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TITLE: Utilizing the 5E instructional model to support turn-taking in cooperative play for preschoolers with autism spectrum disorder: A proposed teaching framework

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ABSTRACT

This study presents a classroom plan designed to teach young children within the Autism Spectrum Disorder (ASD) to take turns during group play at special kindergarten settings. Rather than just talking about it, the approach involves hands-on activities in which children are encouraged to participate by watching, following step-by-step instructions and using pictures, which are methods that children often respond well to. Taking turns involves smoothly swapping roles when playing games or sharing toys, which helps to build teamwork, confidence and better relationships. The approach uses clear, sequential stages to ensure steady and predictable learning, which matches how many preschoolers with autism naturally engage with their world. Each session uses images and routines to create a safe and enjoyable experience, helping children to connect with their peers without pressure. The approach is built around small successes, each child's own pace, and recognising what each child brings to the table. Children join twice weekly for half-hour activities, spread over six weeks to make a total of twelve short meetings. Games use simple tools, such as countdown clocks, step-by-step image cards and hand toys, to help children take turns easily and enjoy themselves. Each lesson follows a five-part structure: The start hooks interest using real-life tales and bright images. The 'Try' section lets children learn by doing, feeling textures and moving around under gentle guidance. Show: provides straightforward examples with hints when needed. Expand: encourages them to try new things in different make-believe scenes. Check: celebrates achievements through positive conversations led by the child. Progress is tracked using a simple two-choice method (done/not done), which assesses eight core sharing actions during set 10-minute open-play sessions before (T1) and after (T2). Two observers aim for 90% agreement on scores, while number summaries highlight results and written snapshots capture emotional reactions and social interactions. Ethical steps include getting clearance from oversight groups and signed permission from parents, as well as getting the children to agree via picture-choice tools, to keep things fair and child-led. Past setups like this one show that turn-sharing might increase from around 40% to almost 80% after the activity, while notes

taken during meetings could indicate a greater willingness to share or act confidently. Based on the hands-on 5E method, this lesson plan provides teachers with a clear way to encourage taking turns, helping children with autism to grow emotionally and socially through everyday classroom activities. Research supports the use of visuals and routine tasks with autistic children, which is why this plan can be adapted to meet individual needs, allowing each learner to gradually take control. Implementing this approach helps children feel heard within their social group and suggests adjustments depending on the school setting, enabling younger students everywhere to build stronger peer bonds earlier.

INTRODUCTION

Autism spectrum disorder manifests differently in every child. Some notice tiny details that others miss and pick up patterns quickly. They thrive on consistency (Mottron et al., 2006, p. 22, para. 2) and see social cues in their own way, adjusting how they act and adding depth to how children connect (American Psychiatric Association, 2013, p. 50, para. 1). Globally, approximately one in every 100 children falls within this spectrum, providing schools with an opportunity to leverage each child's strengths from an early age and foster an inclusive environment where every child feels a sense of belonging (Zeidan et al., 2022, p. 778, para. 2). At preschool age, children with autism may focus intensely, come up with original ideas during organised games and become excited by colours and shapes. These traits can facilitate the teaching of taking turns — the back-and-forth rhythm of joint activities such as passing blocks or sharing ideas when creating stories together. Learning this skill enables children to participate more freely with their classmates, thereby boosting their confidence and helping them to understand others' feelings and form balanced friendships that enhance their everyday happiness (Gangi et al., 2016, p. 1415, para. 5).

Children learn to take turns during play, which makes them feel part of the group while building their patience and teamwork skills through shared activities (Zwaigenbaum et al., 2015, p. 64, para. 2). Children on the autism spectrum often acquire this skill more easily when visuals or daily routines are employed, transforming everyday activities such as games into opportunities to initiate conversations and forge positive connections with their peers (Hunter et al., 2017, p. 68, para. 1). When teachers build lessons around each child's strengths, they create an environment where every child can flourish in their own way, fostering involvement and a sense of acceptance among friends.

The 5E approach — Engage, Explore, Explain, Elaborate and Evaluate — provides an engaging way to design lessons that build on children's natural interests while gradually developing their skills through practical activities (Bybee et al., 2006, p. 2, Table 1). It works by first sparking interest, then moving into practice. 'Engage' captures attention using curiosity hooks, 'Explore' provides an opportunity to try things out firsthand so that ideas can take root, 'Explain' offers straightforward support to clarify thinking, 'Elaborate' encourages creative exploration of new areas, and 'Evaluate'

celebrates progress to strengthen confidence and development (Bybee et al., 2006, p. 2, Table 1). For students with ASD, the clear stages and visual elements of the approach align with their strong need for routine, while also helping them to apply their abilities outside the classroom and supporting gains in key interactions such as taking turns (Koegel, Vernon & Koegel, 2014, p. 429, para. 2). Unlike methods such as TEACCH, which focus on setup and order (Mesibov et al., 2005, p. 20, para. 2), this method encourages movement, enquiry and learner-led choices. As it is based on how children build knowledge, this approach gets them involved by sparking their curiosity, enabling them to learn through doing and playing with materials and using clear visuals — features that work well for young autistic learners. Its five steps — hooking interest, exploring ideas, sharing understanding, expanding thinking and checking progress — create a steady yet adaptable flow. Research by Bybee et al. (2006, p. 1, Table 1) shows that it helps to develop social skills in mixed classrooms, an area that is now supported by robust research.

Real-world findings show that organised, game-like methods help children with ASD to take turns more effectively. For example, movement-focused strategies such as modified games involving role-switching have boosted emotional engagement and teamwork among children with ASD, as well as fostering more positive interactions between classmates (Rosendahl, 2021, p. 5, para. 4). Similarly, exercises inspired by yoga, which also involve taking turns, have been shown to improve shared focus and cooperation, resulting in smoother group activities and calmer participation (Radhakrishna et al., 2010, p. 28, para. 2). These examples reveal that clear signals and predictable patterns can enhance a child's ability to participate, experience joy, and improve their performance in play activities. However, there are few studies that combine the 5E learning approach with turn-taking among preschoolers with ASD, particularly in diverse cultural settings such as Greece, where early education emphasises exploration and collaboration.

This study introduces a new approach to teaching using the 5E method in a Greek kindergarten for children with special educational needs, with the aim of helping children to take turns during group play. Rather than simply combining ideas, this approach provides teachers with a practical tool that leverages the strengths of children with autism, such as their ability to recognise pictures and patterns, to facilitate shared play more effectively and enjoyable. Since children with ASD often like clear routines and visual cues, this approach naturally fits their habits, using everyday moments as opportunities for growth without requiring specialised materials. Rather than focusing on limitations, the approach shifts attention to what each child can already do, helping them to feel capable while building friendships at their own pace. Teachers guide students through each stage of the 5E cycle step by step, starting with things they know and enjoy, and slowly leading them towards imaginative ways to share and cooperate. They check growth by identifying improvements and strong points, and use this information to shape the experience further.

METHOD

Nature of This Proposal

This study introduces a teaching plan intended for use in kindergartens with children with ASD. The techniques, steps and evaluation tools outlined here are based on theory, yet to they haven't been tried all together out in real classrooms. Implementing the plan and checking its effectiveness will be part of ongoing research efforts further down the line. We will discuss the result sections by looking at similar past programmes found in published work.

Participants and setting

The plan is most effective for young children with autism in early learning classes such as preschool or kindergarten settings. The teacher should encourage all those students who enjoy looking at images and joining group games to participate– this way, the setup would utilise their existing strengths, while keeping parents fully informed and on board at every stage. The children mentioned children often excel at noticing sequences, sticking to daily rhythms and sharing thoughts using signs, drawings or picture cards – the approach naturally builds on these strengths. Imagine a cozy corner in the classroom where small groups can gather. It would have cushioned seating, soft lighting and easily accessible bins for visual tools, making it easy to shift between tasks and maintain focus on meaningful connections. Fun activities take place at times when children usually play, fitting right into their day. These activities would be run by the teacher, who helps learners with different needs, and the school counsellor, making it feel like teamwork where everyone's voice matters. Approval from an oversight group is required to do things the right way, and children are given picture options (like smiley faces or checkmarks) to indicate their consent. Information is kept private and progress is shared with parents frequently so they're always in the loop.

Proposed Teaching Procedures: The 5E Structured Teaching Scenario

The six-week plan involves two half-hour activities each week, adding up to twelve in total. All activities are based on team play and use simple, engaging materials such as squishy balls, stackable bricks, hand puppets and sand clocks, to help children learn to take turns without stress. Every meeting begins with a step-by-step image chart that previews what's next, using drawings to map out the flow. It concludes with everyone gathering to share key moments using symbols or body signals, which creates positive memories while boosting confidence (National Professional Development Center on ASD, 2015, p. 17, para. 1).

The teacher shows the children how to take turns during play, such as smoothly switching roles to keep things fair, and pointing out the benefits, such as "When we take turns, everyone gets to enjoy it and feels part of it". Each lesson uses the 5E steps. Instead of leading strictly, the adult provides light guidance, showing excitement and using soft visual cues. They also cheer on each child's contributions to boost their self-assurance. The sequence matters — it flows from sparking interest into exploration, explanation and experimentation, and then reflection — so young learners can grow their abilities naturally while excelling in noticing details or sticking to habits.

- Warm-up (5 minutes): Start with a colorful picture book showing cheerful creatures playing nicely together, such as rabbits tossing berries back and forth in a loop. Ask the children to tap the parts where one says, 'now me' and another says 'now you', helping them to relate it to their own experiences at the playground. Using bold visuals grabs attention quickly and creates a positive atmosphere from the outset (Bybee et al., 2006, p. 2, Table 1). Things needed: An oversized book with bright scenes. What we hope to see: little fingers jabbing at the pages or grins breaking out.

- Check it out (10 min): Start with whatever grabs their attention. Kids learn to take turns by joining a group game where they roll a squishy ball around in a ring. Use a bright countdown tool, such as an hourglass with images, to mark shifts. The adult observes how each child reacts, silently acknowledging when someone shares without being prompted and ensuring a relaxed atmosphere so that the children can freely explore (Radhakrishna et al., 2010, p. 28, para. 2). Doing things instead of just hearing about them boosts discovery skills and feeds real wonder. Things needed: Squishy ball, image-based timer, step-by-step pictures for 'send' and 'hold'; likely reactions: Shy rolls at first, then quicker hand-offs.

- Explain (8 min): The teacher uses puppets to demonstrate how to take turns, for example by saying, 'I'll give it to you, then it's your turn', so the children understand through a short back-and-forth chat. While this happens, little mirrors allow the children to watch their own faces as they learn what calm waiting looks like. Step-by-step picture cards also help, laying out actions such as 'Watch first, hold on, hand over', providing a practical way to understand why sharing time makes games enjoyable (Rosendahl, 2021, p. 3, para. 2). Here, support comes alive through real-life examples using images that are more memorable than words alone. What's needed: Hand puppets, small mirrors and tough printed guides. Signs of learning: Copying moves or sounds during play.

- Children get creative by trying out fun changes, such as switching up how they stack blocks when building a tower together or grabbing cue cards to jog their memory. Teachers can help by suggesting ideas such as 'build a pet home' or encouraging the children to cheer each other on (Zwaigenbaum et al., 2015, p. 73, para. 3). This part helps them to apply what they have learnt in new ways and gives them recognition when they come up with cool ideas. Things needed: Bright bricks and reminder cards. What you would see: Children mixing it up on their own and smiling.

- Check-in (2 mins): The teacher helps the children to spot their progress by going over a big picture board with happy faces. The students add sticky notes showing their best bits and then chat about them using images that show what worked well. This helps them recognise their strengths, preparing them for the next session (NCPMI, 2023, p.1, para. 1). Staff needed: Face chart, stick-ons. Likely actions: Confident choices and pointing responses.

Some changes might mean loose schedules to fit each child's pace, along with extra pictures for those who learn better that way. What is done is tracked using lists designed to achieve about 95% follow-through (Ledford & Gast, 2018, p. 142, para. 2). The instructor makes adjustments on the fly when watching closely so that no one feels left out or stuck.

Proposed Assessment

The assessment will focus on identifying improvements in taking turns using a step-by-step observation method that has been specifically designed for this project. As there are currently no brief, play-focused tools available for tracking turn-taking in Greek early years settings, we have developed an eight-point checklist comprising yes-or-no questions based on clear behavioural markers used in partner-led learning studies (Thiemann-Bourque et al., 2016, p. 1137, para. 2). The checklist covers four categories: initiating take-turn moments, responding when someone else initiates, maintaining the rhythm, and carrying it over to new activities. Each category has two questions, for example, 'Does the child give a toy to a classmate?' and 'Does the child grab an offered object?'. To ensure the reliability of the results, the recordings are coded separately by different reviewers, aiming for a 90% match rate (acceptable range: 85–95%). Information is gathered during fixed 10-minute open-play sessions at two stages: first, before any changes occur (baseline, with an average of two runs), and second, after the scenario has been implemented and opportunities to switch have occurred naturally (for example, an adult will demonstrate around four examples per category). Trained observers, unaware of the study's objectives, review video clips and determine how often turn-taking occurs in each of the eight categories. To ensure accuracy, the ratings of two people should match exactly nine times out of ten for each moment scored.

Qualitative observations can capture natural moments, such as a child smiling or reaching out during an activity. These moments can reveal how involved or self-assured the child feels when switching roles. Statistic programs such as SPSS could handle the number crunching instead of complex tools, providing averages, the spread of scores and shifts in percentages to show progress over time. Advanced statistics would be omitted due to the limited number of participants. The focus remains on improvements to help refine activities later, while acknowledging the unique contributions that children make to shared games.

Projected Outcomes Based on Comparable Interventions

Studies investigating how children with special educational needs communicate socially have shown that they demonstrate better turn-taking when their classmates assist them. In one study, four young children with ASD who rarely spoke initially used an average of one picture card every six minutes while playing. However, once their peers had learned the Stay-Play-Talk approach using PECS, the number of exchanges per round increased to five to twelve, particularly during snack time. Progress doubled for a couple of the children during this time. This approach was clearly effective with the first child and equally so with the next three. All four children also began to interact more freely with those around them (Thiemann-Bourque et al., 2016, p. 1133, para. 1). If we implement our own 5E-style plan consistently and use effective visual aids, we are likely to see similar results. However, the outcome will mostly depend on each child's individual characteristics, such as their initial level of social skills, how they

process sensory input, and whether they are drawn to visual stimuli. Other factors include the classroom environment, family involvement, and local language and cultural norms prevalent in Greek preschools. Past programs with a similar setup provide the basis for these assumptions. Testing them by running structured trials with video analysis (with the aim of achieving solid agreement between coders), plus number-based and descriptive feedback is key to determining whether this approach works well, and what adjustments might be needed to accommodate different types of learners.

DISCUSSION

This 5E-style lesson plan illustrates how children can learn to take turns during group play. It is supported by research indicating that clear visuals help young children with autism to engage more effectively (Radhakrishna et al., 2010, p. 30, para. 3). Breaking things down slowly and building on what each child does well rather than rushing through steps can gradually boost their confidence; celebrating small successes helps children feel in control and form positive connections with their classmates (Gangi et al., 2016, p. 1414, para. 2).

Value of this scenario

The real value of this idea lies in transforming everyday play into confidence-building activities that respect how children with ASD perceive things and adhere to routines. This paves the way for enjoyable shared experiences that foster emotional growth over time. Teachers get a cost-effective option that naturally fits into early learning plans, making teamwork easier while helping each child feel that they truly belong. Day by day, it encourages children to start taking turns independently — a small step towards better understanding others, handling disagreements, joining in with group activities, and settling into mixed classrooms more easily. As it relies on praise and clear visuals, it is particularly effective in settings where resources are limited, such as special needs kindergartens in Greece. It makes use of existing strengths to create calm, connected playtime.

Originality of This Scenario

This study is notable because it applies the 5E method, which is usually employed in practical science education, to the way in which young children with ASD take turns during play. This area has not been widely explored in previous studies (Bybee et al., 2006, p. 2, para. 1). Rather than relying on routine drills for social learning, this approach incorporates picture clocks, puppet demonstrations, and step-by-step real-world practice in an environment influenced by Greek cultural values. Tasks focus on abilities commonly associated with autism, such as identifying sequences, rather than deficits. By merging classroom strategies with behavioral tools, a new blueprint is created that goes beyond typical play sessions by incorporating built-in questioning and thinking time to encourage independent thought and imagination. While it is still in the process of being launched, its main value lies in blending the 5E

cycle with visuals suited to autistic learners when dealing with emotions and interactions — a combination not recorded in any earlier study.

Contribution to Research

Building on what we know, this idea promotes teaching methods that focus on the strengths of children with ASD. It provides a practical example where previous studies have been limited, particularly with regard to incorporating social skills into early learning programmes (Zwaigenbaum et al., 2015, p. 64, para. 3). Rather than being purely theoretical, it offers researchers a clear, step-by-step visual approach that they could test and potentially use to guide larger projects examining the effectiveness of the 5E model across different cultures. While numbers matter, this version also values personal stories and observations, balancing data with real-life changes in how children express themselves or work together. This opens doors to a deeper exploration of the lasting effects on a sense of belonging and mental health. In short, it empowers learners and sparks curiosity about applying similar approaches to highlight other strengths in autism-focused classrooms.

Implications

This idea is relevant not only in preschool settings, but also at home and in the wider community. Families can use visual aids during regular games to strengthen the bond between children and caregivers, and to prepare young children for group activities. In mixed-ability classes, visual aids can connect typical learners with those who learn differently, helping both groups to understand each other through clear, collaborative activities. Depending on the number of students involved, teachers could adapt to it, perhaps by adding screen-based images to engage those interested in gadgets, thus reaching a wider audience.

Limitations and Future Research

This idea offers children on the autism spectrum a clear way to practice taking turns, using pictures to guide them. However, there are some gaps that are worth noting. As it is still just a proposed scenario, our teaching team hasn’t tried it out or verified its effectiveness, so any predictions about its success are pure speculation at this point. It hasn’t been tested with families from different cultures or who speak multiple languages, so it may not be suitable everywhere. Also, although visuals play a significant role, children within the ASD do not all learn in the same way; some respond better to sounds, while others need movement or touch to stay engaged. The six-week timeline may be too short to determine how well children retain their turn-taking skills outside of class. Ultimately, the success of this approach depends on teachers' familiarity with the 5E method, but not all preschool settings have staff who are trained in this approach. Further rigorous experimentation is required to verify the results, evaluate the effectiveness of technological tools in sustaining interest and monitor progress in mixed classrooms over time (Ledford & Gast, 2018, p. 115, para. 3). Comparing this approach with others could help identify the most effective methods

and adapting them for different cultures could increase their global reach. The approach suggested here paves the way for evidence-based learning that recognizes the unique abilities of children with ASD.

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