

Design Proposal Template:**School:**Desert Shadows Middle School**State:**Arizona **Division:**Middle School**Team Members' Names:** Laila Calixtro, Kyler Chen, Regina Gomez, Ruben Hernandez

Project Title: Readers should have a general sense for what the project is about and want to read more. (20 word maximum)

Watch-It: A sensory overload detector for the special needs community.

Inequity Being Addressed: Describe the inequity that you will attempt to address with your proposed solution, and why you chose this inequity. Students are able to consider a global perspective related to their inequity. (75 word maximum)

We are addressing UN Sustainable Goal #3: Good Health and Well-Being. The inequity centers on the disparities in responses to and support systems for individuals with disabilities. Our proposed solution is to create an app that will facilitate early identification of sensory overload triggers. By developing proactive support rather than relying on reactive responses, we aim to enhance the overall well-being for students with disabilities while promoting systemic equity in special education services.

Community Research and User Identification: Explain the process used to identify the inequity and select your user. Include any research done to identify issues in your community and understand which groups face challenges because of these issues. (150 word maximum)

Our observations at school revealed frequent instances of sensory overload among students with special needs. For instance, we noticed students from the special education program experiencing distress in high-stimulus environments such as hallways and the cafeteria. Upon investigating our district's resources, we discovered that specialized programming for students with disabilities is consolidated into three schools: one elementary, one middle school, and one high school. While these students receive support from paraprofessional staff, our research indicates they would benefit from proactive interventions designed to prevent sensory overload episodes rather than reactive responses. Students with special needs often exhibit heightened sensory sensitivity, making them particularly susceptible to overstimulation in typical school environments. This population requires individualized support and environmental modifications to address their unique sensory processing needs and promote their academic and social success.

User Profile: Provide a detailed description of your selected user. Include information about challenges they face, how those challenges impact their lives, and specific project needs based on user feedback. (150 word maximum)

Our target users include individuals with disabilities and their support networks, with particular focus on students with cognitive and behavioral disabilities. Within the Nogales School District, facilities operate with insufficient staffing, maintaining only 3-6 paraprofessionals per campus. This staffing shortage creates a significant service delivery gap, as the current student-to-staff ratio averages 4:1, preventing individualized attention and timely intervention when students require support. This resource constraint directly impacts students' educational experiences and behavioral outcomes, as immediate needs cannot always be addressed due to competing demands on limited personnel. Our user base therefore encompasses both students with disabilities and the paraprofessional staff who serve as their primary educational supports. To address these systemic challenges and enhance communication between special education students and their school-based support teams, we developed the Watch-It application. This tool is designed to bridge communication gaps and facilitate more effective coordination of care within resource-constrained educational environments.

Project Goals: List your project goals and explain how these goals will address the inequity. Project goals should define the desired outcomes, not specific features of the proposed solution. (150 word maximum)

Our project goal is to ensure individuals with disabilities receive appropriate and timely support services consistent with their needs. Through prompt recognition of behavioral and sensory indicators, support staff can implement intervention strategies designed to prevent and manage sensory overload episodes. This proactive approach enables adaptive coping mechanisms tailored to each individual's specific needs. This method benefits both caretaker and recipient by increasing support staff capacity to deliver timely and targeted interventions. The inequity we focused on centers on the disparities in responses to and support systems for individuals with disabilities. Our goal is to establish a responsive, inclusive environment that optimizes both immediate care outcomes and long-term developmental progress for individuals with disabilities.

Proposed Solution: Describe your proposed solution, including any innovative and unique features, and explain how this solution will address your users' needs and the inequity they face. (150 word maximum)

We are developing a monitoring application that integrates with wearable smartwatch technology to provide continuous physiological monitoring of users' heart rate patterns. The system generates real-time alerts to support staff when elevated heart rate indicators suggest potential sensory overload episodes or heightened emotional states. Early warning notifications provide support personnel with sufficient lead-time to implement preventive interventions and establish appropriate environmental accommodations before episodes escalate. This includes creating designated calm spaces and implementing individualized de-escalation strategies tailored to each user's specific needs. Since elevated heart rate correlates with various emotional

states beyond sensory overload, the data provides valuable insights into users' emotional experiences and triggers. This comprehensive approach promotes improved communication outcomes by helping both support personnel and users. Enhanced understanding of these patterns enables more effective implementation of communication strategies, interventions, and individualized support plans that address each student's social-emotional and sensory processing needs.

Initial Design: A single graphic of your first design idea with key features adequately labeled. It should be easy to understand and the reader should have a general understanding of how the prototype functions by looking at the graphic. Max size 8.5" x 11"

