

Leveraging Technology to Support Emotional Self-Regulation in Autistic Students

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Executive Summary

This white paper presents a research-based initiative to improve emotional self-regulation for autistic students through technology-supported interventions and sensory-enriched classroom environments. Emotional regulation challenges often interfere with these learners' academic engagement and social participation. Traditional strategies, like sensory breaks or adult intervention, are reactive and foster dependence.

The project proposes a pilot program at Park Avenue School in Orange, New Jersey, that combines technology and sensory experiences. Selected interventions include wearable stress-monitoring devices, self-regulation mobile apps, interactive digital visual schedules, and multisensory space equipment (e.g., tactile walls, swings, lights, and calming tools). Research strongly supports the view that technology, combined with structured sensory environments, enhances self-awareness, reduces behavioral incidents, and improves inclusion.

To support sustainability, I applied for the SensoryOne Multisensory Space Grant, which funds the development of sensory rooms and the integration of technology. This funding will enable Park Avenue School to establish a fully equipped sensory environment for autistic students, fostering independence, engagement, and emotional regulation.

Background and Problem Statement

Emotional self-regulation is a significant challenge for students with autism spectrum disorder (ASD). At Park Avenue School, many autistic students rely heavily on adult prompts or ad hoc sensory interventions to manage frustration or anxiety. While these supports provide temporary relief, they do not promote student autonomy or teach self-management skills. Consequently, learning is frequently disrupted, and classroom routines are reactive rather than proactive.

Research indicates that autistic learners experience heightened difficulties recognizing, expressing, and managing emotions compared to neurotypical peers (Mazefsky et al., 2013). These difficulties often lead to meltdowns, avoidance, or withdrawal, affecting academic progress and classroom climate.

Technological and sensory innovations present a powerful solution. Mobile applications such as *Calm Counter* or *Choiceworks* provide visual prompts and coping strategies, while wearable devices monitor physiological stress indicators and alert students and educators to early signs of dysregulation (Liu et al., 2017). Physical sensory tools, including swings, tactile walls, weighted items, and lighting, create an environment conducive to self-regulation. However, schools often lack funding or structured systems to implement these interventions effectively.

This initiative proposes a hybrid sensory-and-technology pilot program to proactively support emotional regulation, independence, and inclusion among autistic learners.

Proposed Solution: Hybrid Sensory and Technology Pilot

This initiative establishes a pilot program that introduces a hybrid sensory- and technology-based approach for autistic students at Park Avenue School. The program is guided by the Positive Behavioral Interventions and Supports (PBIS) framework and Universal Design for Learning (UDL) principles.

Key Components:

1. Tool and Environment Selection:

- Evidence-based technologies: wearable stress monitors, self-regulation apps, and interactive digital visual schedules.

- Physical sensory equipment: tactile walls, weighted items, swings, lights, and other multisensory supports.

2. Student Empowerment:

- Instructions for students to independently use digital tools and sensory resources to recognize emotions, apply calming strategies, and re-engage in learning.

3. Data Collection and Reflection:

- Track student engagement, frequency of meltdowns, and classroom disruptions to measure outcomes and inform iterative improvements.

4. External Collaboration:

- Consultation with autism specialists, technology vendors, and SensoryOne to refine implementation, validate effectiveness, and support sustainability through grant funding.

This hybrid approach combines the benefits of both technology and physical sensory support, directly addressing the emotional regulation challenges faced by autistic students while promoting independence and inclusion.

Evidence and Research Support

Empirical studies support the integration of technology and sensory environments for emotional regulation in autistic learners. Wearable devices detecting physiological stress can prevent escalation and support timely interventions (Kushki et al., 2013). Mobile applications and digital visual supports improve emotional recognition and coping skills (Murdock et al., 2013). Multisensory spaces also demonstrate significant benefits for self-regulation, engagement, and behavioral outcomes (SensoryOne, 2021).

Studies have shown that virtual reality programs enhance social and emotional adaptation through simulation (Ip et al., 2018). These results indicate that integrating technology

with tactile sensory environments improves student autonomy, encourages proactive regulation, and cultivates positive classroom dynamics.

Embedding this pilot program within PBIS and UDL ensures equitable access, data-driven evaluation, and structured implementation that benefits all learners.

Funding Application and Sustainability

To support long-term sustainability, I applied for the SensoryOne Multisensory Space Grant, which provides funding for schools to develop sensory rooms and technology-enhanced learning environments. The grant will support the creation of a fully equipped hybrid sensory room for autistic students at Park Avenue School in Orange, New Jersey, including wearable stress monitors, self-regulation apps, interactive visual schedules, and physical sensory tools such as swings, tactile walls, lights, and weighted items.

Funding through SensoryOne ensures that the pilot program can be sustained, expanded, and continuously improved to meet students' evolving emotional and academic needs. The full grant proposal is in Appendix D.

Implementation Outcomes and Professional Growth Impact

This project directly supports my Professional Growth Plan by enhancing leadership in inclusive technology integration and promoting innovative approaches to social-emotional learning.

- **Professional networking:** Consultation with autism specialists, SensoryOne, and technology vendors expanded my collaborative reach.
- **Data-driven decision-making:** Outcome tracking informs improvements and supports future scaling of interventions.

The insights and outcomes from this project inform broader district practices, provide evidence for technology-supported inclusion, and serve as a model for other schools seeking to integrate sensory and technology-based supports.

Conclusion

It is both morally and educationally sound to help autistic students control their emotions. Schools can shift from reactive management to proactive empowerment by combining sensory and technological approaches. This provides students with the tools they need to handle their emotions on their own.

Implementing this pilot program, supported by the SensoryOne grant, promotes autonomy, engagement, and inclusion, creating classrooms where all learners can thrive. Investment in evidence-based technology and sensory environments is essential to equitable, innovative education that addresses students' social, emotional, and academic needs.

References

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Appendices

Appendix A:  APPENDIX A: Evidence-Based Self-Regulation Technologies for Autistic Stu...

Appendix B:  APPENDIX B: Email to SensoryOne

Appendix C:  APPENDIX C: PAS- Pilot Program Data Collection: Emotional Self-Regulati...

Appendix D:  SensoryOne Grant Proposal