

Adaptive Storytelling as a Communication Medium for Children with Autism at TK Tunas Bhakti Semarang

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ABSTRACT

Children with Autism Spectrum Disorder (ASD) often experience significant barriers in social interaction and verbal communication. This community service program aimed to explore the effectiveness of adaptive storytelling as a communication medium for children with ASD at TK Tunas Bhakti. The program engaged three children aged 6–7 years through four storytelling sessions using varied media, including real fruits, animated videos, and hand puppets. Activities were designed based on each child's special interests and emotional readiness, emphasizing narrative participation and expression. Data were collected through observation, interviews, and documentation before and after the sessions. The results showed a marked improvement across multiple indicators: the frequency of initiating speech increased from rare (0–1 times/week) to daily occurrences; responses became more relevant and timely; and story recall shifted from fragmented to sequential and detailed. Children demonstrated greater enthusiasm, expressive intonation, and peer engagement, indicating improved confidence and social interaction. The adaptive nature of the storytelling – tailored to sensory and emotional needs – significantly enhanced communicative effectiveness. The approach not only supported language development but also fostered empathy and emotional connection. This study highlights the potential of adaptive storytelling as both an educational and psychosocial intervention strategy in inclusive early childhood education. Future implementations are encouraged to involve larger participant groups and longer intervention periods to broaden impact.

Keyword: adaptive storytelling, autism, communication skills, early childhood education, social interaction.

ABSTRAK

Anak dengan *Autism Spectrum Disorder* (ASD) sering menghadapi tantangan dalam berkomunikasi dan berinteraksi sosial. Kesulitan ini dapat memengaruhi perkembangan bahasa, kemampuan bersosialisasi, serta kepercayaan diri anak. Pendekatan storytelling adaptif hadir sebagai alternatif yang menjanjikan dalam mendukung komunikasi anak ASD melalui metode yang disesuaikan dengan kebutuhan individual mereka. Kegiatan pengabdian masyarakat ini bertujuan untuk menguji efektivitas pendekatan tersebut dalam meningkatkan kemampuan komunikasi dan bercerita anak-anak ASD di TK Tunas Bhakti. Program ini melibatkan tiga anak usia 6–7 tahun dan dilakukan dalam empat sesi storytelling dengan media yang bervariasi, seperti buah asli, video animasi, dan boneka tangan. Data dikumpulkan melalui observasi langsung, wawancara pra dan pasca kegiatan, serta dokumentasi proses. Hasil menunjukkan adanya peningkatan signifikan pada beberapa indikator: frekuensi inisiatif berbicara meningkat dari sangat jarang (0–1 kali/minggu) menjadi terjadi setiap hari; respons anak menjadi lebih relevan dan tepat waktu; serta kemampuan mengingat cerita berkembang dari narasi terputus-putus menjadi runtut dan lebih terstruktur. Anak juga menunjukkan peningkatan intonasi ekspresif, keterlibatan sosial dengan teman sebaya, dan rasa percaya diri saat berbicara. Pendekatan storytelling adaptif yang disesuaikan dengan kebutuhan sensori dan emosional anak terbukti efektif dalam meningkatkan komunikasi mereka. Temuan ini memperkuat potensi storytelling adaptif sebagai strategi edukatif dan psikososial dalam pendidikan inklusif anak usia dini. Implementasi mendatang diharapkan mencakup lebih banyak peserta dan durasi intervensi yang lebih panjang agar dampaknya lebih luas.

Kata Kunci: anak usia dini, autisme, interaksi sosial, kemampuan komunikasi, storytelling adaptif.

Introduction

Children with Autism Spectrum Disorder (ASD) often experience profound challenges in building verbal communication and social interaction—two essential pillars in early childhood development. These difficulties are not merely about speaking or responding, but are deeply connected to how they perceive, process, and engage with the world around them. As outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), children with ASD may show limited eye contact, difficulty understanding social cues, and exhibit repetitive or highly focused behaviors and interests (Hodges et al., 2020). These characteristics often result in delayed language acquisition and limited participation in classroom interactions (Karani et al., 2022; Yuliana, 2021).

At TK Tunas Bhakti Semarang, our initial observations confirmed what the literature describes. Several children aged 6–7 years were frequently disengaged, offered minimal verbal response, and struggled to connect during group activities. Teachers shared how some children seemed distant when spoken to, while others avoided interaction altogether. A few displayed unpredictable mood shifts or quietly withdrew when prompted to speak. These classroom dynamics revealed an urgent need for approaches that are not only educational but also sensitive to the emotional and sensory needs of each child.

Yet, within these challenges lies potential. Many children with ASD have strong personal interests, unique ways of thinking, and hidden strengths that, when respectfully engaged, can spark remarkable growth. One such avenue is adaptive storytelling—a flexible, child-centered method that weaves together narrative structure with emotional safety. Storytelling in early childhood education is more than just telling tales; it is a bridge between language and experience, fostering connection, understanding, and expression (Christin et al., 2021). For children with ASD, stories can offer a safe path into communication, one that honors their rhythm, their curiosity, and their world.

Emerging studies support this. A study by Ardhiyanti (2017) found that using hand puppets during storytelling significantly helped children with ASD improve their attention span and social reciprocity. Likewise, Fadilla & Yulsyofriend (2023) and Rika et al. (2023) highlighted that visual storytelling could enhance expressive language skills in preschoolers. Azkiya & Iswinarti (2016) also emphasized the importance of engaging multiple senses—sight, sound, touch—in helping children with limited speech abilities participate more fully in learning. However, many of these efforts applied generalized methods, with little room for emotional nuance or sensory diversity.

Our initiative sought to go a step further. We designed an adaptive storytelling program rooted in empathy, responsiveness, and respect for

individuality. Conducted at TK Tunas Bhakti as a community engagement project, this study involved three children diagnosed with ASD, each with different needs and strengths. Across four storytelling sessions—featuring real fruits, animated videos, and expressive puppets—we created space for each child to engage, express, and connect at their own pace.

What sets this effort apart is its commitment to human-centered learning (Homdijah et al., 2023). Each session was not fixed, but responsive. Stories could slow down, speed up, or shift based on the child's interest, energy, or emotional readiness. Verbal participation was encouraged, never forced. Connection was valued over perfection. In this way, storytelling became more than just a teaching tool—it became a shared space of joy, empathy, and discovery.

The purpose of this study is to explore how adaptive storytelling can be used as a meaningful communication medium for children with ASD. More than developing language, we hope this method nurtures self-confidence, emotional awareness, and a deeper sense of belonging. Though limited in scope, this work aspires to open new doors toward more inclusive, responsive, and compassionate early childhood education practices—where every child's voice, however quiet, can be heard and honored.

Method

This community service program was carried out at TK Tunas Bhakti, a kindergarten in Semarang that includes children with Autism Spectrum Disorder (ASD). Using a descriptive qualitative approach, the program aimed to improve the communication skills of children with ASD through adaptive storytelling sessions. Three children aged 6 to 7 years, officially diagnosed by a clinical psychologist, were selected in coordination with the school due to their limited verbal expression and low social responsiveness. The intervention consisted of four storytelling sessions over two weeks, each lasting 45–60 minutes, conducted in familiar classroom settings to maintain emotional safety and reduce sensory distractions.

The sessions were designed based on each child's interests and sensory preferences. Real fruits were used as story characters in the first session, while the second and third sessions featured short animated videos that encouraged dialogue. In the final session, hand puppets were introduced to help children explore emotions and role-play. Each meeting began with a warm-up to build connection, followed by storytelling with guided interaction, and ended with opportunities for the children to retell the story in their own words.

Data were gathered through teacher interviews, session observations, video recordings, and documentation of expressive behaviors (Creswell John and Creswell David, 2023; Sugiyono, 2018). The results were analyzed using content analysis and triangulation, focusing on improvements in verbal responses, sentence structure, and interaction with peers and adults. To support sustainability, the team also shared simple storytelling techniques with teachers through informal

discussions, encouraging them to integrate similar approaches into daily classroom activities. Although limited in scope, this program offers a replicable and low-cost model for inclusive early childhood education that values responsiveness, empathy, and the unique strengths of every child.

Theoretical Review

1. Theory of Mind (ToM)

The Theory of Mind (ToM) refers to the cognitive ability to attribute mental states – such as beliefs, intentions, desires, and emotions – to oneself and others (Fu et al., 2023). In children with ASD, this ability is often underdeveloped, resulting in difficulties understanding perspectives different from their own. Storytelling, particularly adaptive storytelling, provides a structured yet imaginative environment where children can practice recognizing emotions and motivations of characters, thus indirectly nurturing their ToM capacities (Sudarto et al., 2023). By inviting children to participate in role-play or retell stories, they are gently encouraged to interpret emotional cues and social contexts – skills they may not spontaneously develop in conventional classroom interactions. The integration of ToM into adaptive storytelling helps bridge the cognitive gap between self-awareness and social understanding, which is crucial for fostering empathy and communication in children with ASD (Bamicha & Drigas, 2022).

2. Vygotsky's Sociocultural Theory

Vygotsky's Sociocultural Theory (1978) emphasizes the role of social interaction and cultural tools in the development of higher psychological functions (McLeod, 2025). Central to this theory is the concept of the Zone of Proximal Development (ZPD) – the range between what a child can do independently and what they can achieve with guidance (Gauvain, 2020). Adaptive storytelling aligns with this framework by serving as a mediational tool that scaffolds language and social development within the child's ZPD. Through interaction with a facilitator, peers, or familiar media (e.g., puppets, videos), the child is gradually led toward improved communication skills. Importantly, storytelling provides contextual cues – intonation, gesture, narrative structure – that assist children in organizing their thoughts and engaging with others (Maureen et al., 2022). In the case of children with ASD, who often struggle with unstructured or unpredictable environments, the semi-structured nature of storytelling offers a safe yet dynamic space for linguistic and social experimentation (Gauvain, 2020; McLeod, 2025).

3. Multisensory Learning Theory

Multisensory Learning Theory posits that learning is most effective when it engages multiple sensory pathways – visual, auditory, tactile, and kinesthetic (Esplendori et al., 2022). This is particularly relevant for children with ASD, many of whom have unique sensory processing profiles. Some may be hypersensitive to auditory input, while others may crave tactile or visual stimuli. Adaptive storytelling leverages this theory by incorporating diverse sensory elements into narrative delivery: real objects (like fruits), moving images (animations), and

physical interaction (puppets, gestures) (Diaudin et al., 2024). These multimodal inputs help sustain attention, reduce anxiety, and enhance memory retention. Furthermore, the use of preferred sensory channels respects the child's neurodiversity and affirms their way of learning, making storytelling not only a pedagogical strategy but also a form of inclusive and affirming communication (Cohn & Harrison, 2025).

Results

Prior to the intervention, the three participating children with Autism Spectrum Disorder (ASD) at TK Tunas Bhakti showed minimal verbal output, limited eye contact, and low responsiveness to verbal prompts. One child primarily communicated through gestures and spoke only in single words, while another often repeated words (echolalia) without meaningful engagement. Teachers also noted passive behavior, emotional withdrawal, and difficulty sustaining attention in social and classroom settings.

During the four adaptive storytelling sessions, each child responded differently depending on the media used. In the first session, using real fruits as story characters, one child spontaneously named a fruit and associated it with kindness. In later sessions, animated videos such as *Nusa and Rara* and *The Kind Turtle* prompted verbal reactions and role-play. By the final session, children began mimicking puppet expressions, using varied tones and expressing emotions through their storytelling.

A comparison between pre- and post-session observations showed significant growth. Children began initiating speech daily, their responses became more relevant, and their storytelling became more coherent and expressive. Teachers reported visible improvements in turn-taking, attention span, and spontaneous verbal interaction with peers. One notable moment occurred when a child, after watching a story about friendship, quietly related it to his own mother—an unprompted emotional connection not observed previously. Another child used puppets to narrate a simple personal experience about sharing lunch, displaying sequencing skills and emotional expression.

The multisensory storytelling—through real objects, animations, and puppets—helped accommodate the children's diverse sensory preferences. Some responded more actively to tactile engagement, while others showed stronger interest in visual or auditory stimuli. Teachers confirmed that communication gains observed during sessions extended into regular classroom activities. They also expressed enthusiasm for continuing storytelling strategies and received informal training on storytelling techniques. This indicates a ripple effect of the program, not only for the children but also for the learning environment.

Discussion

1.1 Communication Challenges Before the Intervention

Prior to the implementation of the adaptive storytelling sessions, a comprehensive pre-observation was conducted to understand the communication baseline of the three participating children with Autism Spectrum Disorder (ASD) at TK Tunas Bhakti. Initial interviews with teachers revealed that the children exhibited minimal verbal output, lacked consistent eye contact, and often responded inappropriately – or not at all – to verbal prompts. One of the children, for instance, could only speak in one- or two-word utterances and frequently relied on gestures to communicate basic needs. Another child was described as "often lost in thought" and displayed echolalic speech when prompted to speak.



Picture 1. Initial Condition Prior to the Intervention

This preliminary stage clearly identified the core challenges faced: low expressive language, poor narrative structure in speech, limited social engagement, and an observable hesitation or anxiety when speaking in front of others. The children also demonstrated short attention spans, making traditional teaching or communication interventions less effective. The pressing question was: how could a method be designed that both engages and adapts to the unique sensory, emotional, and linguistic profiles of each child?

1.2 Designing and Implementing the Adaptive Storytelling Approach

The intervention was conceptualized using a human-centered design framework. It was informed not only by prior literature on storytelling and autism but also by the real-time feedback from teachers and behavioral observations. Each of the four sessions was crafted to follow a flexible structure, beginning with rapport-building activities, followed by storytelling, and concluding with child-led retelling or discussion.

The materials used were intentionally multisensory: real fruits with distinct textures, colors, and smells; animated videos rich in audio-visual cues; and expressive hand puppets. For instance, in Session 1, children were introduced to characters represented by bananas, oranges, and apples. These fruit-characters had names and personalities, and the story revolved around themes of friendship and kindness.



Picture 2. Implementation of Storytelling Using Real Fruits as Story Characters

In this session, the children were invited to hold, smell, and name the fruits, which anchored the narrative in a concrete sensory experience. One teacher commented:

"For the first time, I saw one of the students voluntarily speak up, pointing to the banana and saying 'Pino! Good friend.' That small phrase meant the world."

This physical anchoring of abstract ideas into tangible experiences was key. In Session 2, animated videos featuring familiar characters like Nusa and Rara were used. These characters modeled prosocial behavior such as saying "thank you" or offering help, which children then practiced through role-play. By the fourth session, with the use of hand puppets, the children began mimicking tones, facial expressions, and dialogue more fluently.

1.3 Observable Improvements in Communication and Participation

As the sessions progressed, qualitative improvements became evident. Children who previously avoided eye contact started to make brief but meaningful connections. Those who rarely initiated speech began to respond with full sentences or even offer spontaneous commentary.



Picture 3. Storytelling Using Animated Media

Pre- and post-session teacher interviews confirmed a visible difference in the children's willingness to speak and their confidence in using language. The following chart summarizes observed verbal behavior.

Chart 1. Observed Verbal Behavior

Communication Indicator	Before Intervention	After 4 Sessions
Initiating speech	Rare (0–1/week)	Frequent (daily)
Responding to questions	Often nonverbal or off-topic	Mostly relevant and timely
Story recall ability	Fragmented, unclear	Sequential, more detailed

Communication Indicator	Before Intervention	After 4 Sessions
Use of expressive language	Limited	Increasing use of intonation and emotion
Verbal interaction with peers	Minimal	Emerging, often initiated by child

This growth is not attributed solely to the repetition of storytelling sessions, but to the adaptive and emotionally sensitive way in which the stories were delivered. Children were never pressured to perform. Instead, they were invited to participate on their own terms, in ways that felt comfortable to them. This empowerment through autonomy is consistent with Vygotsky's sociocultural theory: learning happens when the child is gently scaffolded within their Zone of Proximal Development (Storch, 2018).

1.4 Emotional Engagement and Empathy through Narrative

One of the most profound outcomes of the program was the emotional awakening observed in the children. In Session 3, for example, after watching a video about a kind turtle helping a friend, one child quietly said, "Like my mom." It was an unexpected, unprompted association – a sign of emotional connection and personal reflection. This marked a shift from passive reception to active meaning-making.



Picture 4. Children's Enthusiasm During Storytelling Sessions



Picture 5. Students Actively Engage in the Storytelling Process

Similarly, during the final session with puppets, a child chose to narrate a personal story using the puppets as voice actors. While the plot was simple – "sharing food with friends at lunch" – the act of sequencing events, expressing emotions through the puppets, and confidently speaking to an audience was a milestone.

These moments exemplify what the Theory of Mind refers to: being able to imagine another's perspective, express empathy, and relate personal experiences to universal themes. The narratives provided not just structure but a safe emotional container in which children could explore social roles and relational dynamics.

1.5 Multisensory Storytelling as Inclusive Pedagogy

The decision to use real fruits, animations, and puppets was not incidental; it was rooted in multisensory learning theory. Engaging children through multiple senses increases the likelihood of information retention and emotional resonance. For children with ASD, who often have unique sensory processing styles, the adaptability of materials was crucial. Some children responded more enthusiastically to tactile stimuli, while others preferred visual or auditory input.



Picture 6. Students Appear Enthusiastic, Joyful, and Happy

By offering multiple access points to the same story, the sessions accommodated diverse learning profiles. This not only improved communication outcomes but also affirmed each child's preferred way of engaging with the world. It reinforced the idea that learning is not one-size-fits-all, particularly in inclusive classrooms (Diaudin et al., 2024).

1.6 Teacher Feedback and Community Empowerment

As part of the community engagement aspect of this initiative, teachers at TK Tunas Bhakti were involved throughout the process – not merely as observers, but as co-facilitators. Their role was vital in maintaining consistency, providing emotional support to the children, and offering post-session reflection that shaped the following sessions.

Teachers noted that even outside the storytelling sessions, children who had participated began showing increased verbal output during regular classroom activities. Inspired by the success of the program, teachers expressed interest in integrating storytelling more regularly into their curriculum, especially using puppets and visual media.

An informal training session was held at the end of the program to introduce storytelling frameworks, character development strategies, and voice modulation techniques. While simple, this transfer of knowledge represents an important ripple effect of the project: empowering educators to continue and evolve the practice beyond the original scope of the intervention.

1.7 Limitations and Considerations for Future Work

While the outcomes of the adaptive storytelling sessions were promising, the study was limited by its small sample size and short intervention duration. Each child's progress was deeply contextual, shaped by their individual personality, sensory profile, and emotional readiness. As such, the results cannot be generalized without caution.

However, this limitation also underscores the core value of the approach: personalization. Adaptive storytelling is not a fixed method—it is a framework that listens to the learner and evolves in real time. For future research and community programs, incorporating longer-term follow-ups, parental involvement, and expanded age ranges could further illuminate the potential of this approach.

There is also scope to explore digital storytelling tools tailored for children with ASD, combining technology with narrative empathy. Collaboration with speech therapists and psychologists could enrich the intervention design and enable more robust outcome measurement.

Conclusion

This community service initiative demonstrates that adaptive storytelling can be a meaningful and flexible approach to support communication development in children with Autism Spectrum Disorder (ASD), especially within inclusive early childhood settings. Through four carefully designed sessions that were sensitive to the children's sensory and emotional needs, this program observed clear progress in verbal expression, narrative participation, social interaction, and emotional engagement. What made this intervention effective was not the sophistication of its tools, but the intention behind them—offering children the freedom to respond, express, and connect through stories they could relate to. Real fruits, animated videos, and puppets became more than media; they became bridges between inner experience and shared understanding. Although this program was limited in scale, the outcomes suggest that even small, empathetic interventions can lead to meaningful breakthroughs when learning is approached with patience, presence, and genuine curiosity. Moving forward, we recognize the need for broader implementation, collaboration with specialists, and deeper family involvement to explore the long-term potential of adaptive storytelling. We humbly offer this work as a step forward—not as a finished solution, but as an invitation to continue learning, adapting, and walking alongside children in ways that honor their voices and their unique ways of being.

Suggestions

Based on the findings and reflections from this community engagement activity, we humbly offer the following suggestions:

For educators and practitioners: Consider integrating adaptive storytelling into daily classroom routines, particularly in inclusive settings. Emphasize the importance of media selection based on children's special interests and emotional readiness, rather than a one-size-fits-all curriculum.

For schools and institutions: Provide teachers with simple training on storytelling strategies, such as voice modulation, emotional cues, and the use of tactile or visual aids. Even minimal adjustments can make storytelling more engaging and accessible for children with ASD.

For future research and community service programs: Expand participant diversity and increase session frequency to examine long-term impacts of adaptive

storytelling on language development and emotional regulation. Collaborating with therapists and psychologists could also offer a more holistic understanding of the outcomes.

For families and caregivers: Encourage storytelling as a home activity, using everyday objects, family stories, or puppets to create shared communication experiences. Storytelling can be a joyful way to deepen connection and model expressive language in a safe, familiar environment.

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