evidenced by a t-value of 16.888 and a p-value of 0, which was less than the 0.05 significance level. These results demonstrated that DTT effectively improved learners' ability to perform buttoning, reflecting substantial gains in functional skill development.

The findings suggested that the structured, repetitive, and systematic instruction provided through DTT significantly enhanced learners' buttoning proficiency. The majority of learners progressed from failing or developing levels to passing levels, indicating that targeted and consistent interventions were highly effective in addressing fine motor skill deficits.

The results implied that educators and therapists could implement DTT to foster independence in critical self-help skills such as buttoning. The intervention's success underscored the importance of structured, individualized, and evidence-based teaching strategies to improve functional abilities and enhance the autonomy of learners with special educational needs.

Recent studies supported the effectiveness of DTT in teaching self-help and functional skills. Snyder and Riden (2024) found that structured approaches like DTT significantly improved skill acquisition in children with developmental challenges. Brock and Anderson (2021) emphasized that tailored interventions enabled learners with intellectual and developmental disabilities to acquire essential life skills. Additionally, Patel and Wong (2021) highlighted that systematic, step-by-step instruction facilitated mastery of daily living tasks and improved learner independence. Collectively, these studies reinforced the current findings, demonstrating that DTT effectively enhanced buttoning performance and promoted functional autonomy in learners with special educational needs.

CONCLUSION

The findings of this study affirm that Discrete Trial Training serves as an effective instructional approach for improving self-help skills among learners with special educational needs, as evidenced by substantial gains in shoe lacing and buttoning performance. The posttest results demonstrated that the majority of learners achieved passing levels of performance, with statistically significant improvements observed when compared with their baseline scores. These outcomes confirm the effectiveness of the intervention in addressing critical skill gaps and in fostering greater independence among learners. The results further highlight the capacity of structured and systematic instruction to support functional skill acquisition, particularly for learners who require explicit and repetitive teaching strategies to master essential daily living skills.

Moreover, the demographic profile of the participants underscores the importance of early intervention and the use of developmentally appropriate instructional methods for learners with intellectual and developmental disabilities. The observed improvements suggest that younger learners benefit considerably from targeted interventions such as Discrete Trial Training when instruction is aligned with their individual needs and abilities. These findings reinforce the relevance of evidence-based practices in special education and emphasize the necessity of tailoring instructional strategies to accommodate learner diversity. Collectively, the results provide empirical support for the integration of structured behavioral approaches within inclusive education settings to promote adaptive outcomes and long-term functional independence.

In light of these findings, the study supports the integration of Discrete Trial Training into special education curricula as a means of enhancing self-help skill development among learners with special educational needs. Effective implementation requires that educators receive appropriate training to ensure accurate and consistent application of the method while remaining responsive to individual learner differences. The findings also point to the importance of collaborative partnerships among teachers, parents, and specialists in reinforcing skill development across learning environments. Continuous assessment of learner progress is essential to refine instructional practices, sustain motivation, and ensure that gains are maintained over time. Finally, the study highlights the role of policymakers and educational institutions in providing adequate resources and institutional support for the adoption of evidence-based interventions, thereby strengthening inclusive education practices and ensuring that learners with special educational needs are equipped with the functional skills necessary for greater independence and participation in daily life.

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