

Supporting Neurodivergent Youth with SAGE: A Research-Informed Approach

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Introduction

SAGE (Super Awesome Graham Engine) is a digital assistant and coach designed to support neurodivergent youth in navigating daily life with confidence and care. Rooted in the neurodiversity paradigm and grounded in peer-reviewed research, SAGE affirms each child's unique way of thinking, sensing, and interacting, offering guidance without judgment and tools without pressure. Rather than aiming to fix behavior or enforce conformity, SAGE helps children build awareness, grow practical skills, and develop self-trust. It is not a medical device or therapy replacement, nor does it recommend treatment or medication. Instead, SAGE complements existing support by offering daily, developmentally appropriate, user-directed interaction. This paper outlines the five core domains that guide SAGE's design:

1. Emotional Regulation & Interoception
2. Executive Function & Task Support
3. Social Navigation & Self-Advocacy
4. Sensory Awareness & Regulation

Strengths-Based Growth SAGE is grounded in neurodiversity-affirming principles:

- Respect for sensory, cognitive, and emotional diversity
- Adaptable supports that preserve autonomy
- SAGE does not diagnose or treat with clear limits on scope
- User and caregiver ownership of all data

At its heart, SAGE fosters trust, resilience, and growth. It invites neurodivergent youth to see themselves as whole, not broken, and to approach challenges as chances to grow in ways that honor who they are.

1. Emotional Regulation & Interoception

Many neurodivergent children, especially those with autism, ADHD, or anxiety, have trouble identifying, understanding, or managing their emotions. Emotional regulation is a core challenge, not due to lack of effort or discipline, but because the internal signals that guide emotional recognition (like heart rate, muscle tension, or breath changes) can be muted, overwhelming, or hard to interpret. This process, known as interoception, plays a central role in how we sense and respond to our emotional state. Research indicates that neurodivergent individuals frequently experience decreased or unusual interoceptive awareness, which can contribute to challenges with emotional regulation or expressing feelings, such as alexithymia (difficulty describing emotion).

SAGE provides daily emotional check-ins using plain language and visual support, helping young people identify how their body feels before assigning emotional labels. For example, instead of asking “Are you anxious?”, SAGE might ask, “Does your body feel buzzy, tight, or tired?” This language invites exploration rather than judgment. Over time, these check-ins help the child build a personal vocabulary for emotional states, supported by gentle prompts like breathing exercises, grounding activities, or self-advocacy phrases such as “I need a break” or “I’m feeling full right now.”

Evidence from pilot studies of interoception-focused curricula¹ suggests that body-based emotional awareness training can lead to improvements in self-regulation and reduced meltdowns. While literature is still emerging, especially in children, this framework aligns with occupational therapy practices and trauma-informed design. SAGE treats interoception as a skill that develops over time, with no expectation of getting it “right.”

2. Executive Function & Task Support

Executive function refers to the set of cognitive processes that support planning, organizing, initiating, and completing tasks. For many neurodivergent youths, especially those with ADHD, executive function challenges are a daily barrier, not because they are unmotivated or disobedient, but because their brains are wired to process tasks differently.

SAGE is designed to support executive function by offering daily planners, task breakdown helpers, and soft, customizable reminders. Rather than overwhelming a child with instructions, SAGE breaks tasks into small, approachable pieces, with built-in encouragement and reflection. For example, instead of saying “Clean your room,” SAGE might suggest, “Let’s start with your desk, want to do that for three minutes?” This helps build momentum without triggering the feeling of being overwhelmed.

The tools are informed by research in ADHD and autism support, which shows that external scaffolds like checklists, chunked tasks, and time estimation tools can help children initiate and follow through on goals². SAGE lets users set preferences for how they receive help quietly, with nudges, or with more structured coaching, giving control back to the child while still offering support.

3. Social Navigation & Self-advocacy

Social interactions can be complex and unpredictable, and for many neurodivergent children, social norms may feel unspoken or confusing. Challenges may include interpreting tone of voice, understand sarcasm or idioms, or navigating friendship dynamics. These differences are not deficits; they reflect a different way of engaging with the world.

SAGE helps demystify social situations through gentle, just-in-time coaching. It can model language for setting boundaries, initiating conversations, or asking for help. For example, SAGE might offer phrases like “I’m not ready to talk right now” or “Can I play too?” This form of supported scripting has been used effectively in social communication interventions for autistic children³.

SAGE also encourages identity-building through self-advocacy prompts. These support kids in describing their preferences, needs, and sensory or emotional boundaries in appropriate ways. These tools are critical for school, home, and peer environments.

4. Sensory Awareness & Regulation

Sensory processing differences are a core part of many neurodivergent profiles. Some children may be overwhelmed by noise, light, texture, or movement; others may seek intense input to feel calm or focused. These differences can cause fatigue, stress, or behavioral misinterpretation if not supported.

SAGE uses supportive language and interactive features to help children notice sensory states and experiment with regulation strategies. For example, it might ask, “Is anything too loud or too bright right now?” followed by options like “cover your ears,” “take a break,” or “squeeze a fidget.”

Research in sensory integration therapy and occupational science supports individualized approaches to regulation⁴. SAGE does not push desensitization but rather honors the user’s current sensory thresholds while gently building awareness and choice-making capacity.

5. Strengths-based Growth

Neurodivergent youth are often surrounded by feedback focused on what's hard for them. SAGE intentionally flips that narrative by identifying and affirming strengths, patterns of interest, and progress over time. It asks questions like "What went well today?" and celebrates small wins.

This approach draws from positive psychology and identity-safe educational practices⁵ which suggest that when kids feel seen for who they are, not who they are not, they build motivation, resilience, and self-trust. SAGE integrates this mindset into every domain, offering encouragement that is specific, growth-oriented, and affirming.

Conclusion

SAGE is built on a simple yet radical premise: neurodivergent children do not need to be fixed, they need to be understood, supported, and affirmed.

Grounded in emerging science, lived experience, and the neurodiversity support movement, SAGE offers a daily companion for neurodivergent youth navigating an often-misaligned world. It does not seek to enforce compliance or diminish individuality. Instead, it equips users with tools to better understand themselves, advocate for their needs, and grow on their own terms.

Across its five domains, emotional regulation, executive function, social navigation, sensory awareness, and strengths-based growth, SAGE provides actionable, evidence-aligned support tailored to the realities of neurodivergent development. The platform's commitment to user autonomy, privacy, and co-created growth reflects a shift away from prescriptive solutions, emphasizing collaborative and compassionate care.

While the evidence base for affirming digital tools continues to grow, SAGE already embodies a future-forward model of support: one that treats children with respect, meets them where they are, and evolves with their needs.

In choosing SAGE, you're choosing more than a tool. You're choosing an approach that says: "We believe in you. We believe in how you learn, how you feel, how you move through the world." We are not just building better interventions, we're building a world where neurodivergent youth can thrive, be seen, and define success on their own terms.

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Glossary of Key Terms

Alexithymia

Difficulty identifying and describing one's emotions. Often associated with interoceptive challenges and emotional regulation differences.

Autonomy

The ability to make choices and decisions independently. In SAGE, this means users can choose how and when they receive support.

Co-regulation

The supportive process of helping another person manage their emotions or behavior, often a step toward developing self-regulation.

Executive Function

A set of cognitive skills used to plan, organize, remember, and complete tasks. It includes time management, working memory, and flexible thinking.

Identity-safe

An educational or relational approach that affirms and protects each person's sense of self, especially in diverse or marginalized groups.

Interoception

The ability to notice internal body signals (like hunger, heart rate, or tension) that help us recognize emotions and needs.

Just-in-time support

Assistance offered the moment it's needed, rather than in advance or after the fact.

Neurodivergent

Describes people whose brain functions differ from what is often expected in society, including those with autism, ADHD, dyslexia, and others.

Neurodiversity-affirming

An approach that respects and values neurodivergent ways of thinking, feeling, and interacting, rather than trying to normalize or correct them.

Self-advocacy

The ability to communicate one's own needs, preferences, and boundaries clearly and respectfully.

Sensory Processing

How the brain receives and organizes information from the senses. Differences in this process can affect attention, comfort, or behavior.

Supported Scripting

A communication aid that provides example phrases or scripts for navigating social situations.

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