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INCLUSIVE INTERFACES

THESIS ABSTRACT

In 2014, 1 in 68 children have autism spectrum disorders (ASD) according to US data from the Centres for Disease Control. Occurring in all groups (race, income, geographic), ASD is diagnosed 1 in 42 in boys, which is nearly 5 times higher than in girls (1 in 189). Almost half (46%) of children identified with ASD have average to above average intellectual ability. That's a 78% increase compared to a decade ago. Based on an increase in diagnoses, we can assume that the numbers will continue to increase over time.

Researchers have found that child prodigies have greater number of autistic traits, particularly with attention to detail. Half of the families of the child prodigies studied reported autism diagnoses in first or second degree relatives, indicating strong links to genetics.

I was aware of savant syndrome and its potential in higher education due to my experiences as an educator, in addition to my role as the South Asian self-advocate for ASD. I knew about magazine and website articles from the US, describing extraordinary abilities and splinter skills such as hyperlexia, perfect pitch, pattern recognition and photographic memory. I wanted to create tools and experiences for

neurotypical students, adapted from diverse learning strengths of autistic children with extraordinary abilities. Would these blended, individualized interfaces stimulate neurotypical students to learn effectively and efficiently, in the same way that they help gifted people on the autism spectrum?

In order to answer my researchable question, I created sensory-neutral interface design case studies for learners with ASD, which helped them access digital educational content (online or offline).

These interfaces can also be used by neurotypical learners, providing more tools to access digital resources. Additionally, I created an adaptive experience for both neurotypical as well as autistic learners, inspired by self-directed interest-based learning, a common trait of learners on the autism spectrum.

My case studies and interaction design projects allow greater choices for both educators and students, where few existed before. My goal is to facilitate inclusion by using *dynamic media* technologies that help optimize learning for a greater number of people.