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## **The Effectiveness of Early Childhood Interventions in Overcoming Developmental Delays at Pre-Primary Level: An Action Research Study**

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### **Abstract**

This research examines how early childhood interventions can be effective in addressing developmental delays in children, specifically looking at how targeted strategies and support can lead to lasting improvements in children's growth. The research was qualitative and action in nature, focusing on the pre-primary level at Veritas Learning Circle, located in PECHS, Karachi. The research concentrated on a group of inclusive students who were selected as the study's population. To gather data, the researcher used a combination of interviews with expert teachers from the inclusive team, parents of inclusive students, and classroom observations. The data collection was carried out personally by the researcher through interviews and observations in the classroom. Thematic analysis was used to analyze the collected data. Early childhood is critical for cognitive, emotional, and physical development, and delays during this time can impact future learning and social interactions. Children with developmental delays at the pre-primary level often face challenges that hinder school progress and social integration. This research highlights the importance of early interventions, as timely support can significantly improve overall development.

**Keywords:** Early Childhood, Interventions, Developmental Delays, Cognitive, Emotional, Growth, and Social integration.

### **Introduction**

An eight year period from birth to eight years is referred to as early childhood period. It is a fast growing phase of children's life as children develop in particular areas physically, cognitively, socially and emotionally. Researchers indicate that, a dramatic transformation happens inside the brain, as 90% of growth takes place in the brain between birth and five years of age according to Harvard Center on the Developing Child (2023). Each child's future education, behavior as well as medical well-being, are determined during this stage. The potential development of children during their early years is influenced by the experiences and relationships they have.

Prominent research indicates that enhanced early experiences are linked to development of resilience, maintenance of mental health and minimization of risk factors that may cause developmental delays. Quality early childhood education and care (ECEC) programs are important especially among children in poverty as it helps them to develop their potentials. Programs that aim at play learning, language and motor development are found to contribute significantly towards readiness for



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schooling and lifelong achievements in education (UNESCO, 2021; Penn State University, 2023).

The importance of early childhood education goes beyond learning; it includes proper nutrition, healthcare and family upbringing. The WHO underlines the necessity of such interventions, stating that measures undertaken to provide for the physical and psychological needs of children can prevent developmental difficulties and foster improved life-long health and well-being (WHO, 2023). These interventions are important for children with disabilities or children living in poor families, as they help ensure equity and enable every child to develop optimally.

In terms of data from October 2023 level, the statement from early childhood education perspective and developmental delay relates to each other as this statement from the perspective of early childhood education and developmental delay states that specific intervention in pre-primary settings can address developmental delays successfully. This enables an assessment of which interventions are effective in improving developmental outcomes, with studies conducted post-2019 synthesized. These interventions typically comprise approaches to boost social skills, emotional regulation, and cognitive development through facilitated play and interactivity with peers.

Practice around the world is demonstrating movement toward more inclusive learning environments. Children with developmental delays can thrive when they are included in settings with their peers, and research has shown that inclusion contributes to better outcomes for not only children with developmental delays but also for all students when it comes to social, emotional, and academic success. This is not only helpful for the young learners to broadens their perspective about diversity and inclusion but it also beneficial for the facilitators to develop more specific, unique and better learning experiences that are easy to adapt and cater the needs of an individual.

### **Significanc**

According to the researchers Early Childhood interventions (ECIs) plays a vital role in developmental delays, support and growth in early years of an individual. Recent studies shows that as soon as the ECIs starts, it can help an individual in boosting their cognitive, social, emotional and physical skills, and overcome to the delays which support them to create a better cornerstone for learning and behavior. Speech and occupational therapy, social, emotional learning, and behavior plans are the early intervention methods which works effectively and help an individual to overcome the developmental gaps, and support an individual to achieve their age appropriate milestones and enhance their academic performance and social outcomes in long term. (Fielkow, 2023; Heckman, 2020).

### **Limitation**

The researcher limited the research to the pre-primary level at Veritas Learning Circle School located in PECHS, Karachi.

### **Purpose of the Study**

The main purpose of the researcher is to analyze the effectiveness of early childhood interventions (ECIs) for children with developmental delays, specifically the delays that affect their success and challenges in their life. This research aims to develop a



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deeper and critical thinking of how these interventions are beneficial to overcome different aspects of a child's development, that includes cognitive, social, emotional, fine, and gross motor skills and growth. Furthermore, it also encompasses the family involvement and acceptance in gaining the positive outcomes. It also emphasizes that strong family support is vital to a child's development.

This study also focuses on identifying the different challenges faced during the implementation of ECIs. These challenges include variations in program quality, inconsistency in the services provided, and difficulties faced by children with developmental delays who are part of various intervention programs. Moreover, cultural and economic factors play a crucial role in determining the success of these interventions. Such factors significantly influence how effective early childhood interventions can be.

The goal of this study is to make these interventions easily accessible and elevate them in a way that meets the needs of children with different backgrounds and helps their families to adapt. It focuses on the long-term success of early childhood interventions so they can support all children, regardless of the culture, financial issues, or other challenges. Additionally, provide a platform to the stakeholders to find practical ways to implement ECIs more effectively and help children by giving them skills that they need to survive in society.

### Objectives of the Study

**General Objective:** In general the main objective of this research was to study the effectiveness of early childhood interventions in overcoming the developmental delays at Pre- Primary level.

**Specific Objectives:** The specific objectives of the study were;

1. To recognize early developmental delays enables timely intervention, which can significantly improve a learner's academic and social success.
2. To investigate the role of parental involvement in enhancing the effectiveness of early childhood interventions in addressing developmental delays.
3. To examine the long-term effects of early interventions on the educational and social outcomes of children as they progress through primary and secondary education.
4. To identify challenges faced in the implementation of early childhood interventions and their impact on outcomes.

### Research Questions

1. How effective are early childhood interventions in helping pre-primary children achieve key developmental milestones (cognitive, social, emotional, and physical development)?
2. What is the role of parental involvement in enhancing the effectiveness of early childhood interventions for overcoming developmental delays?
3. What are the long-term educational and social outcomes for children who received early childhood interventions for developmental delays as compared to those who did not?
4. What challenges are encountered in the implementation of early childhood interventions?



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### Literature Review

Early childhood intervention programs are designed to boost the developmental progress of young children, particularly those at risk of delays due to factors such as economic disadvantage, genetic conditions, or unfavorable environments. These initiatives can be categorized into two main types: educational programs and therapeutic services. (Green & Costa, 2023; Jaramillo et al., 2021).

Educational programs, exemplified by Head Start, concentrate on fostering early literacy and numeracy skills whilst also encouraging social development. Conversely, therapeutic services encompass interventions such as speech therapy, occupational therapy, and various behavioral treatments. These therapies are specifically tailored to address particular developmental challenges, including difficulties with speech or physical coordination. (Sénéchal et al., 2022).

The earlier implementation of early childhood interventions increase the rate of improvement in cognitive, physical and social, emotional skills among the children with developmental delays.

According to the systematic review by Jaramillo et al. (2021), well-designed programs that focus on language and literacy skills can play an important role in supporting cognitive development. For example, early literacy interventions, for instance, have been shown to improve language skills, which are crucial for learning to read later on (Sénéchal et al., 2022). Children who participate in pre-literacy programs often make noticeable progress in building their vocabulary, developing phonemic awareness, and recognizing letters.

Early Intervention Research group (2023) stresses that children who engage in challenging activities can think more critically and work on their problem-solving skills more effectively, not in the short term but they help them to build a cornerstone for their future success both academically and socially. Early cognitive and problem-solving skills are the key indicators of how well children are likely to perform in school as they grow older. Simms et al. (2020).

Researchers have proved that social and emotional development has a major role in shaping a child's future, well-being and success. Children develop social skills and manage their emotions through early childhood interventions (ECIs) and these skills are especially beneficial for those with developmental delays. Such type of programs aim to teach children how to work on their emotions, how to make connections and build relationships with the people around them. According to different studies on early childhood interventions children with strong social and emotional skills experience better outcomes in many areas of their development. It includes a positive relationship with their peers, controlled behavior issues, and problem-solving situations.

The positive effects of social-emotional training especially for children with autism spectrum disorder (ASD) were studied by Baker et al. (2020). According to this study children who are part of these programs showed significant improvements in their behavior and expressions. There was a major difference between the children who were part of those programs and the ones who were not. Children with ASD manage social situations and build positive and important skills for engaging with their peers and adults. Holistic support is particularly essential for children with developmental delays because it helps them grow socially, emotionally, and academically. Baker et al. (2020). These findings provide the importance of early childhood interventions, which support and help children to develop these beneficial social-emotional and cognitive skills which play a vital role in their growth and integration into social



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environments.

According to the researchers family acceptance and involvement are essential and play a vital role in supporting children both socially and emotionally, especially children with developmental delays. When parents actively accept and take part in their child's learning through different programs like attending parent workshops, communicating with a relative person, or other activities, their children often show great improvement in controlling and managing their emotions and building stronger relationships with their peers. This focuses that family-centered approaches are not only helpful for them socially but children also create a strong support system academically.

The active participation of families in the learning process of their children creates a strong and stable foundation for building trust and connectivity between home and school. This collaborative partnership between the parent and caregiver or facilitator encourages both to work together for the betterment of the child's needs. In this collaboration, a child is not only able to develop stronger social and emotional skills but also refers to the ability to recover quickly from difficulties and adapt well to challenging situations. Through this holistic support, children can manage emotional difficulties, handle stress, and stay positive even in difficult situations and think critically.

Children who struggle with motor skills can benefit from the developmental programs that work on their fine and gross motor skills, especially children who face challenges with movement.

Green and Costa (2023) assessed various interventions to improve fine and gross motor skills, like balance, hand-eye coordination and different meaningful movement plans. These interventions include physical games, and activities like pegging, twisting, stretching, and rolling to strengthen their specific muscles and improve their coordination. According to the researchers, children who took part in these programs showed noticeable improvements in their physical abilities. That helps them to complete their tasks, strengthen their muscles and improve their coordination. Physical activities like involvement in gymnastics or simple activities like jumping, running, hopping, or using different tools to handle objects like, tong, tweezers, and scissors not only improve their motor skills development, but these activities also boost the confidence of the children to manage every day task with ease. Sensory integration therapy along with motor skills programs are effective ways to improve children with the physical ability. These well-structured programs help children to improve their physical abilities and adapt sensory information from their surroundings, which is the key concept of participating in and coordinating physical activities. Children with autism disorder spectrum are benefitted from the sensory integration theory.

In the words of Sénéchal et al. (2022), children who have difficulty handling sensory information will struggle with everyday activities like getting dressed, playing sports or even eating food. There are different activities offered by sensory integration program which help an individual to explore different sensory experiences in a safe and well-structured environment. After practicing these activities children are able to manage their reactions to sensory information and make it easier for themselves to involve in physical activities with more comfort and success.

The children's physical and sensory development enhance when motor skills development integrate with sensory skills in a program. The main purpose of this program is not only to support children in enhancing their coordination and strength





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but also to support in handling sensory experiences in their daily life. Especially for children with developmental delays, these programs are necessary to support their coordination and strength. By engaging in these meaningful programs children with developmental delays gain skills and confidence to manage their daily tasks, and more challenging activities enhance their problem solving and critical thinking skills. In the life of a child with developmental delays, early interventions plays a crucial role and it last for the long-term in their future. According to the researchers children who are actively engaged in early childhood intervention programs, their performance in the school is better and they have positive relationship among their peers and they showcased their positive behavior. Children facilitate with early interventions at the right time are more likely successful in their academics and have fewer behavior issues as compared to the children who did not facilitate with the similar support. This indicates that early years interventions are not helpful for the short span of time but it leaves the impact for the long-term. Simms et al. (2020).

Programs designed to make children ready for school are the programs in which they teach children in a way that they start thinking critically and follow the directions positively, build strong relationships with peers, and manage emotions. Research by Fisher et al. (2021) revealed that children belongs from financially struggling families who enrolled themselves in early childhood programs achieved better academics goals and ready to face challenges in school life later on.. This revealed how early years interventions are important and how they help children to overcome the challenges they might face.

In addressing developmental delays, early childhood interventions plays an important role in helping children to achieve meaningful progress in cognitive, psychomotor, social, and emotional development. Implementation of early interventions effectively at the pre-primary level can set a goal for long-term academic and social success.

Even with strong research that shows the importance and effectiveness of the early childhood interventions, there are several hurdles continue to limit their impact. The biggest challenge is the inconsistency of the quality in their program. Trained and qualified staff, levels of trainings, resources, and family involvement are the most noticeable hurdles which effect the better outcomes. A program run by well-trained staff with positive family input show remarkable impact, rather than the program with untrained staff and less parent involvement and acceptance. Jaramillo et al. (2021) Regardless the challenges, early childhood interventions are the hope for the children with developmental delays helping in making improvements in their lives. By nurturing cognitive, motor, social, emotional, and behavior growth these interventions programs help children not just for academic but for the broader aspect of their lives. What works very well is the positive relation between parents and caregivers and their active participation in their child's development. This involvement is crucial to create a web of support between academics, sense of responsibility in a community.

Naturally, there are challenges to overcome it includes the improvement in program quality, new technology, trained staff and parent involvement and long-term research. The impact of these interventions are not to be ignored because they help and support children in providing the tools to overcome with the challenges and move forward with the confidence both socially and academically.

As we go deeper to learn more, one thing is clear that early childhood interventions are not just helpful they are absolutely necessary. They give every child despite of diversity,



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the opportunity of growth and help them to reach their full potential. In other words it is not only beneficial but it is essential for every child of this world.

### Gap in Research

The researcher highlighted both the benefits and challenges of early childhood interventions (ECIs) for children with developmental delays. The biggest and main concern is the lack of proper research on children with disabilities, which makes it harder to know how to best support them. Many existing programs are unable to consider the diverse cultural and economic backgrounds of children, which cause leaving some families without the help they need. Many families living in rural areas are unable to get benefit due to lack of resources.

There is not enough research on the sustainability like, how long the benefits of early interventions (ECIs) last. There are some programs show short-term improvements in children's development, though there is a lacking of evidence to know if these improvements are sustainable or not. More research in this field of early interventions is require to clear the sustainability and give a mind set to how to design these programs to create long lasting positive effects.

Understanding whether the benefits of these interventions last over time is crucial for ensuring their success. Ultimately, improving the quality and accessibility of these programs is essential if we are to provide meaningful support to all children, regardless of their background or circumstances, and help them reach their full potential.

### Methodology

**Research design:** This research was qualitative and action in nature and was conducted to study the effectiveness of early childhood interventions.

**Population:** All primary schools of PECHS were the population of this research study.

**Sample:** The inclusive students of class Pre-Nursery- Grade 1of Veritas Learning Circle located at PECHS Karachi was the sample of this research.

**Research Instrument:** The tool that was used by the researcher in this action research was interviews from expert teachers of inclusive team and parents of inclusive students and classroom observations.

**Data collection:** Data was collected by the researcher through the interviews with the teachers and parents and classroom observations.

### Data Analysis

#### Thematic Analysis (For Experts and Teachers)

Data obtained through the interviews from the expert teachers of inclusion students was analyzed by the personal experience of the researcher and responses received from the interviews, with the help of thematic analyses to note the effectiveness of Early Childhood interventions in overcoming developmental delays at Pre-Primary Level.

*The table below show the thematic analysis of the qualitative data.*



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S.No.	Themes	Codes	Frequency
1.	Social Skills Emotional Skills Cognitive Skills Building Relationships Communication Skills. Confidence Building	Holistic Development	Nearly everyone (100%) responded positively about the importance of social, emotional, cognitive skills, building relationships, communication, and confidence-building.
2.	Monitoring Progress Individualized Plan Age-appropriate goals	Milestones achieved	A strong majority (90%) feel positive about individualized plans, age-appropriate goals, and milestones being met.
3.	Self-care skills Problem-Solving Skills Daily living task	Fostering Independence	Most people (90%) see great value in developing self-care, problem-solving skills, and handling daily living tasks independently.
4.	Importance of family involvement Family is a vital foundation of support	Family as a support key system	The vast majority (90%) agree that family plays a crucial role as a support system.
5.	Applying learned skills at home Reinforcing Interventions Extending Learning to everyday life	Generalization of Skills	Around 90% of responses highlighted the importance of applying learned skills at home and reinforcing interventions in everyday life.
6.	Limited Understanding Ignorance of intervention benefits Educational gaps	Lack of Awareness	90% of people acknowledge the challenges of limited understanding, ignorance of intervention benefits, and gaps in education.





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7. Local traditions.Cultural and Social  
Negative societal Factors attitudes  
A significant 90% of responses point to the impact of local traditions, societal attitudes, and other cultural factors on learning.
8. Meet class level Academic Readiness  
Achieve developmenta  
l milestones  
Around 90% of responses agree that meeting class level expectations and achieving developmental milestones is vital for academic success.
9. Teacher-therapist-parent Collaboration between  
communication stakeholders.  
Collaborative decision making  
Everyone (100%) agrees that effective communication between teachers, therapists, and parents is key to a child's success.
10. Observations AnecdotalDevelopment  
Notes IndividualizedTreatment Plans  
plan Identifying strength  
and weakness  
of A 100% positive response indicates that observations, anecdotal notes, and individualized plans are important for identifying strengths and weaknesses.
11. Foundation for future Lifelong impact of early  
success interventions  
Life-long skills  
Once again, everyone (100%) agrees on this aspect.



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## Thematic Analysis (For Parents)

*The below table shows the thematic analysis done through the interviews from the parents to note the effectiveness of Early Childhood interventions in overcoming developmental delays at Pre-Primary Level.*

S.No.	Themes	Codes	Frequency
1.	Speech Emotional Deregulations Hyperactive Behavior Aggressive Behavior	DelaysIdentifying developmental behavior challenges	Among five, three and parents shared positive experiences, noting improvement over time.
2.	Loss of speech Emotional deregulation	Addressing speech regression	Most parents expressed positivity regarding intervention strategies, noticing some progress.
3.	Neurologists Expertise Access to Specialized Care	Expert guidance in interventions	Many parents highlighted the importance of seeking professional help and were satisfied with expert advice.
4.	Family involvement Emotional support Consistency in implementation	Role of family support in interventions	A strong theme, with most parents emphasizing how vital family support is for successful outcomes.
5.	Speech improvement Social skill development Interpersonal growth	Communication and social skills	Parents were mostly positive about their children's progress in speech and social development.

## Observation Checklist

### *Classroom Environment and Family Support*

S.No	Category	Observation Findings	Yes	No
1.	Classroom Environment	Classroom was inclusive, with a mix of group and individual activities.	Yes	
2.	Intervention Strategies	Learning goals clearly stated and adapted for individual needs.	Yes	



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- |    |                             |   |     |
|----|-----------------------------|---|-----|
| 3. | Teacher-Student Interaction | Teacher understands the individual needs and demonstrates the positive behaviour towards inclusion.   | Yes |
| 4. | Family-Support Evidence     | Teacher has a proof of Parent-Teacher conferences.  | Yes |
| 5. | Peer Support                | Classmates assess the inclusion student during the challenging tasks.   | Yes |
| 6. | Social Interaction          | Students encourage to work with mix ability students. Opportunities for social skill development like, role play and team building present. | Yes |
| 7. | Emotional Well - Being      | Student appear happy and comfortable in the environment.  | Yes |

### Results

Based on the interviews and observations, several key findings have emerged regarding the student's performance and development. A standout strength of the student is their active participation in group activities. They seem to enjoy collaborating with peers, which not only helps them engage with the lesson but also strengthens their social interactions. The student is comfortable working in teams, which encourages a positive and supportive atmosphere in the classroom. It is evident that children will grow and flourish if they will get the right support and guidance. Their family involvement and acceptance is the key element of their success. Active participation of both the parents and caregivers boost their confidence and help them in their learning journey both academically and socially. This strong bond among them highlight the importance of education and gives motivation for making improvements in their cognitive, social, emotional and physical development.

### Discussion

The interviews and classroom observation checklist provide clarity about the learning journey of the children with developmental delays and offer deeper understanding of their growth. Group activities played a vital role in their social emotional as well as cognitive development. These activities help them to build strong and positive communication and collaboration skills with their peers. When the children receive clear and targeted support they improve academically and show willingness to learn and grow. One to one correspondence is the key concept of their learning journey, which is helping them to make their understanding deeper and truly enjoy their learning experience. The involvement of their parents, both in schoolwork and emotional support, has made a big difference. This encouragement at home gives the student a sense of security and helps them stay motivated. When families get involved, students often feel more confident and work harder to do well in their studies.

However, there are areas where the student can still improve. While they do well in group settings and are making steady progress, they would benefit from working



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more independently and managing their time better. Learning how to stay organized and take responsibility for their own work will help them grow even more and prepare for future challenges.

### Conclusion

It is concluded the student has made noticeable progress and demonstrated great potential, particularly with the support provided by both school and family. They genuinely enjoy participating in group activities, which has not only helped them in their learning but also built their confidence and social skills. Their enthusiasm for collaboration is a strength that brings out the best in them. Academically, they have made solid progress, and it is clear that with the right guidance, they can continue to improve and deepen their understanding of the subjects.

The involvement of their family has been a huge factor in this success. The care and encouragement they receive at home have helped them feel supported and motivated. It is easy to see that when families are actively involved, students gain more confidence in their abilities and are more committed to their work.

That said, there are still areas that need attention. While the student is great in group settings and has made steady progress academically, they could benefit from working on their independence. Learning to manage their own time, stay organized, and take ownership of their tasks will help them become more self-sufficient in their learning. These small changes can make a big difference in their growth, preparing them for the next steps in their education.

### Recommendations

Based on the thematic analysis and results here are some recommendations to consider moving forward.

- Environment play a vital role to promote independence, confidence, responsibility and personal growth, to support the children with developmental delay it is necessary to create an environment very thoughtfully which fulfill the demand of the children. Then motivate them to own their responsibility and take ownership to work independently and slowly and gradually work on their assignments individually.
- Along with the academics start making them to learn the real life skills to survive independently in this society. Boost their confidence by giving them responsibility and give confidence to work on problem solving skills which is beneficial both in and out of the classroom.
- Making clear order, ritual and routine, and time management which help the children practice to plan their tasks and complete it in the giving time period. By encouraging them the sequence of work according to its importance help and manage their responsibility and they will able to understand the concept of priority and work in a sequence of put first thing first. In this way they are not only organized and perform their responsibilities but also manage time effectively which is a daily life skill and help them to prioritize their things.
- Self-organization is an important aspect. It depends on the facilitator how to encourage the children to keep their things organized and work in a calm and cozy environment. When materials are in order, it's easier for the student to concentrate on their work, which is essential for completing tasks effectively.
- Organization also reduces stress, helping the student feel more in control and



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ready to take on challenges. By establishing habits of self-organization, the student will develop a sense of responsibility and pride in their work, which positively impacts their overall learning experience.

- Family involvement is key to the student's growth and success, making it essential to keep parents actively engaged in their child's learning journey. When parents take an active role in supporting their child's education, it builds a strong foundation for the child's confidence and motivation. A parent's genuine interest in what their child is learning not only highlights the value of education but also gives the child a sense of comfort and courage. This connection creates a positive and supportive environment at home, where the child feels appreciated and inspired to do their best. The collaboration between home and school is a powerful tool in keeping the child motivated and helping them reach their full potential.
- The student has been making great progress, but it's important to continue providing guidance and personalized support to help them keep growing. Checking in regularly and offering specific interventions can ensure they grasp key concepts more deeply. This individualized attention help them to solve their issues with confidence and support, and keep them motivated and focused on their learning. By keeping a balance between encouraging independent works and offering the right amount of support, we can help them build confidence and strengthen their skills, preparing them to handle new challenges with ease.

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