

Facilitating Successful Inclusive Education Practices Through Pedagogy, Research, and Technology

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Abstract

The philosophical basis of Inclusive Education maintains that all children, regardless of their physical, mental, emotional, psychological, cognitive, ethnic, or socioeconomic disposition, should receive access to education in the Least Restrictive Environment (LRE) alongside their non-disabled peers. Current research revealed that education stakeholders are often challenged with successfully implementing Inclusion due to instructional, systematic, and attitudinal barriers. Addressing such barriers is critical to the enhancement of the quality of education provided and educators' efficacy. Current studies identified the utilization of best pedagogical practices, application of research, and the integration of technology as successful approaches to ensuring the success of inclusive education in schools. The purpose of this multi-method qualitative study was to identify the apparent barriers to Inclusive Education in Bahamian public schools and recommend approaches to facilitating successful inclusive education practices. This was achieved by exploring the contributing factors which discourage educators from supporting inclusion. Participants included fifty public educators (n = 5 special educators, n = 5 reading specialists, n = 20 primary and n = 20 high school educators) from a major city. Convenience sampling was employed. Participants engaged in semi-structured interviews and were surveyed using the Teachers' Perceptions of Inclusion Survey. Data were analyzed via open coding. Field theory was used as a lens through which to understand how educators' decisions and behaviours, in addition to student achievement, are determined by the strength of conflicting 'field forces' in their organizations. Key findings revealed that (a) inadequate specialized training, (b) insufficient resources, (c) inappropriate curriculum and assessment practices, (d) lack of support, and (e) teachers' attitudes posed significant hindrance to the possibility of a successful inclusive education program. The government of The Bahamas must prioritize the nation's budget to accommodate the infrastructure, human and technological resources, training, and initiatives required to not only promote societal awareness of inclusive education's significance, but to enhance the efficacy of the practice in public schools. Education policy makers must consider the challenges of all stakeholders in light of current research so that

decisions are made from an informed perspective.

Keywords: Inclusive Education, systematic barriers, instructional barriers, attitudinal barriers, field forces

1. Introduction

The global achievement gap continues to widen, with students requiring special education services often facing significant challenges in attaining academic success. This trend is primarily attributed to insufficient and ineffective pedagogical strategies, approaches, and accommodations [1], [16], [58]. Research underscores the efficacy of inclusive education practices as a framework for delivering high-quality special education, particularly within mainstream classroom settings. Grounded in the principle of equity, the philosophy of inclusive education posits that all students, irrespective of their physical, cognitive, emotional, psychological, ethnic, or socioeconomic characteristics, should access education within the Least Restrictive Environment (LRE) alongside their non-disabled peers [12]. Despite widespread global advocacy, the practical implementation of inclusive education remains fraught with challenges: Instructional barriers pertain to deficits in curriculum adaptation, teaching methodologies, professional development, and teacher preparedness [40], and systemic barriers encompass structural and policy-related impediments, such as insufficient infrastructure and resources, teacher shortages, overcrowded classrooms, unclear legislative frameworks, inconsistent policy execution, and funding limitations. Negative attitudes towards inclusive education have been found to undermine implementation efforts. Researchers suggested that such attitudes often originate from misconceptions about the principles of inclusion [50], [53].

In alignment with the Salamanca Statement [58], The Bahamas is obligated to provide equitable educational opportunities for all children, including those with special needs, by integrating them into regular (mainstream) classrooms [35], [36]. Despite this commitment, inclusive education remains largely unimplemented in Bahamian public schools. While no child is denied access to education, the absence of an explicit policy mandating inclusive

practices has hindered formal implementation. This gap has resulted in classrooms composed of students with a range of disabilities, including emotional, physical, mental, and learning challenges, many of whom fail to meet grade-level standards due to insufficient interventions tailored to their specific needs [29].

Based upon this evidence, the purpose of this study was to explore Bahamian public school teachers' perceptions of potential barriers threatening the successful implementation and execution of inclusive education, should the practice be formally introduced by the Ministry of Education and Technical and Vocational Training (MOETVT). It is anticipated that findings from this study would be useful in mitigating negative attitudes of stakeholders regarding inclusion. Further, this study aimed to provide a foundational platform for education policy makers through the exploration of different strategies for supporting teachers in inclusive classrooms, while addressing the lack of research on inclusive education in The Bahamas. This study was guided by the following research questions (a) To what extent is the possible implementation of inclusive education negatively affected in Bahamian public schools, and (b) How does the application and utilization of pedagogy, research, and technology facilitate successful implementation and management of inclusive education programs in schools?

This study is significant as it fills a gap in the literature on interventions for facilitating successful inclusive education programs. Additionally, it contributes to the limited research on public education in The Bahamas. The findings will impact the teaching profession in The Bahamas by enabling policymakers to make more informed decisions about inclusive education implementation, practice, and legislature, teaching retention initiatives, ongoing funded professional development for teachers, and pre-service teacher education programs.

2. Literature Review

2.1. Theoretical framework

The effectiveness of inclusive education practices is contingent upon the cohesive functioning of all essential factors within the educational system. To this end, this study integrated Lewin's [26] field theory to examine the 'forces' within educational environments that influence the adoption and success of inclusive practices, providing a lens to analyze the dynamic interactions between interventions, organizational structures, and educational outcomes.

One of the most significant challenges faced by stakeholders within many institutions of education across the globe involves issues related to teacher

instruction, student learning processes, and the delivery and execution of lessons designed to facilitate children's ability to construct meaning and advance academically while navigating their individual deficiencies [5], [46]. Such challenges are found to be even more extensive in special education classrooms where the primary source of knowledge (the classroom teacher) lacks the level of competence required to maximize special needs students' learning outcomes within mainstream classrooms [12], [34]. This highlights the need for research and practice to be utilized and applied in a cohesive manner. Instructional barriers to successful inclusion are comprised of multi-faceted and often complicated issues that are not readily or facily resolved or improved due to disintegration of key structures such as funding, human resources, and special education policies [35], [37].

Instructional challenges often leave teachers, paraprofessionals, and administrators alike, frustrated, disgruntled, and burnt out to the point of nonchalance toward the education profession and by extension special education [38], [52]. Research revealed several contributing factors to the demise of inclusive education in schools: Rigid curricula [13], [36], [51], ineffective assessment practices and requirements [11], [40], ineffective use of inclusive teaching strategies [41], [11], lack of training in inclusive education instruction [34], [53], and lack of support through mentorship [29], [44], [21], [57].

2.2. Systemic barriers to inclusion

Systemic challenges include structural issues such as discriminatory policies, implicit biases, and inequitable resource allocation reinforce exclusionary practices across various domains, including education, workplaces, and healthcare systems [7], [39]. Institutional practices that overlook the significance of cultural competence and diversity training exacerbate feelings of alienation and reduce the efficacy of inclusion initiatives [40]. Addressing these entrenched obstacles is thus essential to fostering inclusive practices that advance diversity and inclusion objectives. Structural obstacles include inadequate infrastructure, as observed by Brown [7], who highlighted the lack of accessible facilities for students with disabilities in many schools; and Singh, Kumar, and Singh [51], who noted that rural schools often lack basic utilities such as electricity and running water, further limiting inclusion efforts. Insufficient resources were emphasized by Anderson [4], who pointed to the scarcity of teaching aids, and adaptive technologies in low-income regions. Teacher shortages, another type of systemic challenge, were reported by Davis [14], who found a correlation between limited training programs and high attrition rates among educators. Patel [42] underscored how uncompetitive

salaries deterred qualified teachers from entering the profession. Singh, Kumar, and Singh [51] critiqued the issue of overcrowded classrooms, highlighting their impact on teacher effectiveness and student engagement.

Oh-Young and Filler [33] noted that the absence of clear legislative mandates leaves schools uncertain about their responsibilities. In a similar study, Slee [52] highlighted inconsistencies in laws between national and local levels, which created confusion in education policy enforcement. Funding constraints, as discussed by DeMatthews, Edwards, and Nelson [15], are a persistent issue, as this leaves underfunded education systems unable to meet the needs of diverse learners. Patel [42] findings revealed that financial limitations often forced schools to prioritize core programs over inclusive initiatives. A rigid curriculum poses significant challenges, as Brown [7] argued that inflexible educational models failed to accommodate diverse learning needs. Their findings echoed those of Chitiyo, Kumedzro, Hughes, & Ahmed [11], who emphasized the importance of integrating culturally responsive teaching practices to foster inclusion.

2.3. Attitudinal barriers to inclusion

Researchers argued that although not found to be the most significant challenge, negative attitudes of teachers, administrators, parents, and by extension the community, do adversely impact the process of teaching and learning [14, 33]. Current research revealed that the most significant contributor of negative attitudes of teachers toward inclusion was due to a lack of training (and certification) in special education or inclusive education practices. Researchers argued that many generalist teachers do not usually express a profound interest in teaching children with special education needs [30, 31], hence a negative disposition toward the practice in inclusive education. Researchers posited that the lack of specialized training in special education or inclusive education is the most significant deterrent to teachers' willingness to support inclusion, with wages being an insignificant contributor of educators' negative attitudes.

The research examined revealed a relatively small amount of data that spoke to peer attitudes (those with or without a disability). Studies indicated the critical role students' attitudes play in the success of inclusion [1, 18]. This aspect of inclusion warrants more extensive exploration, as much of the existing research focuses primarily upon systems of education and less upon the actual recipients of this specialized instruction.

2.4. The role of research, pedagogy, and technology in facilitating inclusion

To optimize student achievement and enhance the effectiveness of educators and administrators, it is imperative that strategic planning is informed by evidence-based practices within the realms of special and inclusive education. Scholars have posited that the integration of pedagogical strategies, empirical research, and technological advancements collectively offers a comprehensive framework for facilitating successful inclusion, thereby promoting favorable educational outcomes for all students [16], [43], [56]. Researchers proposed that students with special education needs exhibit considerable academic and social success in inclusive settings characterized by developmentally appropriate instructional practices [17], [30], [54], [51], [53]. These investigations underscore the importance of differentiated instruction, Universal Design for Learning (UDL), collaborative planning and teaching, and the implementation of support networks and programs for both students and educators. With the advent of technological advancements, particularly in educational software and assistive devices [19], [41], [31], [22], students with special educational needs are increasingly effectively accommodated within mainstream classrooms. These innovations facilitate an immersive, tactile learning experience, supported by the utilization of speech-to-text software [22], diverse communication devices [6], [34], [30], and adaptive learning platforms. Such tools enhance the educational engagement and participation of these students, thereby promoting an inclusive pedagogical framework.

2.5. Gaps in the literature

For decades, special education researchers suggested that achievement among students with special education needs increased when they were immersed in an inclusive learning environment. Unfortunately, this position is weakly supported due to a sparse amount of empirical evidence. Another gap in the research is the limited data on the experiences and learning outcomes of students with more severe disabilities, apart from what is commonly seen. Extensive research is needed to explain precisely how negative teacher perceptions of inclusion impact classroom practices. Finally, existing research lacks a comprehensive review of the perspectives of students with disabilities, in relation to their learning experiences in inclusive classrooms.

3. Methodology

This study explored public school educators' perceptions of the role of pedagogy, research, and technology in implementing inclusive education within The Bahamas. A multi-method qualitative approach was employed, integrating semi-structured interviews, a focus group interview, and a researcher-designed survey featuring a 5-point Likert scale. The sample comprised fifty educators ($n = 50$) from primary and secondary public schools in the capital, all with a minimum of five years of teaching experience. Data were analyzed using open coding and NVivo 9 software for organization. Given the diverse learning environment in Bahamian public schools, this research aims to provide valuable insights into educators' perspectives on fostering inclusive practices.

3.1. Participants

Study participants included fifty public school educators ($n = 50$) comprised of special educators ($n = 5$), reading specialists ($n = 5$), primary school teachers ($n = 20$), and high school teachers ($n = 20$) from a major city within The Bahamas (see Table 1 below for participants' demographic profile). The inclusion criteria for the participants were that all participants taught for a minimum of 5 years in The Bahamas' public education system and were posted at a school located within the capital city. This study's sample of 50 participants was suitable, as researchers recommend a minimum sample size of five participants for a qualitative study [12].

Table 1. Demographics of Study Participants

Professional Title	Total Participants	Area(s) of Professional Training	Number of Years Teaching
Reading Specialist (Primary School)	10% ($N = 5$)	Primary education only: 5	5 – 10 years: 8 11 – 15 years: 15 16 – 20 years: 17 >20 years: 10
Special Educator (Primary School)	10% ($N = 5$)	Special education only: 3 Special education and intervention: 1 Special education and social work: 1	
Primary School Educator	40% ($N = 20$)	Primary education only: 20	
High School Educator	40% ($N = 20$)	Secondary education only: 20	

3.2. Study design

This study employed a multi-method qualitative approach [12] to align with its research objectives. Diverse data sources were integrated, including semi-structured interviews, a focus group interview, and a survey which included a 5-point Likert scale to assess participants' perceptions regarding the role of pedagogy, research, and technology in effectively implementing inclusion (The Teachers' Perceptions of Inclusion Survey). This survey was designed by the researcher of this study.

Smith [54] elucidated the advantages of utilizing focus groups for an in-depth exploration of qualitative data, particularly concerning participants' thoughts, feelings, experiences, attitudes, and perceptions relating to a specific phenomenon. Smith [54] also highlighted the merits of incorporating a Likert scale in qualitative research, arguing that it (a) offers a structured format for participants to express nuanced opinions without overwhelming them with excessive options, thereby enhancing the quality of responses, and (b) facilitates the analysis process by categorizing responses into meaningful groups while still capturing variability in attitudes or perceptions [12].

3.3. Study setting

This study took place in The Commonwealth of The Bahamas, an extensive archipelago exceeding 700 islands and cays situated in the Atlantic Ocean. The Bahamian educational system comprises roughly 170 public schools and 55 private institutions. Although Inclusive Education has not been formally adopted within the system, public-school classrooms embody a diverse learning environment, accommodating students with special learning needs, academic challenges, and varied ethnic backgrounds, many of whom are classified as English Language Learners (ELLs).

3.4. Data collection and analysis

A sample of public-school educators ($n = 50$) was selected based on established inclusion criteria, employing convenience sampling as the methodological approach. This technique was deemed appropriate due to its feasibility and the ease of access to participants [12]. Each participant was provided with an informed consent document. Data collection was conducted through individual semi-structured interviews, a 5-point Likert scale survey, and a focus group interview. The semi-structured interviews featured open-ended questions. Individual interviews had a duration of 30 minutes, and the focus group interview lasted for one hour.

To ensure the reliability of the data, member checking was performed after the transcription was completed. The focus group comprised all 50 participants. A tailored interview script was employed to foster more profound insights into participants' responses [12]. The survey was designed to gauge participants' perceptions of the roles of pedagogy, research, and technology in promoting inclusion, ranging from "strongly disagree" to "strongly agree." All interviews were audio-recorded and subsequently transcribed. Data was analyzed via open coding Strauss and Corbin [55]. NVivo 9 software was utilized for data storage and organization.

4. Findings

The purpose of this study was to explore the barriers to successful inclusive education and to provide recommendations for effectively facilitating this practice by utilizing research, technology, and best pedagogical practices. The major themes that emerged from this research (see Table 2), with reference to research question 1 (To what extent is the possible implementation of inclusive education negatively affected in Bahamian public schools?) were (a) inadequate specialized training, (b) insufficient resources, (c) overcrowded classrooms, and (d) teachers' negative attitudes towards inclusive education. Participants identified stress and frustration (due to heavy work loads, large class sizes, low teacher efficacy, and poor student learning outcomes) as major contributors to teachers' negative attitudes towards inclusion. These findings are consistent with the literature which highlighted a correlation between teachers' poor working environments and ineffective delivery of instruction [17], [36], [37].

Table 2. Major Themes Derived from Interviews

Themes (Barriers to Successful Inclusion)		
Question 1: To what extent is the implementation of inclusive education negatively affected in Bahamian public schools?	Number of Participants	Percentage (%)
1 Lack of trained paraprofessionals (e.g., speech therapists, reading specialists, etc...)	50	100%
2 Insufficient funding (for teacher training, resources, teacher salaries)	50	100%
3 Inadequate use of Inclusive Teaching Strategies	35	70%
4 Inadequate curriculum	45	90%
5 Negative attitudes towards disabilities (community)	47	94%
6 Limited resources (e.g., assistive technology)	49	98%
7 Lack of policy support	5	10%
8 Poor teacher-student ratios	50	100%
9 Limited parental involvement	43	86%
10 Inadequate teacher training (in-service training)	50	100%
11 Language barriers (ESL Learners)	43	86%
12 Insufficient teacher's aides	27	54%
13 Unclear plan for implementing inclusive education in Bahamian public schools	15	30%
14 Teacher Shortages	35	70%
15 Classroom Management Challenges	33	66%
16 Poor infrastructure	36	72%
17 Absence of Effective Teacher Mentorship Programs	10	20%
18 Teacher burnout	42	84%
19 Lack of Administrative Support (from school administrators)	26	52%
20 Inadequate support services	10	20%
21 Negative Parental Attitudes	13	26%
22 Lack of knowledge about what is Inclusive Education	40	80%
23 Inadequate Infrastructure	48	96%
24 Inconsistent or unclear implementation of inclusive policies	5	10%
25 Poor collaboration between schools and communities	6	12%
26 Lack of teacher collaboration planning time	25	50%
27 Insufficient Pre-Service Teacher Training in Inclusive Special Education	50	100%
28 Insufficient community awareness	15	30%
29 Lack of peer support programs	20	40%
30 Limited access to specialized instructional materials	36	72%
31 Poor communication relationship between educators and parents	15	30%
32 Lack of student voice in education	2	4%
33 Negative Perceptions About Inclusive Education (teachers)	5	10%
34 Poor school leadership	27	54%
35 Limited professional development opportunities in Special/Inclusive Education	50	100%
36 Negative Teacher Attitudes Towards Inclusive Education	41	82%
37 High-stakes testing (all students are assessed in the same way)	46	92%

Contrary to the literature which cited research as an effective approach in facilitating successful inclusive education programs [2], [45], [48], study participants did not perceive such an approach as being significantly useful. This perception was due in part to the limited research on inclusive education practices in countries of similar demographics as The Bahamas.

Participants of this study expressed uncertainty about the practice of inclusion, attributing this feeling to a lack of knowledge (about the practice) and pedagogical skill, as similarly cited in studies on

teachers' perceptions of inclusive education [18], [36], [64]. Although the special educators and reading specialists (of this study) conveyed a clear understanding about the practice of inclusive education, they also agreed that teachers needed to be informed more about what the practice entails before expecting full support from them. Knowledge about inclusion was not found to be a common barrier cited within the existing review of literature on inclusion. Findings revealed that 80% of the participants did not know (much) about strategies and interventions for successful inclusion, with 80% expressed having a lack of knowledge about what inclusive education is.

Seventy-five (75%) of this study's participants indicated that they would be more inclined to support inclusion if the necessary infrastructure, resources (technical and human), and teacher support systems were in place. Twenty-five percent (25%) of the participants argued that "even with the required resources, inclusion would only be as successful as the mindset of the stakeholders." Contrary to current research, participants identified the following as less influential factors prompting teachers' aversion to inclusive education (a) educators' salaries, (b) negative attitudes toward disabilities, and (c) limited parental support.

Focus group participants agreed that pedagogy and technology would be crucial in maximizing student and teacher success in an inclusive classroom. While participants agreed that research in inclusive education best practices is vital, they expressed concern about the lack of research on effective inclusive practices in countries with similar demographics as The Bahamas. Undisputedly, participants reported the need for state-of-the-art technology in schools practicing inclusion.

Findings revealed that 50% of this study's participants identified 'planning time' as an essential component of inclusive classroom practices. While the issue of planning and time constraints did not emerge as common themes in the review of literature, study participants posited that without the necessary support systems, teachers would become burned out and consequently develop a more negative attitude toward the idea of inclusion. Participants (45%) emphasized the difficulty of balancing inclusive practices with curricular demands. Several participants suggested that systemic changes, such as reduced class sizes or additional planning time, were necessary to alleviate these pressures and allow for more meaningful inclusion.

In contrast to the literature presented on inclusive education best practices, however, findings from this study did not show collaborative teaching models to be effective strategies for the successful implementation of inclusion. In fact, only 4% of study participants supported collaborative teaching

methods. This low percentage was due to the negative past working experiences of teachers.

4.1. Lack of specialized training and professional development

A significant number of participants ($n = 40$; 80%) reported that a huge part of the problem faced in the implementation of inclusive education practices is that “many teachers do not truly understand what inclusive education is or what it entails.” The inadequacy of professional development opportunities was cited by 82% of participants as a barrier to effective inclusion. Many described their professional development experiences as superficial or lacking practical application. All participants ($n = 50$) reported limited professional development opportunities in special/inclusive education as a barrier to successful inclusion, with 86% ($n = 43$) of participants reporting that a lack of specialized training results in teachers’ lack of confidence in handling diverse student needs.

4.2. Inappropriate curriculum design and assessment practices

In response to ‘inadequate curriculum,’ 90% ($n = 45$) of study participants cited this as a barrier to successful inclusion. Ineffective assessment practices were highlighted by 96% of participants as a significant challenge to inclusion. Standardized testing was particularly criticized for failing to capture the strengths and progress of students in inclusive settings. With reference to existing subject curricula, 90% of the study participants described them as being inappropriate for diverse classroom needs. Many described their curriculum as ‘too heavy’ and poorly aligned with the proposed goals of inclusive education. One participant remarked: *If MOE [Ministry of Education] is serious about pushing inclusive education in public schools, current assessment practices must be changed. Why are non-readers given the same end-of-term exam or monthly district test as the student reading on or above grade level? This is unfair to the students.*

4.3. Attitudes toward inclusion

This study revealed several critical themes contributing to teachers’ negative attitudes toward inclusive education. A substantial majority of participants (94%) identified a lack of training in inclusive education practices as a significant challenge, highlighting a critical need for professional development programs aimed at equipping educators with the necessary skills and strategies to support diverse learners. Classroom

overcrowding emerged as a unanimous concern, with 100% of respondents pointing to this issue. This challenge, however, was not one of the most significant factors reported in the review of literature. Perhaps the reason for this is that many schools globally are equipped with teacher’s aides, and their class sizes are not as large as those in Bahamian public schools, therefore not warranting high concern among study participants internationally.

The perceived increase in workload was another universally acknowledged issue, reported by all participants (100%). Correspondingly, 86% of participants expressed a lack of confidence in handling the needs of diverse learners, emphasizing the importance of capacity-building measures to enhance educators’ competence and self-efficacy in inclusive settings. In contrast to these widespread challenges, fewer participants identified issues related to educators’ salary (10%) or limited parental support (10%). These findings suggest that while these factors may influence the broader educational context, they are less pressing concerns compared to systemic and classroom-related challenges. Negative attitudes toward disabilities were reported by only 4% of participants, indicating that while such biases exist, they may not be pervasive within this cohort.

4.4. Insufficient resources

The lack of resources significantly hampers efforts to achieve successful inclusion within organizations and educational institutions. Insufficient funding, for example, limits access to necessary tools, technologies, and support systems that enable equitable participation for diverse individuals. A shortage of trained personnel, such as educators skilled in inclusive practices or human resource professionals adept at managing diversity, further exacerbates this issue by hindering the implementation of tailored strategies to meet individual needs. Additionally, inadequate infrastructure, such as accessible facilities or assistive technologies, can create physical and psychological barriers for marginalized groups, impeding their full engagement.

In alignment with the data presented in the review of literature [36], [49], [61], this study’s findings echoed the importance of teachers having access to resources in an effort to enhance instructions. Inclusive practices are only as effective as the resources employed and the competence of the educator. According to this study’s findings, overcrowding classrooms was closely linked to insufficient support and resources, which 96% of participants cited as a contributor to teachers’ negative attitudes toward inclusion and a challenge for successful inclusion.

4.5. Lack of support

Findings revealed a most discouraging issue – lack of administrative support. Participants reported that on many occasions, they (those who are reading specialists or special educators) are prevented from carrying out their programs because administrators pull them to substitute for absent teachers. Data on such a practice were not prevalent in many inclusive or special education studies, but two studies conducted in The Bahamas on teachers' perceptions of inclusive education and teacher attrition among Bahamian special educators revealed this finding [36, 37]. Several participants (79%) underscored the need for ongoing support and mentorship for in-service educators as crucial to sustaining inclusive practices.

One significant factor, however, which did not emerge from this study's findings was the impact of poor support systems on beginning teachers. Extensive research [18], [31], [20], [56] on teacher attrition revealed that many teachers leave the teaching profession within five years of entering the profession [21], [36]. Some beginning teachers were found to leave the field of education after merely one year in the system. For this reason, it is imperative to examine teachers' attitudes toward teaching, the factors influencing these attitudes, and by extension, teachers' motivations to teach [31].

4.6. The role of research, pedagogy, and technology in facilitating inclusion

The Teachers' Perceptions of Inclusion (TPI) Survey is a research instrument designed by the researcher of this study to evaluate educators' views on the significance of pedagogy, research, and technology in fostering inclusive education amid various challenges. This section reflects findings from this survey.

4.6.1. Research. Findings revealed that research on inclusion *significantly informs teacher professional development and training programs*, with 10% agreeing and an additional 82% of respondents strongly agreeing. This theme demonstrated the highest level of consensus across all categories, highlighting the centrality of research in equipping educators with the skills necessary for inclusive practices. Notably, only 8% of respondents expressed neutrality, and no disagreement was recorded, indicating widespread acknowledgment of the value of research in this area. Participants reporting 'neutral' for the role of research in successful inclusion did so because they expressed concern about the lack of research on successful implementation of inclusion in countries similar to The Bahamas. Another key finding was the strong

impact of research on the use and integration of assistive technology, with 23% agreeing and 75% of respondents strongly agreeing. This finding underscored the critical role of research in fostering technological inclusion. Neutral responses were minimal (2%), and there were no negative responses, suggesting a near-universal recognition of the benefits assistive technology brings to inclusive education.

While 68% strongly agreed that research fosters collaboration, 32% expressed disagreement, indicating a division in perspectives. Similarly, 63% strongly agreed that research offers leadership ideas, but 37% remained neutral. Research was also credited with informing initiatives to increase parental involvement (54% strongly agree, 46% agree) and exposing teachers to effective classroom strategies (49% strongly agree, 51% agree). Both themes exhibited complete agreement among respondents, indicating that research is a universally accepted tool in these areas. However, these findings also highlighted that these themes, while important, are perceived with slightly less intensity than those concerning professional development and technology, possibly due to differing priorities or the perceived ease of implementation.

The least agreed was observed in themes related to *curriculum development and peer/teacher support programs*, with 46% strongly agreeing on curriculum development and 41% agreeing on peer support. Neutral responses (48% for curriculum and 46% for peer support) dominated, suggesting limited or unclear application of research in these domains. Similarly, *facilitating data-driven decision-making* showed the lowest percentage of strong agreement (38%), with half of the respondents expressing neutrality. These findings indicated potential areas for further research or improvement in translating inclusive research into actionable strategies in these less emphasized areas. This analysis highlights both strengths and gaps in how research impacts inclusion, suggesting targeted areas for further exploration and practical application.

4.6.2. Technology. Findings revealed a strong consensus on the *positive impact of technology on the accessibility of learning materials*, with 85% of respondents strongly agreeing and 15% agreeing, resulting in no neutrality or disagreement. Similarly, the *promotion of individualized teaching and learning* garnered significant support, with 78% strongly agreeing and 20% agreeing. However, 2% expressed a neutral stance, reflecting a minimal divergence in opinion. These results highlighted technology's critical role in ensuring inclusivity by providing tailored resources and flexible access for diverse learning needs.

A notable finding is the strong agreement on *technology's ability to enhance engagement and*

motivation, with 76% strongly agreeing and 4% agreeing. Yet, there is some disagreement, as 13% remained neutral, and 7% disagreed. This distribution suggested that while most participants perceived technology as motivational, a subset may question its universal effectiveness, possibly due to varying contexts or implementations. Similarly, while 70% strongly agreed that technology enhances teacher professional development, 27% agreed, and 3% remained neutral. This indicated general support but a small proportion of uncertainty about its consistent impact.

Data from the TPI survey also highlighted varying perspectives on *collaboration and communication among stakeholders*; 68% of participants strongly agreed that technology promotes these aspects, and 32% disagreed. This could be influenced by challenges such as digital access disparities or differences in stakeholder preparedness. On the other hand, the *impact of technology on personalized assessment* demonstrates stronger alignment, with 83% strongly agreeing and 17% disagreeing.

Assistive technology's role in enhancing student learning outcomes received widespread agreement, with 65% of participants strongly agreeing and 35% agreeing, reflecting unanimous support. However, when it came to *increasing parent and community involvement*, opinions were more divided. While 58% strongly agreed and 20% agreed, 22% disagreed, indicating potential challenges in achieving active engagement through technological means. Similarly, flexibility in learning environments was strongly endorsed, with 83% strongly agreeing and 17% agreeing, reflecting its broad applicability in inclusive education. One participant remarked, "We cannot assume that all households have a computer, tablet, or laptop. We also should not assume that all households have internet access – this was an eye opener during the [COVID-19] pandemic."

Finally, survey findings showed mixed opinions about *technology's role in creating individualized education plans (IEPs) and data-driven decision-making*. These mixed results emphasized the need for more targeted strategies and training to harness technology's full potential in these domains.

4.6.3. Effective intervention strategies for facilitating inclusion. A remarkable 100% of respondents strongly agreed on the importance of several approaches, including reducing class sizes to improve classroom environments, funding and resource allocation for inclusive education, and the need for continuous professional learning for teachers and parents of children with disabilities. Similarly, adherence to Individualized Education Plans (IEPs) received overwhelming support, with 97% strongly agreeing and only 3% remaining

neutral, emphasizing its importance in addressing diverse student needs. The neutral participants in this area indicated that they were not familiar with IEP's, thus their response.

Despite broad agreement on many interventions, data revealed variability in participants' perspectives on certain strategies. For example, while 85% of respondents strongly agreed on differentiated instruction, 15% expressed agreement without the same level of intensity. In contrast, *culturally responsive teaching* showed significant polarization, with only 40% strongly agreeing and 60% remaining neutral, indicating either a lack of awareness or hesitation in fully endorsing this approach. A notable area of divergence arose with *peer support and peer buddies*, where 58% strongly agreed, 5% agreed, but a sizable 30% remained neutral and 7% disagreed. This mixed reception may reflect varying experiences with peer-based strategies and their effectiveness across diverse educational contexts. In addition, *community partnerships*, despite their potential to enhance inclusion, garnered only 52% strong agreement, with 20% neutral and 8% disagreement, suggesting possible barriers to collaboration or limited perceived benefits. The *role of emotional and social skills development* also appears to be under-recognized, with only 42% strongly agreeing and 53% expressing neutrality. This lukewarm response highlighted an opportunity for greater emphasis on the social and emotional aspects of inclusion, which are essential for holistic student development.

However, the discrepancies in agreement on specific classroom strategies highlighted the need for tailored professional development and context-specific solutions to address these varied perceptions and challenges.

5. Discussion

Upon an in-depth analysis of the major themes that emerged from the individual interviews, focus group, and Teachers' Perceptions of Inclusion (TPI) Survey, it was revealed that 39% of the major themes which emerged from interview data cited instructional barriers as a major impediment to successful inclusion. This suggests that a significant number of public-school educators may have experienced significant obstacles related to adapting teaching methods, materials, or strategies in an effort to meet diverse students' needs. The presence of instructional challenges could indicate issues such as inadequate teacher training, lack of appropriate instructional materials, and insufficient support for differentiated instruction [18], [33], [35], [36].

Thirty-four percent (34%) of the barriers cited by participants represented systematic barriers. The lowest percentage of 26% indicates that a notable number of respondents see attitudinal barriers as a

challenge, but with less intensity than the other groups. Overall, these percentages reflect a consensus that instructional barriers are a significant challenge to successful inclusion, but the degree to which they impact inclusion efforts can vary widely. This study holds implications for adequately preparing educators to effectively address challenges in delivering instruction in inclusive settings. This study, as supported by Hong [21], also speaks to the need for ongoing research in inclusive education, adaptation of instructional strategies, and utilization of leading technology in facilitating academic achievement among special needs students in inclusive settings.

5.1. Limitations of the study

There were three limitations that arose during this study. These included (a) participants of the study were all from one school district and one island, thereby limiting ability to generalize findings beyond these educators, (b) responder bias (some participants were former colleagues of the researcher, who may have wished to be portrayed in a positive light, thus possibly influencing their responses), and (c) the sample was too homogeneous, with 86% being females and only 14% being males. However, as the Bahamian teaching workforce is predominantly female, this sample of females ($n = 86\%$) is representative of the gender balance in the teaching population.

5.2. Implications for practice

The integration of technology, when combined with informed pedagogical approaches and evidence-based research, creates a robust framework for advancing inclusive education. The Ministry of Education must make a conscious effort to ensure that all public schools are equipped with paraprofessionals (allowed to function in their respective roles). The practice of using specialists as substitute teachers should cease. Another significant implication lies in the design of rigorous pre-service teacher education programs. These programs must embed principles of inclusion into their core curriculum, ensuring that new teachers enter the profession with the necessary knowledge, attitudes, and skills to address diversity.

Inclusive education sensitization and awareness campaigns are needed to engage families and communities. Additionally, the establishment of standardized inclusive education policies and procedures at institutional and governmental levels ensures consistency in practice and accountability, creating a framework within which schools can operate effectively to meet the needs of all learners. Support systems for teachers and students must prioritize social and emotional support, creating an

environment where students feel valued and included.

5.3. Recommendations for future research

To extend this current study, thereby satisfying future generalizability, it would be beneficial to conduct a study including public school teachers from the other islands of The Bahamas. Further, perspectives of students with disabilities regarding their experiences in mainstream classrooms should be explored to close the existing gap in literature on the effectiveness of inclusive education programs.

6. Conclusion

Effective inclusion requires well-informed teaching practices and supportive policies. In an era of globalization, it is imperative for education policy makers and stakeholders to remain on the cutting edge of best pedagogical practices in inclusion through active and informed research. While identification and implementation of effective interventions are critical to the success of inclusive programs, it is equally important to first explore the barriers to successful inclusion. By understanding the challenges faced in providing inclusive education, stakeholders would be more knowledgeable and efficient in providing (and advocating for) the necessary support systems, resources, and policies to maximize the efficiency of inclusion in schools, thereby closing the achievement gap among special needs students.

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