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EXPLORING THE LIVED EXPERIENCE OF OCCUPATIONAL STRESS AMONG SPECIAL EDUCATION TEACHERS: A PROPOSED STRESS MANAGEMENT STRATEGY PLAN

FRANCIS C. FELEBRICO
Cauayan North Central School, Turayong, Cauayan City, Isabela, Philippines
EMAIL: francis.felebrico096@deped.gov.ph

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ABSTRACT

Special education teachers have different and more difficult obligations than general education teachers. They work with students who have a wide range of needs, from developmental disabilities to behavioral issues. Using a thematic analysis approach, the study aimed to understand the primary sources of stress, how these stressors influence instructional effectiveness, the coping strategies employed by teachers, and the support systems they consider essential for reducing stress. Data were collected through in-depth interviews with nine SPED teachers from public schools, focusing on their experiences working with learners with intellectual disabilities. Findings indicate that occupational stress among SPED teachers is multifaceted, arising from both learner-related and administrative factors. Teachers reported that unpredictable student behaviors, such as tantrums, meltdowns, and repetitive actions, often created emotional and physical strain, particularly for those in the early months of teaching. Furthermore, the study highlighted the critical role of social and institutional support systems in mitigating stress. Peer and co-teacher support, family encouragement, and recognition from school leaders were consistently identified as essential in fostering emotional resilience and professional sustainability. In conclusion, occupational stress among SPED teachers is influenced by a combination of learner behaviors, administrative demands, and interpersonal dynamics, which can adversely affect teaching performance and professional confidence. Nevertheless, teachers employ diverse coping strategies and rely on strong support systems to sustain their effectiveness and well-being. The study recommends that schools implement structured interventions, such as peer mentoring programs, recognition initiatives, professional development workshops, and family engagement strategies, to alleviate stress and enhance teacher resilience.

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INTRODUCTION

Special education teachers play a vital role in supporting learners with diverse and complex needs. Their responsibilities now extend beyond traditional teaching, including creating Individualized Education Programs (IEPs), managing behavior, collaborating with specialists, and engaging with families. These growing demands, combined with limited resources, contribute to high stress levels that affect their well-being and effectiveness (Lopes et al., 2020; Carter et al., 2024).

Studies consistently show that SPED teachers experience higher stress and burnout than general education teachers due to heavy workloads, emotional demands, and limited institutional support. These factors often lead to emotional exhaustion, lower job satisfaction, and increased turnover in the profession (Bettini et al., 2020; Garcia & Weiss, 2021).

In the Philippines, SPED teachers continue to face systemic challenges such as overcrowded classrooms, limited assistive technologies, inadequate funding, and insufficient training in evidence-based practices. These issues heighten occupational stress and hinder the delivery of effective interventions. Research also shows a persistent gap in understanding their lived experiences and coping strategies in resource-constrained contexts (Sarmiento & Gonzales, 2020; Flores & Mendoza, 2022).

This study aimed to explore the lived experiences of SPED teachers as they navigate occupational stress and to examine how such stress impacts their performance and competencies. The insights gained will help guide the development of targeted interventions that support SPED teachers' well-being and professional effectiveness within the field.

Research Questions

The goal of this study was to determine the impact of occupational stress on the job performance of SPED teachers. Specifically, this study was aimed at:

1. How did special education teachers describe their experiences with occupational stress in their teaching practice?
2. What factors did special education teachers identify as primary sources of occupational stress?
3. How did occupational stress affect their perceived teaching performance and professional competence?
4. What coping strategies did special education teachers use to manage occupational stress?
5. What support systems or interventions did special education teachers believe would help reduce stress and enhance their professional well-being?

Methodology

This study used a descriptive phenomenological design to explore the lived experiences of special education teachers dealing with occupational stress. This design allowed the researcher to capture the essence of their experiences without imposing preconceived assumptions (Creswell & Poth, 2018).

Total enumeration was employed, including all SPED teachers in the Schools Division of Cauayan City, Isabela. This ensured full population representation and provided a comprehensive understanding of how occupational stress affected their job performance. A sample of 8–12 participants was deemed sufficient to achieve data saturation, following common practices in phenomenological research. This number allowed the researcher to gather rich and detailed accounts while avoiding repetitive or redundant data.

Data were collected through semi-structured, in-depth interviews guided by open-ended questions based on the research objectives. Interviews were conducted in person, recorded with consent, and transcribed verbatim to ensure accurate representation of participants' experiences.

A semi-structured interview guide served as the primary instrument. It was developed from the research questions and validated by experts to ensure clarity and relevance. The guide allowed flexibility for probing deeper into participants' experiences and coping strategies.

Trustworthiness was ensured using Lincoln and Guba's (1985) criteria. Credibility was established through member checking, transferability through detailed contextual descriptions, dependability through an audit trail, and confirmability through bracketing and peer debriefing.

Colaizzi's phenomenological method was used to analyze the transcribed data. This included familiarizing with the narratives, extracting significant statements, formulating meanings, clustering themes, crafting an exhaustive description, identifying the fundamental structure, and validating the findings with participants.

Ethical standards were strictly observed throughout the study. Participants provided informed consent, their identities were kept anonymous, and participation remained voluntary. All data were stored securely and disposed of properly after the study, ensuring full confidentiality and protection of participant information.

Results and Discussion

Table 1. Describing the experiences of Special education teachers with occupational stress in their teaching practice.

Question	Teacher	Verbal Statement	Initial Codes	Emerging Theme
How do special education teachers describe their experiences with occupational	1	"Maybe when many children come to class all at the same time, without following their schedule."	Stress from unorganized student arrivals.	Challenging Behaviors

stress in their teaching practice?	2	"When my students have tantrums because their behaviors are unpredictable."	Challenges of unpredictable student behaviors	
	3	"It was overwhelming in the class because of the variety of cases and also the different topics I needed to teach."	Stress from diverse teaching demands	
	4	"As I observed, the first three months of teaching—especially with new children entering—you need to teach daily routines, craft IEPs, communication, and the daily routine of the children."	Challenges in establishing initial routines	
	5	"I feel stressed when, no matter what I do, they do not stop. Their tantrums—you really can't prevent them."	Stress from uncontrollable student tantrums	
	6	"When a student who was already showing progress suddenly regresses because the parent stopped their therapy. Therapy should be continuous,	Stress from learner regression without therapy	

		because once it stops, the child often goes back to zero."		
	7	"They're like babies—it's really difficult because they run around, throw tantrums, and cry."	Challenges in managing childlike learner behaviors	
	8	"My preparation and teaching mood shift to negative."	Stress affects teaching preparation and mood	
	9	"I really felt stressed because I didn't yet know the children assigned to me—their attitudes, behaviors. That was the hardest part in the beginning."	Stress from unfamiliar student behaviors	

Table 1 reveals that special education teachers experienced occupational stress from multiple classroom-related sources, particularly those involving challenging and unpredictable student behaviors. Teachers frequently described stress triggered by sudden or unorganized student arrivals and by managing unpredictable tantrums that disrupted the learning environment. Statements such as "Many children come to class all at the same time without following their schedule" and "When my students have tantrums because their behaviors are unpredictable" highlight how behavioral instability and lack of routine heighten teachers' emotional strain. These findings support earlier research indicating that behavioral challenges are among the strongest predictors of stress and burnout among special education teachers (García-Carmona et al., 2022; Carter et al., 2024).

The data further show that stress extended beyond daily classroom management to include the emotional burden of learner regression and dependency. Teachers reported frustration and distress when progress stalled, particularly when therapy was discontinued at home, causing learners to "go back to zero." Managing childlike behaviors such as crying, running around, and frequent tantrums added to the physical and emotional exhaustion inherent in the role. Additionally, teachers described how stress affected their preparation, mood, and confidence, especially when working with new students whose behaviors were still unfamiliar.

Table 2. Identification of Special education teachers to various factors as primary sources of occupational stress.

Question	Teacher	Verbal Statement	Initial Codes	Emerging Theme
What factors do special education teachers identify as primary sources of occupational stress?	1	First is the behavior of the children. And then the many reports that are required from us."	Stress from student behavior and paperwork	Paper works, student behaviors, and uncooperative parents
	2	"Challenging students' behavior."	Stress from managing challenging behaviors	
	3	"Sometimes, the paperwork is overwhelming when there are too many requirements given to the teacher. And then student behavior."	Stress from paperwork and student behavior	
	4	"Because I am now the grade chairman of SPED. So all the memos or concerns are directed to me."	Stress from administrative responsibilities	
	5	"Mostly the behaviors of the children. That is really the number one cause of stress."	Stress primarily from student behaviors	
	6	"Mostly the parents who don't cooperate."	Stress from uncooperative parents	

	7	"Learner's behavior and parent interaction. They cry, throw tantrums, and sometimes hurt others."	Stress from learner behavior and parents	
	8	"In parent interaction, too, because it's hard to work together if the parent hasn't fully accepted their child's disability."	Stress from challenging parent interactions	
	9	"It's the students' behavior that has different behaviors."	Stress from diverse student behaviors	

Table 2 shows that special education teachers identified multiple factors as primary sources of occupational stress, with student behavior emerging as the most prominent. Teachers repeatedly emphasized challenges related to unpredictable, diverse, and sometimes aggressive behaviors, describing them as the "number one cause of stress." Statements such as "Challenging students' behavior" and "It's the students' behavior that has different behaviors" underscore how behavioral difficulties disrupt instruction and increase emotional strain. These findings parallel previous research showing that managing complex learner behaviors remains one of the most significant stressors for SPED teachers (Bettini et al., 2020; García-Carmona et al., 2022; Carter et al., 2024). Teachers also highlighted the emotional toll of dealing with students who cry, throw tantrums, or hurt others, further demonstrating how behavioral demands shape their day-to-day stress.

Beyond student behavior, teachers also identified administrative workload particularly excessive paperwork and leadership duties as major contributors to stress. Statements like "The paperwork is overwhelming when there are too many requirements" and "All the memos or concerns are directed to me" reflect the burden of documentation and administrative responsibilities that extend beyond instructional tasks. This aligns with studies noting that heavy paperwork and accountability pressures intensify burnout among special education teachers (Bettini, Jones, & Smith, 2020). Additionally, parent-related challenges were highlighted as significant stressors, especially when parents are uncooperative or struggle to accept their child's disability.

Table 3. Occupational stress affects special education teachers' perceived teaching performance and professional competence.

Question	Teacher	Verbal Statement	Initial Codes	Emerging Theme
How does occupational stress affect their perceived teaching performance and professional competence?	1	"If I cannot meet what they need or what should be taught to them."	Stress from unmet learner needs	Teaching Performance and Competence
	2	"Stress impacts my teaching confidence because it drains my energy."	Energy depletion reduces teaching confidence	
	3	"I cannot give my best in teaching because I also get weak."	Physical weakness limits teaching effectiveness	
	4	"My self-confidence decreases."	Decline in professional self-confidence	
	5	"When the same scenario happens every day in the classroom."	Stress from repetitive classroom scenarios	
	6	"When parents keep on reminding us teachers in our group chat."	Stress from constant parent reminders	
	7	"If the child keeps crying for several days."	Stress from prolonged student distress	
	8	"Because you cannot function or be productive if you allow stress to consume you."	Stress hinders productivity and functioning	

	9	"When I see a child not changing, when the behavior is still the same."	Stress from stagnant student behaviors	

Table 3 depicts that occupational stress significantly affects special education teachers perceived teaching performance and professional competence. Teachers reported feeling pressure when they were unable to meet the individual needs of their learners, as reflected in statements like "If I cannot meet what they need or what should be taught to them," highlighting stress from unmet learner needs. Closely related were declines in teaching confidence and professional self-assurance, evident in statements such as "Stress impacts my teaching confidence because it drains my energy" and "My self-confidence decreases." These responses suggest that stress undermines teachers' self-efficacy and instructional confidence, corroborating previous studies that link occupational stress to reduced teacher performance and diminished professional competence (Bettini et al., 2020; Greenier et al., 2021; García-Carmona et al., 2022; Carter et al., 2024).

Physical and emotional strain also emerged as key factors affecting teaching effectiveness. Teachers noted that exhaustion limited their ability to give their best, as seen in statements like "I cannot give my best in teaching because I also get weak," while repetitive classroom scenarios and prolonged student distress further heightened stress, illustrated by remarks such as "When the same scenario happens every day in the classroom" and "If the child keeps crying for several days." External pressures, including constant parent reminders, added to their burden, reducing productivity and overall functioning. Stress from stagnant student behaviors when learners failed to show progress over time also contributed to emotional fatigue. Collectively, these experiences underscore that occupational stress compromises SPED teachers' energy, resilience, confidence, and instructional effectiveness, highlighting the need for targeted support, coping strategies, and professional development to maintain teacher well-being and competence.

Table 4. Special education teachers use various coping strategies to manage occupational stress.

Question	Teacher	Verbal Statement	Initial Codes	Emerging Theme
What coping strategies do special education teachers use to manage occupational stress?	1	"I just sleep, or I use my cellphone to watch videos, and of course, praying."	Coping through rest, leisure, and prayer	Self-Care Leisure Family
	2	"Prioritize self-care."	Coping by prioritizing personal self-care	
	3	"I do many things—I chat	Coping through socializing and distractions	

		with others, use my cellphone."		
	4	"I go out with my children—we eat out—or I go out with my friends so I can unwind a bit."	Coping through social outings and relaxation	
	5	"I practice leaving problems at home in the house, and stress from work at school."	Separating work stress from personal life	
	6	"Going out, eating out, having "me time", bonding with friends. Chitchatting."	Coping through leisure and social bonding	
	7	"Sometimes I just watch something so my attention is diverted. Sometimes I run."	Coping through distraction and physical activity	
	8	"When I make customized cakes, it removes stress and tiredness."	Coping through creative activities	
	9	"Sometimes, I want to be alone. But other there times, I talk with my co-teachers."	Coping through balance of solitude and socializing	

Table 4 illustrates that special education teachers employ a variety of coping strategies to manage occupational stress, emphasizing both personal and social approaches. Teachers frequently highlighted self-care, rest, leisure, and spiritual activities as essential methods for recharging and maintaining well-being. Statements such as "I just sleep, or I use my cellphone to watch videos, and of course, praying" and "Prioritize self-care" illustrate how personal time and restorative

practices help alleviate stress. Social interactions and relaxation also played a key role, as teachers described unwinding through conversations with friends or family, eating out, and spending quality time with loved ones. These strategies reflect the importance of connecting with others and engaging in enjoyable activities to relieve stress, supporting previous research on teacher resilience and stress management (Collie, 2021; Fathi, Greenier, & Derakhshan, 2021).

Overall, these findings reveal that SPED teachers adaptively combine multiple coping strategies personal, social, creative, and boundary-setting to sustain their resilience, emotional well-being, and professional effectiveness in high-stress teaching environments (Aldrup, Klusmann, & Lüdtke, 2022; Riley & Gallant, 2022; Yin & Zheng, 2023; Villanueva & Santos, 2025).

Table 5. Support Systems and Interventions for Reducing Stress and Enhancing Well-being in SPED Teaching

Question	Teacher	Verbal Statement	Initial Codes	Emerging Theme
What support systems or interventions do special education teachers believe would help reduce stress and enhance their professional well-being?	1	"My friends and co-teachers, they help me relieve stress."	Peer support alleviates occupational stress	Support from family, peers and school heads
	2	"School leaders acknowledge the unique efforts and achievements of SPED teachers."	Recognition from school leaders enhances well-being	
	3	"There are people who help support our well-being, like fellow teachers."	Colleagues provide support for well-being	
	4	"Family, number one. And then my co-workers here, my co-teachers, they help especially when I ask them."	Family and colleagues provide primary support	
	5	"Yes, my friends, my colleagues here."	Friends and colleagues offer emotional support	
	6	"The ones that understand you, too."	Support from understanding peers	

	7	"For school leaders, they are at the top, so even if teachers want to do something, if it's not approved, nothing happens."	School leadership influences teacher support effectiveness	
	8	"Support from colleagues and school leaders."	Colleagues and leaders provide professional support	
	9	"my co-teachers. We understand each other, and whatever happens here at school, they are always there."	Mutual support among co-teachers	

Table 5 emphasizes that the special education teachers highlight the importance of various support systems and interventions in reducing occupational stress and enhancing professional well-being. Peer support emerged as a key factor, with teachers consistently emphasizing that colleagues and co-teachers help relieve stress, provide emotional support, and foster mutual understanding, as reflected in statements such as "My friends and co-teachers, they help me relieve stress" and "my co-teachers. Recognition and support from school leaders also play a crucial role in enhancing teacher well-being; teachers noted that acknowledgment of their efforts and advocacy for SPED programs increases morale, though bureaucratic limitations sometimes hinder effectiveness, as in "For school leaders, they are at the top, so even if teachers want to do something, if it's not approved, nothing happens." Overall, these findings demonstrate that social, familial, and administrative support systems are crucial in helping special education teachers cope with stress, maintain resilience, and sustain their professional competence, consistent with qualitative research that emphasizes the role of collaborative networks and institutional support in teacher well-being.

Proposed Intervention Plan: Stress Management Strategies for Special Education Teachers

Rationale

Special Education (SPED) teachers face unique occupational stressors, including a heavy workload, emotional demands, classroom management of learners with diverse needs, a lack of resources, and high expectations from stakeholders. These stressors often lead to burnout, decreased job satisfaction, and a decline in teaching effectiveness. To support teacher well-being and ensure quality education for learners with special needs, a structured stress management intervention program is proposed.

Goals and Objectives

General Goal:

To reduce occupational stress and promote resilience, emotional well-being, and professional growth among SPED teachers.

Specific Objectives:

1. Identify everyday stressors experienced by SPED teachers;
2. Equip teachers with practical stress management techniques;
3. Strengthen teachers' coping mechanisms and emotional resilience;
4. Promote peer support and collaborative practices; and
5. Enhance overall well-being and teaching performance.

Components of the Intervention Program

1. Awareness and Psychoeducation

- Stress awareness seminars/workshops.
- Discussions on the nature, sources, and effects of occupational stress
- Understanding stress symptoms (physical, emotional, cognitive, behavioral)

2. Skills Training on Stress Reduction Techniques

- Mindfulness & Relaxation Exercises (deep breathing, meditation, progressive muscle relaxation).
- Time Management & Workload Prioritization Strategies
- Cognitive-Behavioral Approaches to reframing negative thoughts
- Self-care practices (healthy routines, hobbies, exercise)

3. Peer Support and Mentoring

- Formation of Peer Support Circles for sharing experiences and coping strategies
- Mentorship program pairing novice and experienced SPED teachers.
- Group reflection activities

4. Professional Development and Empowerment

- Training on classroom management for diverse learners
- Workshops on adapted teaching strategies to reduce workload stress
- Sessions on work-life balance and boundary-setting

5. Administrative and Institutional Support

- Regular mental health check-ins by school guidance counselors/psychologists
- Advocacy for reduced paperwork and reasonable workload distribution
- Provision of teacher wellness spaces (quiet rooms, relaxation corners)

6. Monitoring and Evaluation

- Pre- and post-program stress assessment (using teacher stress scale or self-report tools)
- Feedback sessions from participants
- Continuous refinement of strategies based on teacher input

Implementation Plan

Phase	Activities	Duration	Responsible Persons
1. Preparation	Needs assessment survey, orientation, and resource preparation	2 weeks	Researcher, School Admin
2. Program Launch	Stress awareness seminar	1 day	Researcher, Psychologist
3. Skills Training	Workshops on stress management techniques	4 sessions (weekly)	Experts, SPED Teachers
4. Peer Support	Establishment of peer circles & mentoring	Ongoing	Teachers, Coordinators
5. Professional Development	Training sessions on classroom management & work-life balance	2 sessions	SPED Experts
6. Evaluation	Post-assessment, feedback, and recommendations	1 week	Researcher, Participants

Expected Outcomes

- Reduced stress levels among SPED teachers.
- Improved coping strategies and emotional resilience.
- Stronger sense of peer and institutional support.
- Enhanced teacher satisfaction and effectiveness.
- Sustainable culture of wellness and care in the workplace.

The proposed intervention framework is grounded on the understanding that occupational stress among Special Education (SPED) teachers arises from multiple factors- emotional demands, workload pressures, resource limitations, and classroom challenges unique to diverse learners. To address these stressors comprehensively, the framework integrates individual, peer, and institutional levels of support, ensuring that stress management is approached holistically:

1. Individual Level (Personal Coping and Resilience)

At the core of the framework are strategies that focus on strengthening individual teachers' ability to cope with stress. This includes mindfulness, relaxation techniques, time management, and self-care practices. By equipping teachers with these skills, they gain immediate tools to alleviate stress symptoms and develop long-term strategies to enhance their resilience. This component is based on the principle that stress management begins with self-awareness and personal coping mechanisms.

2. Peer Level (Collaboration and Support Systems)

The framework recognizes that SPED teachers often feel isolated due to the specialized nature of their work. Thus, peer support circles and mentoring programs are established to provide emotional and professional support. These groups allow teachers to share experiences, exchange coping strategies, and build a sense of community. This collaborative environment promotes psychological safety, reduces feelings of burnout, and enhances teachers' sense of belonging.

3. Institutional Level (Administrative and Systemic Support)

Teachers' stress is not solely an individual burden; it is also shaped by organizational factors such as workload distribution, resource availability, and administrative expectations. To address these, the framework includes administrative initiatives such as wellness spaces, mental health check-ins, and advocacy for reduced paperwork. These measures ensure that institutional structures actively contribute to teacher well-being, rather than adding to stress.

4. Professional Development and Empowerment

Another essential element of the framework is empowering teachers with skills in classroom management, adaptive instructional strategies, and work-life balance. By enhancing their professional competence, teachers are better equipped to manage classroom challenges effectively, thereby reducing the stress associated with professional demands. This also boosts self-efficacy, which is closely associated with lower occupational stress levels.

5. Monitoring and Evaluation

Sustainability of the intervention is ensured through continuous monitoring and evaluation. Pre- and post-assessments of stress levels, along with feedback sessions, provide measurable data to refine the program. This cycle ensures the program remains relevant, effective, and responsive to the evolving needs of SPED teachers.

The intervention framework is holistic, multi-level, and sustainable. It empowers teachers personally, fosters collaborative peer networks, and strengthens institutional support systems. Through this layered approach, the program not only aims to reduce stress temporarily but also to build long-term resilience, well-being, and professional growth among SPED teachers.

Conclusion

Drawing on the study's results, several conclusions were formulated to address the research objectives. These conclusions reflect the lived experiences, coping mechanisms, and professional needs of SPED teachers in the Division of Cauayan City. Specifically, the study concludes that:

1. The findings revealed that special education teachers experience both manageable and overwhelming stress in their teaching practice. While some stress is tolerable, significant challenges arise from unpredictable student behaviors, varied teaching demands, lack of skills in behavior management, and unfamiliarity with learners' attitudes and needs.

2. Occupational stress significantly affects special education teachers' teaching performance and professional competence, leading to fatigue, disrupted instruction, and mental strain, though some demonstrate resilience by finding motivation despite challenges.

3. Occupational stress significantly affects SPED teachers' teaching effectiveness and professional competence, leading to reduced confidence, physical fatigue, and self-doubt, though teachers demonstrate resilience through adaptive strategies to maintain their well-being and instructional performance;

4. Special education teachers cope with occupational stress primarily through support from peers, family, and school leaders, which helps them maintain emotional resilience and sustain teaching effectiveness; and

5. Special education teachers experience occupational stress from multiple sources, including unpredictable student behaviors, diverse teaching demands, and unfamiliar learners, which affect their emotional well-being, teaching performance, and professional competence.

Recommendations

Based on the findings of this study, the following recommendations are proposed to support SPED teachers in managing occupational stress and promoting their well-being, professional effectiveness, and commitment:

1. It is recommended that schools and education authorities provide continuous professional development on behavior management and inclusive practices, while also ensuring adequate institutional support such as manageable workloads, sufficient resources, and sustained therapy programs for learners to prevent regression;

2. It is recommended that schools provide structured support systems, including stress management programs, professional development on behavior management, and reduced workload strategies, to help special education teachers effectively cope with occupational stress while sustaining their teaching performance and competence;

3. It is recommended that schools provide targeted professional development, stress management programs, workload support, and mentorship to help SPED teachers cope with occupational stress while sustaining their teaching effectiveness and professional competence;

4. It is recommended that schools foster collaborative work environments, encourage peer mentoring, and promote family engagement to strengthen support systems that help SPED teachers manage stress and maintain professional competence;

5. It is recommended that schools provide targeted professional development, behavioral management training, and structured support systems, including mentoring and peer collaboration, to help SPED teachers manage stress effectively and enhance their teaching effectiveness; and

6. Based on the findings of the study, it is strongly recommended that schools adopt the proposed Stress Management Strategies for Special Education Teachers to reduce occupational stress, enhance resilience, and promote teacher well-being. Implementing these strategies with continuous monitoring will foster a supportive environment, improve teaching performance, and sustain professional growth.

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learner-centered interventions are effective in closing numeracy gaps and improving measurement competencies among ALS students.

5.4 Geometry

Descriptive

	N	Mean	Median	SD	SE
Pre-Test Geometry	65	2.34	2	1.278	0.1585
Post- Test Geometry	65	2.32	2	0.773	0.0958

Paired Samples T-Test

			statistic	df	P	Mean difference	SE difference
Pre-Test Geometry	Post- Test Geometry	Student's t	0.127	64.0	0.899	0.0154	0.121

The results indicate no significant improvement in ALS students' geometry scores, with pre-test and post-test means nearly unchanged (2.34 vs. 2.32) and a paired samples t-test showing no statistical significance ($t(64) = 0.127$, $p = 0.899$). This suggests the intervention did not impact geometry performance, highlighting that abstract mathematical concepts like geometry require specialized, multimodal, and learner-centered instructional strategies—such as visual, tactile, or technology-enhanced methods—to effectively develop spatial reasoning and conceptual understanding in ALS learners.

5.5 Pattern and Algebra

Descriptive

	N	Mean	Median	SD	SE
Pre-Test Pattern and Algebra	65	2.98	3	1.386	0.1719
Post-Test Pattern and Algebra	65	4.22	4	0.800	0.0993

Paired Samples T-Test

			statistic	df	P	Mean difference	SE difference
Pre-Test Pattern and Algebra	Pre-Test Pattern and Algebra	Student's t	-10.7	64.0	<.001	-1.23	0.116

The results indicate a significant improvement in ALS students' Pattern and Algebra skills, with mean scores rising from 2.98 (SD = 1.386) in the pre-test to 4.22 (SD = 0.800) in the post-test. A paired samples t-test confirmed the difference was statistically significant ($t(64) = -10.7$, $p < .001$), demonstrating that the intervention effectively enhanced numeracy, particularly in algebraic reasoning and pattern recognition. These findings align with research showing that targeted, project-based, and contextualized math instruction boosts both mathematical proficiency and learner confidence, supporting the development of higher-order problem-solving skills.

5.6 Statistics and Probability

Descriptive

	N	Mean	Median	SD	SE
Pre-Test Statistics and Probability	65	2.69	3	1.41	0.175
Post-Test Statistics and Probability	65	2.63	2	1.13	0.140

Paired Samples T-Test

			statistic	df	P	Mean difference	SE difference
Pre-Test Statistics and Probability	Post-Test Statistics and Probability	Student's t	0.497	64.0	0.621	0.0615	0.124

The findings indicate no significant improvement in ALS learners' Statistics and Probability skills, with mean scores slightly decreasing from 2.69 (SD = 1.41) in the pre-test to 2.63 (SD = 1.13) in the post-test ($t(64) = 0.497$, $p = .621$). This negligible change suggests that the intervention had little effect in this area, consistent with research showing that numeracy gains are limited when instruction lacks intensity, explicit focus, or contextual relevance. The results highlight the need for sustained, structured, and context-sensitive approaches to effectively enhance Statistics and Probability skills among ALS learners.

5.7 Significant Difference of Numeracy Skills in Terms of Number and Number Sense, Number Operations, Measurement, Geometry, Pattern and Algebra, Statistics and Probability

NUMERACY SKILLS	*t-value*	*p-value*	Mean difference	Decision on H0	Interpretation
Number and Number Sense	-10.01	< .001	-0.969	*Reject*	*significant*
Number Operations	-4.73		-0.477	*Reject*	*significant*
Measurement	-9.05		-1.03	*Reject*	*significant*
Geometry	0.127	0.899	0.0154	*not reject*	*not significant*
Pattern and Algebra	-10.7	< .001	-1.23	*Reject*	*significant*
Statistics and Probability	0.497	0.621	0.0615	*not reject*	*not significant*

The analysis of 65 ALS students' numeracy skills showed significant gains in Number and Number Sense, Number Operations, Measurement, and Pattern and Algebra ($p < .001$), while Geometry and Statistics & Probability showed no meaningful improvement ($p = .899$ and .621). These results reflect patterns observed in prior research, where interventions more readily enhance number-related skills, but abstract areas like Geometry and Statistics & Probability require explicit, visual, and concept-focused instruction. Overall, the findings suggest that while the intervention strengthened foundational numeracy, future ALS programs should include targeted, domain-specific strategies to address persistent challenges in Geometry and Statistics & Probability.

Conclusions

ALS serves a diverse age group, mainly adults in their late twenties, with a gender imbalance and mixed employment status, highlighting the need for flexible, skill-focused programs. Learners generally have functional literacy, with older and employed learners performing more

independently. Targeted, age- and gender-sensitive instruction is needed to address gaps. ALS learners show a solid numeracy foundation, though younger learners require more support. Females generally perform better, and employment enhances numeracy, suggesting real-world tasks can improve skills. The intervention significantly improved speed, accuracy, vocabulary, and comprehension. Significant gains occurred in Number Sense, Number Operations, Measurement, and Pattern & Algebra, but not in Geometry or Statistics & Probability, indicating a need for targeted strategies in these areas. The intervention effectively improved most literacy and numeracy skills, but Geometry and Statistics & Probability require additional focus. Future ALS programs should use flexible, learner-centered, and context-based strategies to address specific gaps and support diverse learners.

Recommendations

1. For ALS Students: Attend regularly, practice literacy and numeracy outside class, apply skills in real life, and collaborate with peers.
2. For ALS Teachers: Differentiate lessons, provide extra support for younger/non-working learners, use practical and hands-on approaches, and focus on Geometry and Statistics/Probability.
3. For Parents/Guardians: Ensure attendance, provide study support at home, and celebrate learners' achievements.
4. For Administrators/Policymakers: Improve curriculum for weak areas, train teachers in differentiated instruction, provide flexible schedules and adequate resources, and create real-world learning opportunities.
5. For Future Researchers: Study long-term skill retention, explore factors influencing progress, replicate with larger samples, and test innovative teaching strategies.

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