The Incorporation of Augmentative and Alternative Communication Devices into the Classroom To Assist Neurodivergent Learners: An Action Research Plan

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The purpose of my study is to evaluate the effectiveness of this innovation/curriculum and to utilize the analytical findings to further develop meaningful education tools and courses that better connect educators and neurodivergent learners in the pursuit of fostering diversity, inclusivity, and versatility amongst learning environments that ensure the support of all learners. As an educator and a parent of a neurodivergent child, I want to know if technology-enhanced learning courses/curriculum can help reshape and forever change the perspective of what a neurodivergent learner's educational environment can and should look like. Additionally, I would like to better understand what the best or some of the best implementation strategies for the technology and curriculum are that facilitate feasibility, sustainability, and comfort to the needs and interests of the students and stakeholders. The classroom setting will provide students with 100% technology-based resources, such as AAC devices, iPads, and other sensory-focused tools that will allow a safe space for students to actively engage in their learning process without any communication restraints. The development of this technology-based learning model/curriculum is to hopefully provide a solution and raise awareness of the issues surrounding educational support for neurodivergent learners and their learning environment.

Fundamental Research Question

My fundamental research question is what improvements does incorporating ACC devices into the classroom have on academics and behavior amongst neurodivergent learners in grade K-5? My research question addresses the main aspects of my topic and purpose. It specifies a technology-based learning tool, while highlighting the blended learning strategy developed to combat the fact that neurodivergent learners are grossly underserved as it pertains

to their respective educational environment. It is derived from my innovation plan, which is designed to provide neurodivergent students with Augmentative and Alternative Communication (AAC) devices to be used in the classroom and throughout campuses in the Fort Bend School District

Summary of the Literature Review

The literature review detailed evidence that highlighted the lack of technological support neurodivergent individuals face in the classroom and gave insight into what the incorporation of AAC devices in the classroom on a large scale looks like for all involved. Much of the research discussed showed just why there is a huge lack of understanding regarding neurodivergent learners and what their in-class needs truly consist of. Educators, moving forward, can utilize the information found in many of these literature pieces to fundamentally change how they go about constructing learning environments. Education is shifting from what the learning experience used to be to the endless possibilities of what it can be, and that is the biggest takeaway educators can gain from the information provided.

Study Information

My study information is all about taking and modeling learning environments around the specific needs of the learners and thinking outside the box of traditional grading scales and criteria to create the most beneficial learning model for the individual learner's short-term and long-term goals. This brings the learning environment and the creation of supportive learning environments to the forefront regarding neurodivergent learners and the incorporation of AAC devices. The study will analyze and gauge how the incorporation of AAC devices in grades K-5 affects neurodivergent learners' overall quality of learning. The study will highlight areas in

which AAC device incorporation serves as a benefit, as well as the problematic issues that are present within the initiative.

Research Design

A major stream of AAC research has focused on studying everyday conversations involving people and AAC. This research has tended to adopt either quantitative, distributional perspectives of interaction, focusing on quantifying the use and functions of language, or qualitative perspectives, providing insights on the ways that social actions are achieved in everyday conversations through conversational analysis (Ibrahim et al. 2023, par. 1). Studies like this take recorded accounts of social interaction between neurodivergent students and nondivergent students, as well as neurodivergent students and their respective educators to highlight the differences between the three groups based on having the assisted capabilities of the AAC devices versus not having it. The research design utilized is a mixed methods design, which combines qualitative and quantitative approaches. I chose this design because it will allow me to capture the nuances of my implementation plan. The measurement instruments selected will help me to measure and document the changes and outcomes associated with my innovation plan. I will be able to track the performance, perceptions, and experiences of learners and educators, which will allow me to evaluate the effectiveness and/or ineffectiveness of my innovation plan. With this design model, I will then be able to utilize the mixed method to make alterations to the course structure or implementation strategy that serve to improve the desired outcomes and capabilities possible through the utilization of my innovation plan.

Timeline

Phase 1: Planning and Initial Development 1 year (8 months, Aug-Apr)

• Analyze the best option of AAC device to distribute in support of the program

- Establish invoice and warranty information
- Utilize compiled analytical data to secure funding, research, and development support

Phase 2: Initial Development and Soft Launch 1 year (4 months, Apr-Jul)

- Hire Speech Pathologists/Occupational Therapists to conduct tutorial workshops for teachers involved in the program
- Qualifications: AAC Certification or extensive experience utilizing AAC devices in educational or instructional settings
- Utilize the Registrar, Special Education teacher, on-campus Speech Pathologist, and parents to establish a list of students to participate in the Beta summer class
- Work with the elected teacher(s), Speech Pathologist, and administrator to establish a curriculum that aligns with the use and productivity of an AAC device
- Execute the soft lunch summer school program.
- With the use of achievement and performance testing from students, along with survey assessments from parents and summative updates from teachers (s), data will be collected every three weeks.

Phase 3: Development Research (Year 2)

- Report on results and feedback of phase 2 soft launch to the SSC, as well as the other organizations and personnel that stand to be allies in this effort
- Establish the widespread utilization of improved AAC devices and applications throughout both public and private sectors of education to ensure all neurodivergent individuals are equipped with the proper amount of support

• Secure long-term funding and support for further renditions of the program geared towards varied education curricula and social settings

Phase 4: Final Objective (Year 2-5)

• Work with technology development programs like the Rehabilitation Engineering Research Center on AAC and others to create AAC devices that expand the device's capabilities in both educational and social environments.

Data Collection and Analysis

The data that I will collect are pre-tests, assessments, pre-surveys, post-surveys, interviews, observations, and student-led group collaboration workshops. These data sources will provide me with both quantitative and qualitative data that are relevant to the research question. I can use qualitative methods, such as surveys, to explore the perceptions and experiences of students to evaluate the strengths and weaknesses of my innovation/curriculum. I can use quantitative methods to express and highlight the analytical data findings through assessments, group collaborations, and other means of performance testing. The pre- and post-assessments and surveys will allow me to gauge everyone's initial outlook, level of understanding, and capabilities from the beginning of the course to what types of changes in outlook or abilities are developed throughout the course. These measurement techniques will help me to analyze and interpret the data that I collect, and better highlight my research purpose, while answering my overall fundamental research question. I will use descriptive statistics to summarize the scores and changes in academic performance, behavior, and in-class participation. I will utilize central statistics to showcase a classroom view of how the learners' abilities and behaviors have changed in this engineered learning environment from the start of the course till its completion. "Central measurements are frequently used when trying to find a collective level of performance"

(Mertler, 2020). I will use both these measurements to compile vital analytical data that allows me to formulate credible, supported information that can be utilized to expand upon the continued innovation of learning environments for neurodivergent students.

Sharing and Communicating Results

The results of assessments and student/teacher survey feedback at the end of the course will be relayed to the school district administrators, educators, and parents. When educators teach programs, oftentimes for both students and educators alike, the purpose is course completion. In this learning environment, the learner's goal is to simply acquire the necessary information to pass. As educators, we have both the responsibility and opportunity to provide so much more to the learner's entire education journey through the insight placed into how and why we construct a program in the particular manner we choose. That is where Jim Collins' Big Hairy Audacious Goal (BHAG) comes into play. BHAG asks us as educators to look at our students' entire learning journey and to construct our courses as a portion of a map guiding them to their overall learning destination. Much like myself, there are many parents, family members, and educators eager to find and facilitate the use of as many needed resources as they can to provide the support all neurodivergent individuals should have. With the sharing of these findings, the hope is to reach into the minds and hearts of the administrators and politicians whose support is critical in gaining the necessary financial support needed to expand the education support tool initiative on a broader scale.

Final Reflection

With continued improvements in technology and the growing advocacy efforts to equip neurodivergent learners with everything that they need to have a learning environment that they feel fully included in, I feel that progress is being made. However, studies and research show a critical need for more direct, driven efforts. Educators, administrators, and family communities have to continue to work as one. As both a parent and educator, I utilize my innovation plan and the research information found in my plan to continue the efforts of creating a better view and understanding of what neurodivergent learners experience in their learning journey and what capabilities can be added to AAC devices in the future, while creating monumental changes for neurodivergent learners in the present.

Appendices A <u>Teacher Survey</u> Appendices B <u>Parent Survey</u> Appendices C <u>Student Survey</u>

References

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