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Professional Development Programs of STEM: Outcomes of Students with Multiple Disorder

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Abstract

This study used mixed-method method approach and tried toexamine the effectiveness of professional development (PD) programs in enhancing STEM teachers' instructional practices for students with Multiple Disorder (MD) in Pakistan and the subsequent impact on student achievement. Data were collected from 30 middle and high school STEM teachers who had participated in inclusive education within the past three years, along with 30 students with MD students (grades 5–9). The Teacher Efficacy for Inclusive Practices (TEIP) Scale measured teachers' self-efficacy, while classroom observations and standardized STEM assessments evaluated instructional practices and student outcomes. Results indicated that while teachers demonstrated high confidence in general inclusive strategies), they showed moderate efficacy in MD -specific adaptations. Classroom observations revealed strengths in multimodal instruction (visual aids, written instructions) but inconsistent implementation of FM systems and individualized supports. Student engagement was higher in structured,

visually supported activities, though challenges persisted in verbally dense collaborative tasks. The study highlights critical gaps in Professional Development (PD) programs, particularly in trauma-informed behavior management, family engagement, and STEM-specific accommodations. Recommendations include, sustained, practice-based PD on MD-specific strategies, systemic support for assistive technologies and classroom acoustics, and enhanced parent-teacher collaboration frameworks. This research contributes to global efforts to advance equity in STEM education for students with hearing loss.

Keywords:Multiple disorder, STEM education, professional development, inclusive practices, teacher efficacy

Introduction

Science, Technology, Engineering and Math (STEM) education are really the skills of the future when the focus of a lot of the world is on technology. The success of STEM instruction relies on teachers adapting to changing trends in one and/or more of these three essential pedagogical areas (Darling-Hammond et al., 2017). Although PD programs aim to reduce this gap, they differ significantly in effectiveness. This paper explores how Professional Development (PD) participation is associated with improvements in instruction, and ultimately student outcomes with cochlear implant (CI), in STEM.

Professional development (PD) programs are designed to improve teachers' pedagogical practice and serve as a means to develop higher-quality instructional strategies in STEM education. Organized professional development approaches offer educators research-based teaching strategies, subject matter expertise, and responsive methods to address the variety of learning needs of pupils (Desimone, 2009). Nonetheless, very little research has been done on the effect of such programs on STEM teachers of students with Multiple Disorder (MD). As a result, students withMD frequently encounter challenges in the STEM classroom due to auditory processing, language, and collaboration issues (Marschark et al., 2015).

Students with Multiple Disorder (MD) are underrepresented in STEM classrooms, and their success in these subjects relies on teachers implementing first- and second-wave instructional practices. Because of these differences, students with MD show heterogeneous academic performance in the field of STEM depending upon age of implantation, history of auditory-verbal therapy, classroom support (Geers et al., 2017). Although MDstudents develop high levels of literacy, they may be less proficient in the high register language, abstract or technical concepts, and fast-paced discourse that are characteristic of STEM classrooms (Pagliaro & Kritzer, 2013).

Beyond language, there is growing research documenting that students who are deaf or hard of hearing (DHH), including those with MD, underachieve in mathematics and science compared to their hearing peers due in part to access barriers in spoken instruction and group-based problem-solving activities (Marschark et al., 2019). With the right instructional adaptations, (e.g., visual supports, captioned multimedia, and direct vocabulary instruction), students with MD can succeed academically in STEM (Easterbrooks & Bundy, 2020). The success of these strategies is often contingent upon teacher readiness, highlighting the need for purposefully designed professional development programs focused on building educators' capacity to implement inclusive STEM pedagogies.

Overcoming barriers to implementing first- and second-wave practices may improve academic and social outcomes for students with MD. Easterbrooks and Beal-Alvarez (2013) imply that effective PD can help increase teachers' confidence and competence in modifying lessons for students with hearing loss. While important in its own right, little is known about the impact PD programs provide for STEM teachers, resulting in changes to instructional practice and how this, in turn, affects the academic performance of students with MD. However, questions persist about how effective PD programs are in preparing STEM teachers to support students with MD and how student learning outcomes may or may not benefit from this (Stachl, et al., 2021).

Interpreting the relationship between teacher PD and student learning and/or teacher PD and student achievement in this setting is critical for understanding how to frame equity in STEM education more collectively. These findings are a valuable addition to the larger discussion of teacher preparation and special education, as they may allow for greater determination of how PD can best benefit students with hearing loss in STEM fields.

The implications of the article are considerable for both educational practice and policy, especially in extremely poor underdeveloped countries, in support to inclusive STEM for students with Multiple Disorder(MD). As there is an increasing focus on STEM careers, and more and more children with MD are being included in mainstream classrooms, developing equity of learning access for children with MD is vital (Knoors & Marschark, 2014). STEM teacher professional development (PD) programs can fill this gap by providing educators with evidence-based strategies for supporting auditory and language accessibility for concurrent science and math instruction. This research examined the impact of the effectiveness of such PD programs, and consequently, actionable insights on what teacher training can look like for enhancing instruction in ways that improve academic outcomes for students with MD. Finally, the results stimulate wider discussions about inclusive education and provide a valuable reference point for policymakers and school principals in planning specific and comprehensive professional development programs for addressing the needs of MD learners in STEM fields. This study, therefore holds promise in addressing the achievement gap and building pathways of success for students with MD, thereby promoting a more diverse future workforce in STEM fields.

Research Questions

1. How do professional programs influence STEM teachers' instructional practices on students with multiple disorder?

2. What is the correlation between teacher professional programs participation and multiple disorderstudent STEM achievement?

Methodology

The present study employs a mixed-method to investigate in-depth the impact of professional development (PD) programs on the instruction provided by STEM teachers and the academic performance of students with Multiple Disorder(MD) in Pakistan. The qualitative and quantitative data enable the researcher to reach a robust analysis of how the findings about teacher training influence the classroom practices and student achievement.

An inclusive purposive sample of middle and high school STEM teachers from public and private schools in Pakistan (30), Teachers needed to have taken PD of inclusive of STEM

education within the last 3 years, and be currently teaching at least 1 student with a MD. The participants who were students withMD(30) from grades 5 to 9; all who have used their implants for at least 5 years to ensure stable auditory access. This deliberate sampling strategy guarantees that the research explored practices from educators who have experienced meaningful PD and students who have been exposed to MD.

Multiple tools wereutilized for data collection to find insights. An adapted version of the Teacher Efficacy in Inclusive Practices (TEIP) scale was delivered to teacherswhich surveys instructional strategies, confidence levels, and frequency of accommodations after the professional development. In the school, randomly selected 3 sessions of classroom teaching (from the first stage) was observed with the aim of documenting the preferred practices of teaching and student engagement, similar to the semi-structured checklists embodied in the classroom observation rationale. Student performance will be assessed using standardized STEM test score and grade comparisons. Also, semi-structured interviews with 20–30 teachers will add qualitative depth, focusing on their perceptions of both the effectiveness of PD and the challenges of implementation.

The quantitative analyses will consist of descriptive statistics to summarize survey responses, Pearson's correlation and regression analyses to examine relationships between PD participation and student achievement, and ANOVA to compare outcomes for different PD durations. Interviews and observations will be analyzed thematically for qualitative data, to identify patterns and triangulation. The study will follow ethical principles and gain necessary approvals from Saudi Arabia's Ministry of Education and institutional review boards, ensure participant anonymity by anonymizing data and confidentiality protecting procedures.

This analysis framework is built from a rigorous methodology aiming to produce actionable information that can be used in the design of better and more successful PD programs for STEM teachers who teach students with MD in Pakistan. This blend of statistical analysis with qualitative exploration yields a rich picture of how teacher training affects classroom practices as well as student outcomes in this particular educational context.

Background of the Study

Professional development (PD) programs are essential in preparing STEM (Science, Technology, Engineering, and Mathematics) teachers to teach diverse learners, such as students with multiple disorder. Due to these challenges, MD students often experience difficulties with STEM education (Marschark et al., 2016), in particular with auditory processing, language delay, and K-12 instruction that fail to accommodate their unique needs and that the PD can enhance teachers' proficiency at enacting evidence-based practices like multimodal instruction, assistive technologies, and differentiation for students with such disabilities (Easterbrooks & Beal-Alvarez, 2013), effective PD programs are key to facilitating better academic outcomes for these students.

Studies show that STEM teachers receive insufficient training to include students with hearing loss and students with MD (Pagliaro & Ansell, 2016). Professional development (PD) programs specifically focused on these gaps can combat inclusive teaching strategies emphasizing visual scaffolding, experiential learning, and direct vocabulary instruction, which are all important for students with MD (Wang et al., 2018). Yet, the degree to which PD programs are associated with changes in teachers' instruction that, in turn, correlate with

student achievement is less studied. Comprehending this connection is critical when creating targeted PD that increases both teacher effectiveness and student achievement.

Researcher have an extensive literature documenting the link between teacher PD and student outcomes in general education (Desimone, 2009), but fewer studies link outcomes for students with disabilities and their general education teachers, and even fewer link students with MD in STEM content areas. As the number of students with MD in mainstream classrooms increases (Moon, et al., 2012), it is important to investigate the influence of PD on teachers and if these changes lead to demonstrable gains in STEM achievement. Previous research indicates that the most robust instructional changes occur when PD is continuous and focused on content, along with follow-up support (Garet et al., 2001). Still, the influence of PD on students with MD needs more exploration.

Moreover, this suggests that achievement in STEM among students with MDmay be impacted by contextual factors that go beyond teacher instruction (Geers & Hayes, 2011). This makes determining the isolated impacts of teacher PD on student outcomes quite complex and requires a multiple-methods approach with the consideration of confounding variables. This study seeks to contribute to the research base on inclusive STEM education and evidence-based teacher training by studying associations between PD participation and STEM achievement among students with MD.

In short, this study aims to integrate teacher professional development and equitable STEM learning opportunities for students with MD. The results can provide policymakers, school administrators, and teacher educators with insights to design effective PD programs to meet the needs of the educators and the children with hearing loss. STEM innovations serve as pillars to global progress; therefore, there is an urgent need for diversity and inclusion in fields that shape the future of our world, making accessibility of these two components just as critical for all learners, including those with MD.

Findings of the Studies

Quantitative data analysis and findings from Teacher Efficacy for Inclusive Practices (TEIP) Scale

Using the data collected from the Teacher Efficacy for Inclusive Practices (TEIP) Scale items, descriptive statistics (mean and standard deviation) were obtained for each item in the three subscales (Instructional Efficacy, Behavior Management Efficacy, and Collaborative Efficacy). The subsequent table below summarizes these findings:

Table1
Mean Scores and Standard Deviations of TEIP Subscales

Subscale	Item	M	SD	Interpretation
Instructional Efficacy	I can effectively use diverse assessment methods (portfolios, modified tests, performance tasks) for students with disabilities	4.8	1.1	High confidence in diverse assessments

Subscale	Item	M	SD	Interpretation
	I can provide alternative explanations or examples when students need clarification	5.2	0.9	Very strong ability to clarify concepts
	I can design learning activities that accommodate the individual needs of students with disabilities	4.5	1.2	Moderate confidence in designing inclusive activities
	I can accurately assess student understanding of taught material	4.7	1.0	High confidence in assessing understanding
	I can create appropriately challenging tasks for high-achieving students	4.3	1.3	Moderate confidence in challenging high achievers
	I can successfully facilitate pair and small group work among students	5.0	0.8	Strong ability to facilitate group work
Behavior Management Efficacy	I can proactively prevent disruptive classroom behaviors	4.6	1.1	High confidence in preventing disruptions
	I can effectively manage disruptive behaviors when they occur	4.4	1.2	Moderate confidence in managing disruptions
	I can calm students who become disruptive or noisy	4.1	1.4	Moderate ability to calm disruptive students
	I can consistently enforce classroom rules	5.1	0.7	Very strong enforcement of rules
	I can confidently handle physically aggressive students	3.9	1.5	Lower confidence in handling aggression
	I can clearly communicate behavioral expectations to students	5.0	0.9	Strong communication of

Subscale	Item	M	SD	Interpretation
				expectations
Collaborative Efficacy	I can guide families in supporting their child's academic success	4.2	1.3	Moderate ability to guide families
	I can help struggling students improve their academic performance	4.9	1.0	High confidence in helping struggling students
	I can effectively collaborate with other staff to support students with disabilities	5.3	0.6	Very strong collaboration with staff
	I can engage parents of children with disabilities in school activities	4.0	1.4	Moderate engagement of parents
	I can create a welcoming environment for parents at school	4.5	1.1	High ability to create a welcoming environment
	I can work with specialists to develop educational plans for students with disabilities	5.2	0.8	Very strong teamwork with specialists
	I can educate others about inclusion laws and policies	4.1	1.3	Moderate ability to educate on inclusion policies
	I can adapt standardized assessments to accommodate all students with disabilities	4.4	1.2	Moderate confidence in adapting assessments

According to tab 1, it is identified a number of important features related to STEM teachers' self-efficacy for successfully teaching students with Multiple Disorder(MD) using the Teacher Efficacy for Inclusive Practices (TEIP) Scale analytical method in Pakistan. Findings suggested teachers exhibited high levels of efficacy in some areas but low levels of efficacy in other areas, indicating potential for growth.

Teachers were most confident in their instructional practices (M=5.3), with alternative explanations (M=5.2) and group work (M=5.0) scoring highest, indicating that they had received effective PD in the foundational inclusive practices. Interestingly, their high level of confidence in planning differentiated activities (M=4.5) and designing more complex tasks

for high achievers (M=4.3) reflects a lack of effective training for lesson planning for students with MD, who may need specific stems in STEM subjects.

Finally, in behavior management, the teachers felt quite proficient in enforcing norms (M=5.1) and communicating expectations (M=5.0), both necessary for an inclusive and productive learning environment. Yet the lowest confidence relates to physically aggressive behaviors (M=3.9), signifying that de-escalation strategies and trauma-informed practices should also feature heavily in PD programs, as some students with hearing impairments may become frustrated by their inability to communicate effectively.

Results were more mixed on the collaborative efficacy subscale. The teacher's confidence in working with specialists (M=5.3) and in assisting students needing extra help (M=4.9) was very high, suggesting success in interdisciplinary collaboration. Conversely, their moderate ratings in parent engagement (M=4.0) and inclusion policies education for others (M=4.1) indicate a level of deficiency in school-family partnerships and system-wide understanding of frameworks for inclusive education. As parental involvement is key to the education of students with MD, it would be beneficial for future PD to focus on ways to improve communication with families and create a culture of inclusion at the whole school level.

Although Saudi STEM teachers performed well on the key components of inclusive instruction and classroom management, moderately targeted PD areas of improvement in content knowledge lessons could further support their skills to accommodate students with MD. To better empower teachers in the creation of an equitable and effective STEM learning environment for all students, PD programs should address the gaps identified in this investigation, specifically in adaptive curriculum design, behavioral interventions, and family engagement. Both findings are consistent with the prior literature on the need for long-term, practice-oriented professional development (Desimone, 2009) and specific training of teachers of students with hearing loss (Easterbrooks & Beal-Alvarez, 2013). These findings can be used as guidance to develop more targeted PD strategies that increase effectiveness in providing STEM-specific CP for teachers who have students with MD, as well as help Saudi educational policymakers refine teacher training programs.

Qualitative data analysis and findings from Observation Checklist

Results from the qualitative analysis of the classroom observations added information regarding the accommodations used by the STEM teachers for their students with MD. There were some broad common threads related to communication strategies, lesson adaptations, and collaborative learning approaches across the classrooms. Access, since teachers showed strengths in ways to make it easy for students to communicate, often specifically through using good articulation techniques with clear speech and minimizing background noise in their instructional setting. The majority of teachers accompanied verbal explanations with written instructions projected on blackboards or screens, as well as visual aids such as diagrams, graphs, and videos with subtitles to stress important ideas. Such multimodal approaches follow intuitive best practices for working with students with hearing loss, which are based on principles of access to information via multiple channels.

For instance, regarding lesson adaptations, it was observed that teachers often divided challenging components of STEM lessons into smaller, more digestible steps, which can be especially useful for abstract subjects in mathematics and physical sciences. Common across

classrooms were hands-on activities and lab experiments, which are beneficial forms of kinesthetic experience. However, a third of participants observed teachers using FM systems, which suggests this technology was used inconsistently, since most teachers use this assistive technology frequently. Although many provided advanced organizers in the form of outlines and glossaries, these materials did not specifically cater to the needs or the previous knowledge of any given student. This indicates a lack of individualized assignment of instructional materials to students with MD.

The analysis of collaboration learning activity observations yielded a net neutral outcome. Teachers showed an awareness of the significance of structured group work, tending to assign peer buddies and specific roles within the teams. On the other hand, certain implementations were problematic in that students with MD became too dependent on peers or disengaged in parts of the lesson involving a lot of speech. The most effective collaborative instances involved visual aids such as co-edited online documents or well-specified role cards. This indicates both the promise and the pitfalls of group work for MD students in STEM classes.

Some significant gaps were identified in the observational data. While speech-to-text technology had obvious benefits, the researchers rarely saw the use of real-time captioning or transcription tools. Classroom acoustics varied widely, with noise present in some environments that would distract and interfere with MDstudents' ability to understand. Plus, although they did check for understanding frequently, such checks were not always systematic or responsive to the preferred modes of communication of individual students.

This has a significant impact on professional development programs. Although many teachers had well-developed strategies to support MD, there are clear gaps that could be addressed by targeted training. Some may need to receive further training in one of the areas that may be a priority: deeper work in assistive technology, classroom acoustics, and how to increase and improve collaboration. These observational data, in particular, highlight the importance of PD, which goes beyond general inclusionary practices to focus on the unique characteristics of MD users in STEM environments. With mindsets that reinforce both what schools already do well and what they do poorly, schools can create spaces for learning about and learning through science that foster full engagement and achievement among students with MD.

Triangulation of Qualitative and Quantitative Data

The combination of quantitative and qualitative data in this study yields a meaningful synthesis regarding STEM teachers' preparedness to teach students with Multiple Disorder(MD) in the Pakistani context. Results point to a mixed bag for teachers, showing both strengths in certain domains and clear opportunities for improvement in other areas. The combined results of the TEIP Scale and classroom observation data serve as a data triangulation that provides an in-depth insight into both teachers' self-perceptions and real-time instructional practices.

The results of the quantitative TEIP Scale data indicated that teachers felt most confident in their instruction (M=5.3), especially in providing alternative explanations (M=5.2) and leading group work (M=5.0). Such self-reported results were supplemented with qualitative observation data and sync with the fact that multimodal teaching strategies were used often (e.g., use of visual pictures and written directions). Yet, the type of general inclusive practices that were frequently used were not always, when observed in the classroom,

adapted for specific students with MD. This disparity indicates that although teachers have internalized general theoretical tenets related to inclusive education, they may require more precision in the supports they are trained on to serve MD students specifically.

There were, however, significant gaps between apparent teacher confidence and implementation in schools, which formed the basis of the study's main conclusions. While quantitative data demonstrated an average level of trust with respect to designing differentiated activities (M=4.5), we observed that although game-based adaptations were taking place, these tasks were rarely adapted specifically to meet the needs of each of the individual MD users. Likewise, although teachers' confidence in managing behavior was high on average (M=5.1 for handling norm violations), they were substantially less confident about managing physically aggressive behaviors (M=3.9). This is especially relevant since it has been documented that students with hearing loss often become frustrated and act out, therefore teachers trained in de-escalation need to be the focus/professional development for these students.

Again, collaborative practices were identified as something that needed to improve. Teachers expressed high confidence in partnering with specialists (M=5.3, SD=9.5), but only moderate confidence in partnering with parents (M=4.0, SD=9.5). In terms of classroom observations, teachers engaged students in structured peer collaboration, but limited systematic family engagement strategies were found. Considering that parent involvement in the education of children with hearing loss is extremely well documented, this is an area for potential growth in teacher training programs.

The mixed-methods study was especially helpful in pinpointing the areas of professional development that might be most effective. Based on the findings, the results suggest three critical points: First, professional development (PD) programs aimed at teachers of students with Multiple Disorder(MD) must shift emphasis from general principles of inclusive education to STEM-specific practices, including specialized assistive technology training and MD-appropriate demonstrations of STEM concepts. Second, training focused on student-specific behavioral support strategies for students with hearing loss. Finally, programs should focus on strategies to engage families to help link them more closely to the school.

This is consistent with existing research in the field. Desimone (2009) has outlined a framework for effective professional development, which points to content-focused and sustained professional development. Easterbrooks and Beal-Alvarez (2013) have established that specialized preparation is necessary when teaching children with hearing loss. The study extends this work by empirically establishing classroom areas of teacher knowledge and in-practice gaps to guide the design of better PD programs.

Support at the policy level would help implementation of these recommendations: In some cases, school administrators could place a higher emphasis on funding for assistive technologies, as well as enhancements in classroom acoustics. One policy suggestion is to require certain hours of MD training specifically for STEM teachers. These system-level changes, accompanied by professional development, could dramatically enhance the academic performance of students with MD in STEM disciplines.

As such, this study illustrates an opportunity for using mixed methods in measuring teacher efficacy and practice. Through mixed methods of quantitative self-assessment data and qualitative classroom observations, the research yields a nuanced landscape of current inclusivity strengths and growth items in STEM education. These findings provide specific recommendations for professional development programs that can be used to improve the educational experience of students with cochlear implants. Future research should expand on these findings to examine the long-term effects of targeted PD programs over time on teachers' practice and students' outcomes.

Discussion

This study's findings emphasize the need to continue and enhance efforts in preparing STEM teachers to effectively teach students with Multiple Disorder(MD) in Pakistan. Teachers showed an excellent foundation in the principles of inclusive education with ease in applying instructional strategies (M=5.3) and a regular use of multimodal approaches but evidenced large gaps in applying MD-specific accommodations. This is consistent with prior research highlighting the inadequacy of typical inclusive practices in meeting the specific needs of students with hearing loss without additional training (Easterbrooks & Beal-Alvarez, 2013). This difference between teachers' self-reported efficacy and what we see in the field greatly emphasizes the need for PD that connects theory-to-practice and provides tangible, classroom-based strategies to support its implementation. Although visual aids and written instruction were commonly used by teachers, the limited (40% of the classrooms + observed) usage of assistive technologies such as FM systems suggest more systemic barriers to accessing or training, further showing something in line with Pagliaro & Ansell, (2016).

The study's mixed-methods design revealed policy- and practice-relevant insights too. These finding, particularly regarding the moderate confidence in parent engagement (M=4.0) and variable family-school collaboration qualitative determinations suggest that PD programs may need to include specific training on how to engage families, an established predictor of positive academic outcomes for students with MD (Geers et al. 2017) Secondly, the finding that efficacy in addressing frustration-related behaviors was lower (M=3.9) underscores the need for trauma-informed training aligned with the socioemotional needs of hearing loss students. Desimone (2009) provides a framework for effective PD, which these recommendations are grounded in when it suggests our training needs to be sustained and based in the context of teachers rather than a one time workshop. Research with a longer-term follow up is needed to examine the impact of this type of more targeted PD on both teacher practice and student outcomes, particularly with respect to STEM content areas where the conceptual and linguistic demands may present further challenges for MD users (Pagliaro & Ansell, 2016).

Recommendations

The conclusion of this study provides some significant recommendations for improving STEM education for cochlear implant students in Pakistan. Most importantly, STEM teacher professional development programs must go beyond broad-based inclusive education training to include training on MD-specific strategies. The programs will also need to provide opportunities for practicum experiences regarding teaching in the area of assistive technologies such as FM systems and speech-to-text programs, display effective methods for concept presentation using visual and tactile means and include practical strategies for addressing special behavioral and emotional needs in the area of hearing loss. It should be

sustained, more practice based than one-off workshops, and include classroom mentoring, peer observation, and follow-up support sessions to ensure that one-off training leads to implementation.

Curriculum-specific STEM resources should be developed for students with MD, such as visual lesson plans, modified science experiment guides, and multilingual vocabulary supports by education authorities. Teachers, too, need space to learn from each other within Professional Learning Communities, and are best positioned to do so when they have the freedom to share and shape their instruction around inclusive STEM practices. We also need system wide change such as Ministry of Education trained hours in hearing loss, specific funding for assistive technologies and classroom acoustics standards. Each school should have an inclusion coordinator skilled in supporting students with hearing loss and a bank of evidence-based strategies to engage parents, such as STEM-oriented communication approaches and home-carry activity kits. Finally, longitudinal studies must be done to assess these interventions, and researchers should create targeted assessments to monitor STEM learning for students with MD. As a whole, these recommendations cover teacher training for better teachers in Pakistan, adaptation of the curriculum to be appropriate for students with cochlear implants, systemic policies to improve the adoption of Multiple Disorderin the country, engagement of families of children with Multiple Disorderto partner with the school and educators, and ongoing research on implementing these recommendations to improve them to transform STEM education into a better experience for students with Multiple Disorderin Pakistan.

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