Helping All Children Learn: Action Research Project

Joyce Jamerson
Longfellow Elementary School
Muncie, Indiana
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There is a growing awareness in the education community that attention deficit disorder (ADD) and attention deficit hyperactive disorder (ADHD) can result in significant learning problems for children with those conditions. While estimates of the prevalence of ADD vary widely, we believe that three to five percent of school-aged children say have significant educational problems related to this disorder. Because ADD has broad implications for education as a whole, the Department believes it should clarify State and local responsibility under Federal law for addressing the needs of children with ADD in the schools. Ensuring that these students are able to reach their fullest potential is an inherent part of the National education goals and AMERICA 2000. The National goals, and the strategy for achieving them, are based on the assumptions that: (1) all children can learn and benefit from their education; and (2) the educational community must work to improve the learning opportunities for all children.

U.S. Department of Education

All children deserve an equal opportunity to learn. Teachers of the twenty-first century have a very different generation of students to teach than their predecessors. Today's teacher not only teaches the academic curriculum, but constantly has to incorporate curriculum add-ons such as character education, life skills, and behavioral modification procedures. Teachers are facing the task of raising children in the classroom as well as teaching them their academic skills. This is not by choice in some classrooms, but the "by any means necessary" tactic. To ensure that every child learns means that today's teacher has to first eliminate or control the many barriers and issues students bring into the classroom that often prevent such learning to occur. One of these barriers is a disorder known as ADD or ADHD.

Attention Deficit Disorder

Attention Deficit Disorder (ADD), also called Attention Deficit Hyperactivity Disorder (ADHD), is a developmental disability estimated to affect between 3-5% of all children (Barkley, 1990). Students with this disorder are often inattentive, impulsive, and in some cases hyperactive. Some signs of inattentive behavior include daydreaming in class. Often the students in my classroom that were diagnosed with ADHD were seen staring out the window, or somewhere into the space of the classroom, rather than focusing on the seatwork in front of them. They were easily distracted by things going on all around them. The students with ADHD also had a short and limited attention span. The impulsive behavior in these students included rushing to finish assignments whether they were completed correctly or not, speaking or acting without thinking first, losing temporary control of emotions, and constantly shifting gears, moving from one thing to the next. The hyperactive behavior in these students included constant moving around, fidgeting, moving in and out of their seats, and constantly playing with objects from their own or a neighbor's desk. These students seemed to find pleasure or comfort in tapping their fingers on the desk or humming sounds or tunes during the day. These behaviors were often disruptive to others, thus leading to interventions by the teacher.

Students under medication, stimulants such as Ritalin, Dexedrine, or Adderall, seemed to do fairly well in class until the medication wore off right before lunch or at the end of the day. The daily problems arose primarily from the students whose parents did not give them the medication needed. As a result, students diagnosed with ADHD but not medically treated came to school with a barrier that prevented optimum learning from occurring. In efforts to "teach all students" I

felt action research was needed to find ways to reach not only these children but all in an innovative way.

Classroom Adaptations
Rebecca Chapman Booth (1998) lists several ways teachers can modify their classrooms to accommodate students with ADD or ADHD:

1. Provide this student with a quiet, distraction-free area for quiet study time and test-taking.
2. Provide a consistent, predictable schedule and prepare the student for transitions.
3. Allow the student to move around.
4. Make sure all homework instruction and assignments are clear and provided in writing.
5. Break instructions into short, sequential steps.
6. Provide regular guidance and appropriate supervision on planning assignments, especially extended projects that take several days or weeks to complete.
7. Give private, discrete cues to student to stay on task, cue the student in advance before calling on him, and cue before an important point is about to be made.
8. Allow adequate time for the student to answer questions to permit the student time to form a thoughtful answer.
9. Allow the student to begin an assignment and then go to the teacher after the first few problems are done for confirmation that he/she is doing the assignment properly, and to receive gentle correction or praise.
10. As much as possible, use high impact visual aids with lively oral presentations to provide a more interesting and novel presentation of lessons.

A Need Identified
I have been a teacher for five years in a school where 100% of the students receive free lunch and more than 80% of the students live in economic poverty. A great number of students in our school are labeled with ADD and are prescribed medication to keep them attentive and on task during school. Over the past five years I have had several parents of students with ADD or ADHD share negative feelings about their child having to take the medication. Some have said that the child may not be attentive at school, but they are at home. This led me to believe that the students may just need more visual stimulation or creative methods to learn and complete assignments in class to keep them paying attention. Number 10 on the classroom accommodations list above was the motivation and inspiration behind writing a proposal to the SMARTer Kids Foundation requesting the use of an interactive whiteboard for classroom instruction.

The purpose of the research project was to find out if students are more attentive and motivated to learn when technology is integrated into instruction. There was a special focus on the students diagnosed or labeled with ADD or ADHD. The visual tools that were available for teacher and student use during the action research project included an overhead projector, a tripod and chart paper, three chalkboards and a SMART Board 560 and floor stand from the SMARTer Kids Foundation. The project was divided into two components, teacher-guided instruction and student projects.

Action Research Components
During the teacher-guided instruction, students were instructed in small groups and observed when technology was not integrated and when it was integrated. For the student projects component, students were encouraged to use technology to complete assigned projects. The type of technology available for use varied among groups. This was done to help determine which types of technology did and which did not motivate students to perform well on assignments. I asked students and parents to complete surveys, lesson evaluations, and personal interviews about their feelings concerning technology and classroom instruction.

A Look at What Happened

The students diagnosed with ADHD, whom I will identify as Tony and Raul (names have been changed to protect privacy), exhibited very different behaviors. Tony's parents made sure he was receiving his medication properly, while Raul's parents didn't agree with giving their child such strong medication when he was normally fine at home. Tony needed help with organization and recording his assignments. He also had to be reminded several times of assignments that were due. During teacher-guided lessons, Tony was an eager participant. The symptoms of his disorder were mildly displayed when he was under medication. He sometimes had to be reminded to wait his turn, and to pay attention to the directions for assignments, but overall he was a very bright student with his disorder under control. Raul, on the other hand, was constantly sent away from the small group instruction period because he wouldn't (or couldn't) pay attention, and he made constant noises that disrupted the lesson – among other things, his constant blurting out and rudeness was breaking group rules. As far as completing assignments, Raul had a heart of gold. He showed signs of truly wanting to make the teacher happy and finish his work, but it simply didn't happen.

Before technology was integrated into the teacher-guided lessons, some of the other students sat lifeless and partially listened to what was being taught. There were small ways to get the students to eagerly participate, such as offering treats or classroom money tokens. This only worked for a little while, however. It was motivation, but not intrinsic and self-developed. Therefore, when the treats disappeared, so did the motivation of some students to participate.

When asked how the teacher instruction could be improved, most students suggested using the computers, going on field trips, or allowing the students to do some team teaching. Most students completed the assignments that were done at the teacher's table or as seatwork while other students participated in small group instruction with the teacher. Homework assignments were rarely completed. Students lacked the motivation or desire to complete the work. Regardless of the countless hours spent discussing the importance of the homework or the benefits from the knowledge gained, the majority of the students did not value the assignments. Classroom projects were assigned to all the students.

One project focused on South America. After studying about the Amazon Rain Forest, students were asked to create a report or project demonstrating what they learned about their favorite animal in the rain forest. Of the 14 third graders in this study, three of them completed the assignment and were able to present it to the class. The other students offered excuses as to why they didn't do the assignment.

Another project the students were encouraged to complete without technology was a mealworm experiment. For three weeks the students took care of mealworms in containers attached to their desks. Of the 14 students, 12 participated in the observation component of the project, but a mere four completed the written journals that documented what the students saw, measured, and discovered each day. Whenever a project required writing or reading, the students opted out. So, needless to say, I looked forward to the time to integrate technology into my instruction to see if it truly would make a difference.

The first day I included the SMART Board into instruction I decided to do it whole class rather than during teacher-guided instruction because I knew they would all be paying attention to what I was doing whether they were at my table or not. My prediction was right. I simply used the SMART Board to record a K-W-L graphic organizer chart after a class read-aloud. Every student wanted to give me a response to write on the board. Students who sat lifeless before were on the ends of their seats, hands ferociously waving in the air, yelling, "Pick me, Mrs. Jamerson, pick me!" I did. I knew it would gain attention, but I did not know it would change the behaviors displayed by the students. Tony and Raul were as eagerly excited as everyone else. When Raul blurted answers out loud I gave one warning and that was all it took. Prior to technology integration instruction, it took about four or five warnings. But now, I warned that if he made any more outbursts he would ruin his chance to write on the SMART Board later. This was enough

incentive to keep his impulsive and hyperactive behavior under control. This would continue throughout the most part of the project.

For the first student project that included access to the classroom visual aids and technology, the students were divided into four groups based on their prior technology experience, with Group 1 being the most experienced and Group 4 being the least experienced. Group 1 had access to the SMART Board, the overhead projector, the tripod and chart paper, and the chalkboard. Group 2 had access to the overhead projector, the tripod and chart paper, and the chalkboard. Group 3 had access to the tripod and chart paper, and the chalkboard, and Group 4 had access to the chalkboard. Students were assigned with the task of teaching their classmates a chapter from the current unit being studied in their science textbook. All the students chose to use the chalkboard in some way. Group 1 also chose to use the computer to create a quiz to give the classmates after the group lecture. Group 2 used the overhead projector to display illustrations to go along with their group lecture. Group 3 used the chalkboard to write a few facts about their topics and Group 4 did not complete the assignment. They were consequently made to give an oral speech about the importance and benefits of class projects.

After observing the students in this manner, I decided to not focus so much on the groups and focus more on individual choice of technology integration. The next project was to research their favorite book author and create a project to display for other third grade classes to see. Of the 14 students, 12 completed the assignment. Everyone wanted to create their project like the model I had provided. I used PowerPoint to create informational slides and I displayed my presentation using the SMART Board. We were able to add comments and notes to the project as the students learned new things. This file was saved and students referred back to it as they worked on their individual projects.

Tony went all out. He worked on his project in class faithfully day after day. He had to be redirected a few times, but otherwise, like most of the other students, he displayed enthusiasm to complete the assignment well. Raul showed equal enthusiasm. He loved the horns and whistles PowerPoint provides by way of visual and sound enhancements, but that's where his focus was spent. Every time I moved to Raul's computer, he was playing around on the computer. He was not roaming the room, or blurting things out and getting into trouble as before, but this still wasn't the key to motivating him to complete his work. He couldn't stay focused on it long enough. He would find a web site with information he needed, but then he would play around. He would add a word or two, and then back to playing around. Even with access to technology, Raul needed more to hold his attention.

The presentations were a success and many students were very proud of their work. The two students who did not complete the project, one being Raul, were apologetic and sorry they did not apply themselves as the other students had.

During class instruction I found that using the SMART Board as a visual tool greatly increased the number of student participants who were motivated and enthusiastic about learning and participating. The students retained the information better, which was shown by an increase in scores on quizzes given on Fridays. When asked, students listed some of the following reasons for increased participation and excitement for learning:

1. This is so different from the way we used to learn. It's fun to do different things.
2. The books are boring. Using the Internet and other software to teach the subjects makes them more interesting.
3. We're learning as a team and that is very helpful to me.
4. With the SMART Board you can see the software a lot better than on the little computer screen.
5. When I was absent from class I was still able to get the same notes everyone else had.
6. It's just like playing on my Nintendo. I have to have something like this to keep me having a good time. I like it 'cause it's fun.

7. The other way is good (teaching without the technology). I still learned a lot, but this way is way cooler.
8. People don't get in to trouble any more. They all want to help teach with the SMART Board and they have to listen and learn first to do it.

These were just a few of the comments shared by students. Parents were surprised when the students displayed their classwork using an electronic portfolio rather than a paper one. Some parents said that they would have never known that their child could do as much as they did with technology. Tony's mother knew that he had the potential to do well. She felt that the medication combined with the technology helped to keep her son attentive in class and at home when completing homework. When asked how technology made a difference, she stated that he loves video games and she is always surprised at how attentive he is while he plays. She said with the new computer at home, Tony has begun to use the Internet and is able to find all sorts of things to learn about by himself.

Tony especially liked the integrated lesson including software about the human body. Students were able to locate parts of the body based on information given by a cool skeleton. They were able to research, play games, take quizzes and learn about the body using the software. The SMART Board enabled the class to work collaboratively in this learning endeavor. No one was left out and the majority of the students passed the teacher-created test on the human body.

Raul's mother, however, shared her continued frustrations with her son's classroom and home behavior. She eventually agreed to let Raul try a small dosage of medication prescribed by his doctor. I did not see a significant change in behavior. Some of the things I noticed that kept Raul attentive were one-to-one attention, opportunities to use the SMART Board, and continuous praise for his efforts. When assignments were provided to him in writing, his mother was able to help at home. Frequent breaks also seemed to help somewhat. When lessons included technology such as the SMART Board, software, or the Internet, he was excited and motivated to learn; however, this excitement was overly heightened at times. Overall, however, the number of times Raul was referred to the office decreased as technology was made available to use during classroom learning.

Some of the forms of technology that seemed to help were books on tape, a microphone and tape recorder to orally record reports on learned topics, the Internet for research, different learning tools such as a Leap Pad, VTech learning instruments, and AlphaSmarts for word-processing. These things were brought in and used in rotational centers to determine if students preferred learning with them over textbooks and teacher lectures. Some of the forms of technology that did not seem to motivate or increase attention in students as much were calculators, computer use without explicit instructions, non-interactive software, and the use of the overhead projector.

Results

I am aware that this was merely a group of 14 third graders in a small city in Indiana, but this is what was observed during my action research.

As expected, the students in the classroom were very excited and motivated to learn when forms of innovative technology were integrated into instruction and assignments. The students with ADHD were very attentive, and less impulsive and hyperactive during technology-integrated instruction. If I could further the study, I would probably survey and observe the same group of students over an extended period of time to determine if it was the technology or interest in a new piece of equipment that truly inspired them to work harder.

I have changed my views on medication for students diagnosed with ADD or ADHD. Before I believed that all you needed was to visually stimulate the students more or make things totally cool for them and then they would listen. While this worked for some, for students such as Raul,

who seriously had a problem, medication was needed. He told me, through sincere tears, that he truly did not have control over his actions. I watched him over the course of the year. Although technology-integrated instruction held his attention a lot longer, and threats to take away his opportunities to work with technology made him work extra hard to avoid rude disruptions, overall, his constant struggle to focus on one thing rather than on the many things going on around him was too huge of a battle to win with this one solution. The search continues....

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