

ADHD, Autism, and other Neurodiversities in the American Classroom: Research into Classroom Management Skills and Behavioral Tactics to Improve Learning Amongst Neurodiverse and Neurotypical Students

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ABSTRACT: My proposed research investigates the phenomena of ADHD, Autistic, and other broadly neurodiverse student's classroom success in direct relation to the accessibility practices and "openness" of the classroom. Classroom accessibility will be monitored with the use of three main implementations: sensory friendly lessons, fidget use, and open seating options. Students will be evaluated on success and improvement in two categories: emotional wellness and academic success. Students will be evaluated on emotional wellness by completion of a bi-weekly survey inquiring into their academic anxiety and self image. Students will be evaluated on academic success by review of state test scores in comparison with other districts as well as per grade with the same assessment given to both the test and control groups. The predicted result is the implementation of accessible classroom practices will cause direct exponential student success in neurodiverse students in correlation to how accessible the classroom is. Additionally, neurotypical students - students without any form of ADHD, Autism Disorder, Dyslexia, Dyspraxia, and other behavioral disorders - will also see an increase of academic success as well as emotional stability and wellbeing. I am requesting \$50,000 in aid for one academic calendar year's worth of research and data collection in classrooms.

PROPOSAL:

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common disorders an American child interacts with. In American schools, nearly 10% of all K-12 students have attained an ADHD diagnosis, though the actual number of expected students with ADHD is closer to 20%. This means roughly one-fifth of all students in a standard K-12 classroom are ADHD. This ailment with ADHD can cause severe classroom repercussions and effects. ADHD can often lead to social, academic, and emotional distress in schoolchildren. I myself am ADHD, and I find daily that I struggle with things my peers would never dream of being an issue. Time blindness, audio processing issues, and a struggle to focus are just three items off a laundry list of ailments that I struggle with daily as an ADHD individual.

One major issue felt by a lot of ADHD-ers is Executive Dysfunction. Executive dysfunction is an umbrella term for all the ways one's personal ADHD symptoms combine to create a mental environment where completion of work or daily tasks is nearly impossible. Everyone experiences executive dysfunction from time to time, but ADHDers and Neurodiverse people in large experience it at a heightened level more frequently. We often feel paralyzed while doing work. Torn between decisions, we are unsure which is the "correct" one. ADHDers and other neurodiverse people thus experience heightened distress when it comes to completing schoolwork.

The report, "Executive Dysfunction in School-Age Children With ADHD" written by authors Rikke Lambek, Rosemary Tannok, and their colleagues and published in the *Journal of Attention Disorders* showcases the heightened numbers of executive dysfunction in ADHDers. Their report found that as a group, ADHD children exhibit executive dysfunction at a higher rate, specifically when they are put in a group academic setting (Lambek, et. al).

The modern American K-12 school has little to no requirements of accessibility and neurodiverse sensitivity training. Often, teachers are practicing outdated and ableist methodology that has been repeated for decades.

My proposed research would question a better way to educate not just our ADHD students, but all students in the modern American school system. I propose that accessibility practices built into the classroom (access to open seating, stim toys, and sensory friendly lessons) would not only improve the emotional and academic well being of neurodiverse children, but would create an improved morale and prowess of all students in the classroom, ADHD or not.

I was first drawn to this topic at age 13, when I myself was diagnosed with ADHD. I lived over a decade of my life with an undiagnosed disability, and its repercussions affected me every day. Every test I did not pass, every assignment I struggled to comprehend, it was all linked to my undiagnosed ADHD. This is quite commonplace actually, as, “It is estimated that half to three-quarters of all women with attention-deficit/hyperactivity disorder (ADHD) are undiagnosed.”(Walters). If a girl or woman is lucky enough to be diagnosed, it often comes later in life, with girls being diagnosed “on average, 5 years later than boys” (Walters). Meanwhile, boys are much more likely to be diagnosed with ADHD at significantly younger ages, with their likelihood of diagnosis being 13.2% at age 7, in comparison with girl’s likelihood of diagnosis being a mere 5.6% at age 12 (Walters). This disparity piqued my interest, and I began to research other ways the ADHD and neurodiverse community has been disenfranchised.

When performing research into the history of ADHD acceptance and resources, it became abundantly clear how little there was in the realm of required training on neurodiverse classroom management. In fact, in a study done in 2018, it was found that teachers knew roughly 50% of

the ADHD friendly classroom methods being taught in the inservice (Poznanski, et. al). In my experience, 50% is generous.

In general, little is known about ADHD's relationship with the classroom. ADHD's symptoms manifest differently in different age groups of students. Preschoolers, for example, struggle more with the impulsivity side of ADHD. They suffer in the classroom not because they cannot comprehend the subjects being taught, but because they lack the impulse control to focus in the first place (Dailey and Birchwood). These impulse issues still negatively affect their academics though, with 34% of hyperactive preschoolers observed still being reading-impaired up to 5 years later (Dailey and Birchwood).

In the past, the typical way of treating the classroom outbursts so common for children with ADHD was through the, "use of token-economies... and a mix of positive reinforcement (e.g. praise) and prudent negative consequences" (Pfiffner, et. al). One example provided was the use of a daily behavioral report card where, "the child is rated each day on his or her performance in a number of prespecified domains of behavior that require improvement—and rewarded for [good] performance." (Pfiffner, et. al). This outdated view of classroom ADHD treatment is inherently ableist, as it aims not to help the child but slowly condition them into a carbon copy of their neurotypical classmates. With these outdated practices, general lack of knowledge, and systemic barriers of education in mind, I questioned if there was a better way to teach ADHD students. In my inquiry, I have proposed the research I will now explain.

I propose an academic year long study following three sets of twin classrooms, all pairs ranging different ages, in the LAUSD school system. One half of each pair will be the research subjects, henceforth known as the "accessible" classroom. The other classroom will be our

control group, or “standard” classroom. I will follow both pairs of classrooms for one full academic year, watching them side by side for any academic or behavioral differences between the accessible and standard classrooms. The classrooms will be made up of 3rd, 7th, and 11th grade students. I have chosen these age groups because these are traditionally grades that take part of all state testing in California.

Students in the accessible classroom will be given complete access to all amenities in it. Accessibility will be featured in three main ways: sensory friendly lessons, open seating options, and the use of fidgets in class. I have chosen each of these categories in light of my conducted research married with my own personal experiences.

Sensory friendly lessons will consist of access to noise dampening earphones. These earphones will allow sensory sensitive students to take part in lessons without risking overstimulation. Open seating is another way I will implement accessible practices into the experiment. Students will be allowed to choose daily from a multitude of different seating options. I will provide bean bags, standing desks, solo desks, exercise balls, and large group tables as seating options for the students. Different seating options have been linked to differing classroom moods. When students are made to sit in regimented lines, for example, they often will feel boxed in in their creative thought. Providing open and freeing explorations into sitting allows for these students to let their intuition and internal tuning with their sensory state guide them to a seat best suited for their work at that exact time (Weinstein). Fidgets’s implementation into the classroom would provide stimulation to hyperactive and under-stimulated students. I propose a class fidget box, accessible at all times, where students may use fidgets as needed. Additionally, I would tie certain fidgets into certain lesson times (ie for math we would use pop-its, for science, spinners, etc). This repetitive behavior and its correlation with a physical

object will allow the student to link focusing on a specific task with a tangible item, improving their ability to focus and stay on task (Stahr, et. al). Lastly, I would allow students who are experiencing excessive hyperactivity to use a standing exercise bike in the back of the classroom. This idea actually originated from my Dad, who was a teacher and has ADHD himself. He used to allow hyperactive students to ride on the bike during his lessons. This exercise allowed them to focus on the lesson and alleviate their ADHD at the same time. This statement is backed by research conducted in 2017 which states, “Cognitive, behavioral and physical symptoms of ADHD were alleviated in most instances [of exercise] ... [and] regular sports and physical recreation should be recommended in the management of ADHD as research has demonstrated some positive effects on neurocognitive function and inhibitory control in children with ADHD.” (Xiang Ng, et. al). Additionally, I will encourage the accessible teachers to be available for extended office hours before and after the class instruction time, as many high school and college aged students express the way in which they need the most accessibility is review, tutoring, and one on one connections with their teachers or professors. When a teacher or professor is accessible outside of scheduled instruction hours, it allows their neurodiverse students to gain extended knowledge of the materials and feel more emotionally safe in that space (Wilson, et. al).

Classrooms will be evaluated on both an academic and an emotional health front. Class pairs will alternate taking an academic assessment (to be graded against their twin “traditional” class) and an emotional wellness questionnaire every other week from each other. Every five weeks, Classes will be challenged to perform an academic assessment against all members of their grade level in their school district. Every month, I will audit the data I have collected, comparing each week’s trends as well as how the students are performing over the course of the

month and in comparison to last month. Additionally, once a month I will conduct 2-4 in depth emotional wellness interviews with like-performing students of each twin class. I will ask these students in depth questions about their emotional and social health in relation to school.

I expect that the accessible classroom will do wonders better across the board than the traditional classroom. I expect them to perform better academically starting week 3, with week 4 showcasing a significant change in their retention and academic abilities. Additionally, I expect the accessible classroom's students to feel more self confidence, less anxiety, and overall have a happier and healthier relationship with school than their counterparts in the traditional classroom. This is backed by research into the concept of student success being linked to their feeling of mutual respect and freedom in the classroom. Open seating will be particularly helpful in boosting academics and morale in the accessible classroom as it improves critical consciousness amongst youth and allows kids and teens alike to feel that they have an active voice in their educational journey. This active role encourages students to seek out knowledge because they choose to, not because they are forced to and in turn improves emotional health and academic grades (Godfrey and Grayman).

Through my journey as a hopeful future teacher with ADHD, I have always been curious as to what I can do as an educator to make students' lives easier. By conducting this research, I hope to do just that. My hope is that the accessible classroom model I make for this experiment won't simply vanish once my 37 weeks of research are done. Rather, I hope it all - the fidgets, the exercise bike, the bean bag chairs, the dampening headphones, all of it - gets repurposed in classrooms around the school and surrounding district. If my prediction is true, then all of these

valuable resources will drastically improve both emotional and academic facets of student life, and in turn grant accessibility and equity not just to the ADHD students, but level the playing field for all students to enjoy their classroom and the valuable knowledge gained within it.

BUDGET:

I am requesting \$40,000 in financial aid for this research. This is far below the roughly \$52,387 and \$76,496 salaries paid to most public school teachers in LA. This budget request factors in needed supplies, working hours, rent, utilities, groceries, and other survival necessities for both the subjects and the conductor. Below is a chart detailing the requested funds and their purposes.

	Item	Purpose	Quantity	Expense	TOTAL: \$55,00 to start
	Sensory friendly headphones	Block out unwanted and overstimulating noise in lessons	2 packs of headphones x 15 orders (30 total) x 3 classes	\$1350	_____
	fidgets	Allow students to fidget and release unwanted tension, anxiety, or energy during lessons	50 pack x 3 orders (one per classroom)	\$75	_____
	Exercise balls	Allow for open seating and	5 per class x 3 classes	\$225	_____

		stimulation for hyperactivity			
	Bean bag chairs	Allow for open seating and calming sensory environment for overstimulation	5 per class x 3 classes	\$450	_____
	Lap Desks	Allow for desks compatible with open seating options	30 per class x 3 classes	\$1080	_____
	Exercise bike	Allow for open seating and stimulation for hyperactivity	1 per class x 3 classes	\$780	_____
	Rollable desks	Allow for open seating and stimulation for hyperactivity/solitude for overstimulation	10 per class x 3 classes	\$ 2700	TOTAL W/OUT RENT & GROCERIES*: <i>\$48,000</i> *factoring in a \$400 buffer incase of broken or stolen items
	PERSONAL: rent/utilities for home in the area	Allow researcher to be physically close to the classrooms in order to conduct daily	Quantity n/a Monthly Charge	\$3,600/mo	_____

		research			
	PERSONAL: groceries	Allow researcher to survive in the area, grants the ability to be close to the classrooms in order to conduct daily research	Quantity n/a Monthly Charge	\$400/mo	TOTAL W/ RENT & GROCERIES: <i>\$683.00 in profit per month</i>

As you can see, each and every one of these supplies is vital to my proposed research. Each item has a specified place and impact on the accessible classroom. All items serve a unique purpose and cannot be supplemented out for each other. For example, the noise canceling earphones do not provide the type of sensory soothing as fidgets do. One is a treatment of overstimulation and one is a treatment of understimulation.

Additionally, I have factored in the cost of living in the proposed neighborhood of Los Angeles, where my study will take place. This factored in cost includes rent, utilities, and groceries. These three things are vital to not only my survival as a researcher, but to the larger health of the experiment. By living close to my test subjects, I would be able to complete the hands-on work and observation so vital to this study. I would need to come into these classrooms at least 2 twice a week to monitor daily behaviors. Additionally, my research is hinged on a biweekly survey on emotional health, and I would need to be close to the schools to conduct separate supplementary interviews on the student's responses.

Finally, I would be conducting research for this study primarily from 8AM to 3:30 PM, not factoring in commuter time and data analysis time. These are prime business hours for a more traditional office space, retail, or food service job. Because the majority of my time would

be spent collecting and analyzing this research, it would be virtually impossible to hold a steady flow of income from another source. Therefore, I am required to request this amount, as the \$683 it would leave me per month would go towards savings and as emergency money should anything go awry both in the study and in my personal life.

TIMELINE

Below is a detailed chart of my proposed timeline for conducting this research. Dates are subject to change and are reliant on student participation and attendance of school. Factors like severe weather, COVID-19 outbreaks, and student or teacher personal days are not reflected in this timeline. This timeline’s main purpose is to document when approximately I will be performing audits on the students performance in both the academic and emotional well being categories. I

WEEK	DATE	RESEARCH ACTIVITY
ONE	Week of 8-14	Get to know class, baseline emotional and academic tests
TWO	Week of 8-21	First emotional wellbeing assessment
THREE	Week of 8-28	Academic performance assessment- internal with grade
FOUR	Week of 9-4	emotional wellbeing assessment CLASSROOM AUDIT - review and analyze data collected thus far Perform research journal

		entry and conduct 2-4 interviews with students on their POV
FIVE	Week of 9-11	Academic performance assessment- internal with grade First district wide academic performance assessment
SIX	Week of 9-18	emotional wellbeing assessment
SEVEN	Week of 9-25	Academic performance assessment- internal with grade
EIGHT	Week of 10-2	emotional wellbeing assessment CLASSROOM AUDIT - review and analyze data collected thus far Perform research journal entry and conduct 2-4 interviews with students on their POV
NINE	Week of 10-9	Academic performance assessment- internal with grade
TEN	Week of 10-16	emotional wellbeing assessment District wide academic performance assessment
ELEVEN	Week of 10-23	Academic performance assessment- internal with grade

TWELVE	Week of 10-30	<p>emotional wellbeing assessment</p> <p>CLASSROOM AUDIT - review and analyze data collected thus far</p> <p>Perform research journal entry and conduct 2-4 interviews with students on their POV</p>
THIRTEEN	Week of 11-6	Academic performance assessment- internal with grade
FOURTEEN	Week of 11-13	emotional wellbeing assessment
FIFTEEN	<p>Week of 11- 27</p> <p>*Skipped week of 11-13 due to thanksgiving vacation</p>	<p>Academic performance assessment- internal with grade</p> <p>District wide academic performance assessment</p>
SIXTEEN	Week of 12- 4	<p>emotional wellbeing assessment</p> <p>CLASSROOM AUDIT - review and analyze data collected thus far</p> <p>Perform research journal entry and conduct 2-4 interviews with students on their POV</p>
SEVENTEEN	Week of 12-11	Academic performance assessment- internal with grade

		SEMESTER AUDIT: review data so far, assess my predictions in relation to their real life counterparts, tweak any methodology for second semester
<u>HOLIDAY/SEMESTER BREAK</u>	<u>HOLIDAY/SEMESTER BREAK</u>	<u>HOLIDAY/SEMESTER BREAK</u>
EIGHTEEN	Week of 1-8	emotional wellbeing assessment
NINETEEN	Week of 1-15	Academic performance assessment- internal with grade

TWENTY	Week of 1-22	emotional wellbeing assessment District wide academic performance assessment CLASSROOM AUDIT - review and analyze data collected thus far Perform research journal entry and conduct 2-4 interviews with students on their POV
TWENTY-ONE	Week of 1-29	Academic performance assessment- internal with grade
TWENTY-TWO	Week of 2-5	emotional wellbeing assessment
TWENTY-THREE	Week of 2-12	Academic performance assessment- internal with

		grade
TWENTY-FOUR	Week of 2-19	emotional wellbeing assessment CLASSROOM AUDIT - review and analyze data collected thus far Perform research journal entry and conduct 2-4 interviews with students on their POV
TWENTY-FIVE	Week of 2-26	Academic performance assessment- internal with grade District wide academic performance assessment

TWENTY-SIX	Week of 3-4	emotional wellbeing assessment
TWENTY-SEVEN	Week of 3-11	Academic performance assessment- internal with grade
TWENTY-EIGHT	Week of 3-18	emotional wellbeing assessment CLASSROOM AUDIT - review and analyze data collected thus far Perform research journal entry and conduct 2-4 interviews with students on their POV
TWENTY-NINE	Week of 3-25	Academic performance

		assessment- internal with grade
THIRTY	Week of 4-8 *Note that the week of 4-1 is skipped for students spring break	emotional wellbeing assessment District wide academic performance assessment
THIRTY-ONE	Week of 4-15	Academic performance assessment- internal with grade
THIRTY-TWO	Week of 4-22	emotional wellbeing assessment CLASSROOM AUDIT - review and analyze data collected thus far Perform research journal entry and conduct 2-4 interviews with students on their POV
THIRTY-THREE	Week of 4-29	Academic performance assessment- internal with grade
THIRTY-FOUR	Week of 5-6	emotional wellbeing assessment
THIRTY-FIVE	Week of 5-13	Academic performance assessment- internal with grade District wide academic performance assessment
THIRTY-SIX	Week of 5-20	emotional wellbeing assessment CLASSROOM AUDIT - review and analyze data collected thus far

		Perform research journal entry and conduct 2-4 interviews with students on their POV
THIRTY-SEVEN <i>-fin-</i>	Week of 5-27 *End of experiment to allow students a free finals week	<p>Final emotional well being assessment</p> <p>Final Academic performance assessment- internal with grade</p> <p>Final district wide academic performance assessment</p> <p>Final CLASSROOM AUDIT - review and analyze data collected thus far</p> <p>Perform final research journal entry interview classrooms as whole groups</p> <ul style="list-style-type: none"> - Review with students how they felt about this experiment - Review with students any feedback for future research - Review with students quantitative differences in academic and emotional wellbeing

Through this tightly packed schedule, I hope to gain knowledge on the emotional and academic health of these students. I will use the biweekly smaller internal-grade academic check ins as well as their emotional wellbeing assessment counterparts to keep a pulse on my research subjects baseline of wellness. The broader district wide academic assessments and more in depth one on two student emotional wellbeing interviews are to deepen my understanding and data on

these topics. Through use of all of these methods shown in my calendar, I will gain knowledge of my research subjects and their relationship to academics and emotional well being through the lense of accessibility in the classroom.

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