

# THE USE OF A WIKI STICK IN A THIRD GRADE CLASSROOM

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## **Abstract**

The ever changing classroom environment is a challenge for the educators as well as the students. There needs to be an environment that allows students to learn in their own unique way. Assessing the students to uncover their multiple intelligence allows for the educator to understand the students learning style. Students with the multiple intelligence of bodily kinesthetic appeared to have a strong relationship of success in decreasing negative behavioral problems during direct instruction and individual work time. They were better able to focus attention, improve their attitudes, and decrease negative behavioral problems during direct instruction and individual classroom.

The use of proper wiki stick manipulative assists in the shaping of the classroom-learning environment. Successful environments assist students to learn in their own comfortable style as the manipulative suggested a strong relationship. The wiki stick is a helpful tool for teachers to use with students. It will help students better utilizes their excess energy therefore helping them more appropriately direct their attention during direct instruction and/or individual work time.

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## **Introduction**

Imagine you are in a classroom of 25 third grade students attempting to teach them a lesson about personification. Picture your student John flicking a paper football at Brennan and Audrey writing notes back and forth to Jenna. How do you focus their attention and allow them to constructively use their excess energy? This is a common issue all teachers face and often become frustrated with. There is a potential solution, you could give them a Wiki Stick (a wax covered string) and allow them to fiddle with it during direct instruction and individual work time. Not every student struggles with concentration, however for those students that need to release some excess energy, this “fiddle toy” could potentially help them focus more easily in class.

Research conducted in a sixth grade classroom in Georgia, allowed students access to stress balls during direct instruction and independent practice. This research found that: the frequency of distraction incidents decreased during both direct instruction and independent practice when students used stress balls. Kinesthetic learners used the stress balls more consistently and their attention spans increased more when compared to other learners. Students’ achievement on writing paragraphs improved. Based on journal entries, all types of learners thought that their attitude, attention, writing abilities, and peer interaction improved due to stress ball use (Stalvey, Sheryl & Brasell, Heath 2006, p. 7).

The fact that the students felt the stress ball was a productive tool leads me to believe the Wiki Stick may have the same affect. My hypothesis is that the use of a Wiki Stick will show an increase in students’ ability to focus attention, improve their attitudes, and increase their performance in various subject areas.

I am interested in exploring students *multiple intelligence in relation to the use of an alternative tool that will possibly help them improve their attention during direct instruction and individual work time while in the classroom.* I also wonder if these tools will become a hindrance to teaching or learning. Will they become distracting? Will a tool like the Wiki Sticks potentially cause another distraction in the classroom? Will students with ADD or ADHD be hindered by the use of the manipulative item?

### **Literature Review**

Many different problems arise in the classroom that cause behavioral issues, including: Attention Deficit hyperactivity disorder/Attention Deficit Disorder, behavioral and special needs, the use of a manipulative during class and the implementation of active learning as a teaching strategy. The array of diverse teaching strategies integration of multiple intelligence awareness and movement in the classroom benefits the students more than

#### *Multiple Intelligence*

Howard Gardner is a common name found in the literature when discussing human development. He spent many years studying the mind which morphed into the study of an individual's intelligence. Gardner defined intelligence as the ability to solve problems or to create products that are valued within one or more cultural settings (Gardner 2000). However, Gardner was not pleased with what most psychologists theorized about an individual's cognitive development; which was that humans had the possibility to reach "end states" meaning once they reached the final stage they no longer developed. After many years he refined his definition of a conceptualized intelligence as a 'bio psychological potential' to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture (Gardner 2000). In 1983 Gardner introduced seven multiple intelligences which include:

linguistic, logical-mathematical, musical, bodily-kinesthetic, spatial, interpersonal and intrapersonal. At that time, this newly developed list Gardner developed needed to be studied in a more in-depth manner which he explains as, “I emphasized that the list of intelligences was provisional, that each of the intelligences housed its own area or sub-intelligences, and that the relative autonomy of each intelligence and the way the intelligences interact needed further study” (Gardner 2000, p. 43).

The introduction of multiple intelligences by Gardner has positively affected the field of education. Providing a multiple intelligence sensitive classroom environment requires educational professionals to be aware that each student learns in their own unique way. Thomas Armstrong discusses the main idea of Gardner that not all students can be successful with standardized tests “Howard Gardner has repeatedly pointed out; standardized tests measure only a small part of the total spectrum of abilities” (Armstrong 2009, p. 101). There is a benefit to integrating multiple intelligences into the classroom environment as it allows for students to succeed in a more varied environment that is more inviting to diversity of learning.

#### *Movement in the Classroom*

The use of movement in the classroom is crucial to the students’ academic success; this includes both gross and fine motor movements. Many educators are aware of the benefits of movement in the classroom, however they dismiss this connection once children get beyond 1<sup>st</sup> and 2<sup>nd</sup> grade. Jensen believes that “Many play-oriented movements have the capacity to improve cognition, which include: solitary play, functional play and constructive play” (Jenson 2005, p. 64)

During Jensen’s research of additional benefits for Special-Needs Learners he explored the advantages of movement to the students and their academic improvement.

Many special-needs learners may be stuck in counterproductive mental states, and movement is a quick way to change their brain activity. Movements such as those involved in playing active games will activate the brain across a wide variety of areas. It may be the stimulation of those neural networks that helps trigger some learning. (2005, p. 233)

The group of students that Jenson researched showed significant improvement in dexterity, reading, verbal fluency, and semantic fluency compared to the control group as well as making significant jumps in their standardized testing.

#### *Behavior and special needs*

Students with Attention Deficit Hyperactivity Disorder (ADHD) and Attention Deficit Disorder (ADD) have a tendency to struggle in a typical classroom setting. This reoccurring theme was found throughout the literature, including research by Fabiano et al. (2010) and Fowler (2010), which expresses the need for a positive behavioral practice implementation by the teacher in the classroom.

Fowler argues that there are three main strategies that are helpful tools in helping ADHD students to succeed in class: 1) Scaffolding, which includes structure, strategies, support and skills that will improve a students' performance, 2) Constant monitoring of behavior by guiding and directing students and 3) Positive feedback which helps them stay on appropriate behavioral paths (Fowler, 2010, p. 47-48). ADHD expert Roland Rotz believes that the use of a manipulative during tasks was a helpful tool for the students to use because it promoted appropriate movement during class by "fidgeting to focus" (Fowler, 2010, p. 49). This idea in essence is "using an ounce of prevention rather than a pound for a cure" (Fowler, 2010, p. 50). Students with ADHD have a tendency to lose sight of goals or they may not be sure what the



goal is, which can be problematic for students using a manipulative. As an educator, it is one of the many jobs that teachers must take on to set the student up for success by teaching them self-management and self-awareness skills making a manipulative a beneficial tool, as long as the student is always aware what the purpose of the tool is. This can be done effectively as long as the proper time is put into the implementation of the manipulative and that the expectations are clear and concise, not leaving any room for confusion.

Along with ADD and ADHD, other emotional and behavioral disorders bring a whole new dimension into the classroom that can cause extra stress and distraction to the students as well as the teacher. There are many problems that are associated with these specific disorders that are explored frequently. The three researchers, active in this field of research view such disorders from different perspectives, which gives one the opportunity to understand the disorders in many different dimensions. In their research Hayling, Cook, Gresham, State, & Kern (2008) discuss the behavioral assessment, the attention, and the disruption or destruction a child presents to the teacher during instruction mainly focusing on students from Kindergarten through twelfth grade. This article explores the disability act and how it is affecting this particular group of students which focuses on the specific placement of the student. This emphasizes the importance of giving each student an opportunity to learn regardless of their disorders or disabilities. The emphasis on the equality and quality of education that each student receives reminds educators the importance of taking each student strengths and weaknesses into account when teaching the class as a whole.

In Niesyn's study (2009), the focus is on the emotional and behavioral disorders pinpointing the success of the students in their academic career. This article presents research on "evidenced-based instructional practices, behavioral and student based instructional practices, as well as

behavioral and student self-management strategies that teachers of grades Kindergarten through third grade can use when working with students that have emotional and behavior disorders” (Niesyn, 2009, p.1). The idea that their practices are evidenced based, proves that their practices have been successful in other academic approaches. Using these specific approaches with the use of instructional practices to aid in the students’ academic success, especially those students with behavioral disorders, the students have a better chance of becoming successful.

There is attention focused toward Kindergarten boys which show that they have a tendency to respond very differently in specific situations in the classroom. McGlamery, Ball, Henley, & Besozzi (2007) search for the relationship between the mind, attention and young boys’ executive function. In a similar research Volpe, McConaughy, & Hintze find that:

Disruptive student behavior in the school setting is among the most common causes of referral to school psychologists (DuPaul & Stoner, 2003). Partly because of the efficacy of behavioral interventions for children with disruptive behavior problems and recent changes in the 2007 reauthorization of the Individuals with Disabilities Education Act (2004), behavioral assessments in school psychology now place more emphasis on increased early screening and progress monitoring (Eyberg, Nelson, & Boggs, 2008; Pelham & Fabiano, 2008)(Volpe, McConaughy & Hintze 2009 p 389).

This emphasizes that student needs are changing and that it is crucial that the education system keeps up with the ever-changing environment in the classroom. Our educational environments need to be flexible as well as aware of what is going on with each student in their success as well as their shortcomings. This increases stress on the teacher, especially when class sizes get larger every year. As our world in education morphs the focus needs to remain on the students and their needs.

### *Strategies for Teaching-active learning*

In Graeff's (2009) research he discusses the importance of active learning and encourages "teachers to develop active learning exercises for their class and to better understand the role of active learning in achieving students' learning goals" (Graeff, 2010, p.1). He emphasizes the need to focus on the long term educational goals for each individual student rather than the course content which allows room for creativity in the curriculum. Along with learning the material the article goes into detail about focusing attention on the skills, behaviors, and abilities that the students must learn in order to become successful.

While continuing the focus on active learning Yildirim (2008) uses a qualitative study which focuses on using specific materials while teaching which is different from allowing students to keep a specific manipulative to themselves. The material that should be used for teaching should: a) be in accordance with the developmental features, interests and needs of the students, b) bring about the planned achievements, c) be appropriate for classroom use, d) pave the way for presenting the topic more efficiently, e) be clear about their methods and conditions of use, and f) be handy, economic and easy-to-transport from one place to another. These tools will aid the teacher in emphasizing their main points during their lessons as well as grabbing the students' attention in a more productive manner. Ultimately these tools create a better learning environment for the teacher but most importantly the students.

Shifting to the more scientific aspect of active learning let us explore the research into students' brains and learning, Willis explores the importance of the students' brain and their enjoyment of what they learn. Willis research looks into how the brain works at its best when learning; "Optimal brain activation occurs when subjects are in positive emotional states or when the material holds personal meaning, connects to their interest, is presented with elements of

novelty or evokes wonder. This is why attentiveness is so closely linked to positive emotional cueing and personal meaning” (Willis 2006, p. 44) When the individual finds interest in a particular subject they will be more successful when they enjoy what they are learning about. It is important for students to find a connection with something. It is proven that the brain will learn more when there is a better connection, which is explained by Willis:

When there is connection to prior knowledge or positive emotional experience, new information passage through the limbic system will be enhanced. The thalamus will then “decide” to pay attention to the information. If it is then interpreted as having rational meaning, based on previous knowledge, it is linked to existing brain cell networks, which in turn are enlarged, extended, and ultimately strengthened by their reactivation. If there are no emotional or intellectual connections to the new information, and it is not presented in a way that sparks attention, it will be discarded, and attention will be withdrawn (2006, p. 44).

This finding is crucial as it is scientifically proven that in order for the students to learn they must have a positive association to what they are learning, which allows them to make better connections and thereby assisting the student to better understand the material they are learning.

#### *Use of a manipulative while teaching*

Bushong and Stalvey, S., & Brasell (2006) studied the use of a physical manipulative in the classroom to potentially help the student’s better focus their attention. They specifically researched the use of a stress ball which they argue helped:

By providing students with an appropriate method of coping with fidgety and impulsive behavior, the teacher in reinforcing calm on task behavior, teaching the students socially appropriate and responsible behaviors to replace the problem behavior and helping

students to recognize trigger in time to divert their disruptive behavior (Stalvey & Brasell, 2006, p. 9).

Each study focuses on the concept that kinesthetic learners are more successful when they are given a manipulative that allows an outlet for their excess physical energy.

In the world of education there is constantly change, the class sizes are getting larger; more students are being diagnosed with special needs and parents are spending less time with their children. There is extra pressure being placed on the aides, educators and administrators as well as the students with standardized testing and the stress of being academically successful. Teachers must become more open to new ways of teaching and reaching the students; with the bombarding research that is always being conducted it is almost impossible to be up to the newest and most helpful teaching strategies. Taking the students needs and their multiple intelligence into account when planning an educational lesson plan give the students' a better chance to succeed academically. The use of a manipulative allows the students to be kinesthetically engaged which gives the students the opportunity to be actively involved helping the students appropriately use their excess energy in a way that is connected to the material being taught.

### ***Research Question***

Several questions drive this research project. My primary research question is: Will the use of a manipulative, the Wiki Stick, during direct instruction and individual work time be beneficial to the students' with a specific multiple intelligence? A secondary question is: Will the implementation of the Wiki stick be more successful with females or males?

## *Methodology*

### *Method and Rationale*

There will be two methods that will be used for this particular study; the first method is a qualitative study which will be the collection of data through observations. The second method that will be used will be a quantitative study which will allow me to determine co-variance between the males and females success in the use of the manipulative, the Wiki Stick. I am interested in discovering the Wiki Sticks will help the students concentrate better during teacher direct instruction as well as individual work time. I am also curious to explore if students with a multiple intelligence of bodily kinesthetic will be more successful using the wiki sticks compared to other multiple intelligences.

These two methodologies will be appropriate to use for this particular research question in that I believe that observation will be the least invasive way to view the behavior of the students while a new tool is introduced to their everyday lives at school.

### *Sample*

My data sample consists of a third grade classroom containing 22 students at an elementary school in Washington. Although this is a small sample it may give me some insight into how a third grade classroom will respond to the use of a manipulative the wiki stick. There are 10 females and 12 males in the classroom; there are two students with a special need within the classroom, these students have attention deficit disorder. Within the school there are three third grade classrooms, on Friday the gifted students participate in a gifted program that is held at a different elementary campus. There are only two students in the particular classroom that I did my study in.

### *Instrumentation*

At the beginning of this project I had each student fill out multiple intelligence assessment that allows me to better understand their learning styles (appendix A). During this project I kept an observational log on how the students respond to the implementation of the manipulative. The behavior that was recorded was when they used the manipulative whether during direct instruction or individual work time by fiddling with the wiki stick. If the manipulative became distracting which includes making shapes, being used as a toy, or if it became distracting to the student or other students the wiki stick was taken away.

I observed 24 students two days a week during different times of the day which gave me the opportunity to get a sense of if the wiki sticks were useful. The research lasted for about 3 months, I observed regularly so I could get a good understanding of the students typical behavior, however that does not mean that I recorded every time I observed. I recorded on four occasions March 25, April 5, April 7, and May 19. The first two weeks I introduced the wiki sticks, reminding the students on a regular basis that the wiki sticks were not toys, instead they were tools that would help certain students focus a bit better during direct instruction and individual work time. The survey (appendix B) was given after the last day that the wiki stick was used in class.

### *Analysis/Validity*

I found that the observation made during the time period that the manipulative was implemented in the classroom, affirms the benefit of the wiki sticks. My control component was when the students did not have a wiki stick to use. The notes from my observational log have been analyzed (table 1.3) and have been compared to my hypothesis and to the time when they do not use the Wiki Sticks. These observations allowed me to have a better understanding of

each student's typical classroom behavior. I also was able to determine if this implementation of the Wiki Sticks were helpful or harmful to the students' attention during direct instruction and individual work time.

Their success was determined by reactions that they display while the wiki sticks are being used during direct instruction and independent work time. By comparing the results of the multiple intelligence assessment and the observations I made while the Wiki Sticks were used; I found that I could conclude that the manipulative was useful for learning styles. Lastly, their sex was compared to the success of the implementation of the Wiki Stick along with which multiple intelligence they are. These three components will show me who is able to use the wiki sticks with the highest success.

I know this study is reliable because it compares the students' reactions and their behaviors to other literature resources which I have come to find very helpful in my understanding of how a student becomes successful in the classroom.

## Data

Each third grader took a multiple intelligence test (Appendix A). Table 1.1 lists their raw scores from their assessment. Table 1.2 it defines their highest scoring multiple intelligences and the sex of the student.

**Table 1.1-Raw Multiple Intelligence scores**

Student	Verbal/ Linguistic	Logical/ Mathematical	Visual/ Spatial	Musical/ Rhythmical	Bodily/ Kinesthetic	Interpersonal	Intrapersonal
A	18	18	17	20	17	20	15
B	19	17	15	19	20	20	11
C	17	16	20	18	18	12	17
D	16	18	20	20	20	20	17
E	20	18	19	20	20	19	15
F	16	16	17	16	17	16	16
G	16	18	19	16	19	18	17
H	17	18	19	15	19	20	18



I	15	14	17	17	17	20	16
J	16	19	20	20	20	14	18
K	9	10	13	7	17	8	14
L	18	18	16	16	20	18	15
M	19	20	18	17	18	20	19
N	17	16	16	16	17	17	18
O	18	14	17	11	20	14	18
P	13	18	18	12	20	20	17
Q	19	20	16	19	18	17	14
R	13	17	15	19	20	14	15
S	14	16	14	19	18	16	14
T	13	17	19	12	15	13	13
U	10	14	11	7	17	16	9
V	13	14	13	19	18	18	16

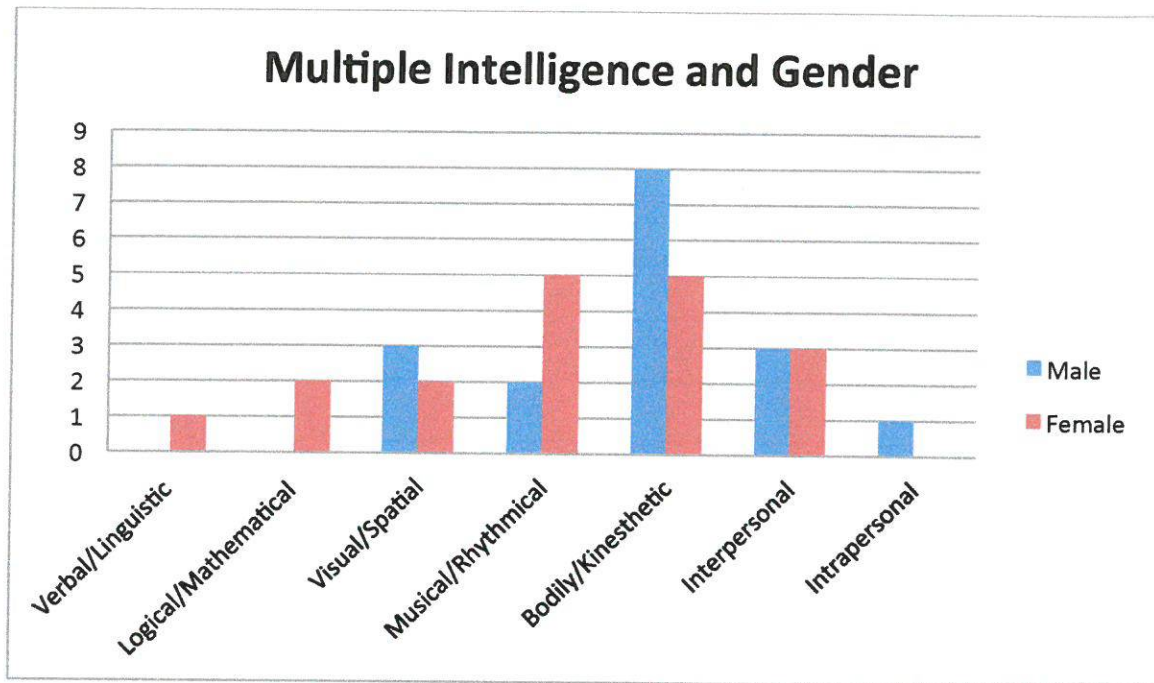
**Table 1.2 Students Sex and Individual Multiple Intelligence**

Table 1.2 it defines their highest scoring multiple intelligences and the sex of the student.

Table of Student Sex and Multiple Intelligence		
Student	Sex	Multiple Intelligence
A	Male	Musical/Rhythmical Interpersonal
B	Female	Bodily/Kinesthetic Interpersonal
C	Male	Bodily/Kinesthetic
D	Female	Visual/Spatial, Musical/Rhythmical, Bodily/Kinesthetic, Interpersonal
E	Female	Verbal/Linguistic, Musical/Rhythmical,

		Bodily/Kinesthetic
F	Female	Visual/Spatial, Bodily/Kinesthetic
G	Male	Visual/Spatial, Bodily/Kinesthetic
H	Male	Interpersonal
I	Female	Interpersonal
J	Male	Visual/Spatial, Musical/Rhythmical, Bodily/Kinesthetic
K	Male	Bodily/Kinesthetic
L	Female	Bodily/Kinesthetic
M	Male	Intrapersonal
N	Male	Bodily/Kinesthetic
O	Female	Logical/Mathematical, Interpersonal
P	Male	Bodily/Kinesthetic
Q	Female	Logical/Mathematical
R	Male	Bodily/Kinesthetic
S	Female	Musical/Rhythmical
T	Male	Visual/Spatial
U	Male	Bodily/Kinesthetic
V	Female	Musical/Rhythmical

Figure 1.1



When the third graders were first introduced to the wiki sticks they were informed that the wiki stick is a tool that they may use when the teacher is teaching and when they are working on an assignment individually or with a group/partner. They were told that if the tool becomes a distraction it will be taken away and they would not get it back. The students were observed on four occasions March 25, April 5, April 7 and May 19 and on each occasion they were given a new wiki stick. They took a survey on May 20 the day after the last observation with the use of the wiki sticks.

**Table 1.3-Students Response to the Wiki sticks**

During the observational period the students were evaluated to see how they reacted to the manipulative. If that manipulative became a distraction the wiki stick was removed from the students' possession. There was no argument the ground rules were set and the students understood what was expected of them.

**Key**

DI-USE DURING DIRECT INSTRUCTION

IW-USE DURING INDIVIDUAL WORK TIME

TA-TAKEN AWAY

NDC-No data collected

AB-Absent

\*Documentation of ADD or ADHD

Student	3/25	4/5	4/7	5/19
A	IW	Didn't use Wiki	IW	IW
B	DI & IW	Didn't use Wiki	AB	DI & IW
C	DI & IW (very helpful)	DI (very helpful)	NDC	DI & IW (very helpful)
D	DI & IW	DI	DI & IW	DI & IW
E	Didn't use Wiki	Didn't use Wiki	Didn't use Wiki	Didn't use Wiki
F	NDC	Didn't use Wiki	NDC	Didn't use Wiki
G	DI & TA during IW	Didn't use Wiki	IW	Didn't use Wiki
H	Didn't use Wiki	Didn't use Wiki	Didn't use Wiki	Didn't use Wiki
I	IW	DI-distracting	TA	IW
J*	TA	TA	TA	TA
K	DI	DI	NDC	NDC
L	DI & IW	DI	DI & IW	DI & IW
M	DI& IW	DI	DI	DI & IW
N*	TA	TA	AB	TA
O	NDC	Didn't use Wiki	IW	NDC
P	IW	Didn't use Wiki	IW	IW
Q	Didn't use Wiki	Didn't use Wiki	Didn't use Wiki	Didn't use Wiki
R	AB	TA	TA	AB
S	Distracting during DI & IW	DI	DI & IW	DI & IW
T	Didn't use Wiki	Didn't use Wiki	Didn't use Wiki	Didn't use Wiki
U	DI & IW	TA	TA during DI	NDC
V	DI & IW	DI	DI & TA during IW	IW

**Surveys-taken May 20, 2011**

These surveys were taken the day after the last formal observation of the use of the wiki sticks. Each student in the class took a survey however the only ones displayed below are the surveys of the students that turned in a consent form.

### **Student A**

The survey about the use of the wiki sticks will include these three questions:

Was the wiki stick distracting?

Yes or **No**

Did you like that you were able to play with it while the teacher was still teaching and while you were working by yourself?

**Yes** or No

Would you like to continue the use of the wiki stick?

**Yes** or No

### **Student C**

The survey about the use of the wiki sticks will include these three questions:

Was the wiki stick distracting?

Yes or **No**

Did you like that you were able to play with it while the teacher was still teaching and while you were working by yourself?

**Yes** or No

Would you like to continue the use of the wiki stick?

**Yes** or No

### **Student G**

The survey about the use of the wiki sticks will include these three questions:

Was the wiki stick distracting?

Yes or **No**

Did you like that you were able to play with it while the teacher was still teaching and while you were working by yourself?

**Yes** or No

Would you like to continue the use of the wiki stick?

Yes or **No**

### **Student I**

The survey about the use of the wiki sticks will include these three questions:

Was the wiki stick distracting?

Yes or No **-sometimes**

Did you like that you were able to play with it while the teacher was still teaching and while you were working by yourself?

**Yes** or No

Would you like to continue the use of the wiki stick?

**Yes** or No

### **Student J**

The survey about the use of the wiki sticks will include these three questions:

Was the wiki stick distracting?

Yes or  No

Did you like that you were able to play with it while the teacher was still teaching and while you were working by yourself?

Yes or  No

Would you like to continue the use of the wiki stick?

Yes or  No

### **Student M**

The survey about the use of the wiki sticks will include these three questions:

Was the wiki stick distracting?

Yes or  No

Did you like that you were able to play with it while the teacher was still teaching and while you were working by yourself?

Yes or  No

Would you like to continue the use of the wiki stick?

Yes or  No

### **Student N**

The survey about the use of the wiki sticks will include these three questions:

Was the wiki stick distracting?

Yes or  No

Did you like that you were able to play with it while the teacher was still teaching and while you were working by yourself?

Yes or  No

Would you like to continue the use of the wiki stick?

Yes or  No

### **Student P**

The survey about the use of the wiki sticks will include these three questions:

Was the wiki stick distracting?

Yes or  No

Did you like that you were able to play with it while the teacher was still teaching and while you were working by yourself?

Yes or  No

Would you like to continue the use of the wiki stick?

Yes or  No  maybe

### **Student S**

The survey about the use of the wiki sticks will include these three questions:

Was the wiki stick distracting?

Yes or **No**

Did you like that you were able to play with it while the teacher was still teaching and while you were working by yourself?

**Yes** or No

Would you like to continue the use of the wiki stick?

**Yes** or No

### **Student U**

The survey about the use of the wiki sticks will include these three questions:

Was the wiki stick distracting?

**Yes** or No

Did you like that you were able to play with it while the teacher was still teaching and while you were working by yourself?

**Yes** or No

Would you like to continue the use of the wiki stick?

Yes or **No**

### **Student V**

The survey about the use of the wiki sticks will include these three questions:

Was the wiki stick distracting?

**Yes** or No

Did you like that you were able to play with it while the teacher was still teaching and while you were working by yourself?

**Yes** or No

Would you like to continue the use of the wiki stick?

**Yes** or No

### **Analysis**

#### *The use of a manipulative*

The use of the wiki stick during direct instruction and individual work time was a successful tool for the students. The data presented in the survey shows that 100% of the sample of students liked being able to use the manipulative while the teacher was still teaching and while they were working by themselves. There were students that didn't use the wiki stick at all however they still liked the idea of having it available. 63% of the students did not find the wiki stick to be distracting. 72% of the students would like to use the wiki stick again in the future.

The data shows that the students had positive reactions to the use of the wiki stick, which can be half the battle when implementing a new class tool.

From the sample 60% of the students fell into the intelligence of bodily kinesthetic intelligence. 43% of the students that fell into the intelligence of bodily kinesthetic were able to use the manipulative successfully during direct instruction and/or individual work time. Five out of thirteen students were females that had the intelligence of bodily kinesthetic; out of those five females only three of them used the wiki sticks regularly during direct instruction and/or individual work time. All of the eight males used the wiki sticks during direct instruction and/or individual work time.

Three of the males did have the wiki stick taken away every time they had the opportunity to use the manipulative. Two out of the three males have a documented case of a behavior disorder, which I believe is one of the reasons they became more distracted by the manipulative. If more time was spent with these two particular students I believe that they could have been successful using the manipulative. There wasn't enough time to work individually with these students to work on their self-awareness and self-management.

#### *Student reaction*

Since I could not use half of the students survey data in the outcome data due to time conditions and the lack of parental response to the consent forms, I was only able to survey 50% of the sample. Out of half the sample there were six students that had the intelligence of bodily kinesthetic, which is 54% of the sample. Student C and P were bodily kinesthetic students that enjoyed using the manipulative and did not find it distracting; they would use it in the future. During the formal observations both students used the manipulative appropriately, student C used it during both direct instruction and individual work time whereas student P used it only



during individual work time. As for students G and P they didn't use the manipulative on a regular basis and they both responded that they would not want to use it again. Students J and N both struggled using the manipulative, every time they were observed the wiki stick was taken away. As stated earlier this could be due to the fact that they both have documented cases of a behavioral disorder.

### *Multiple Intelligence*

Since the students were able to test into multiple intelligences some students had more than one intelligence. The distribution shows that bodily kinesthetic surpasses any other intelligence. Interpersonal and musical rhythmical are the second most common intelligence with six students each that tested into these multiple intelligences. The use the wiki stick during direct instruction and individual work time showed to be beneficial to the majority of the bodily kinesthetic students that is expressed in the data. After reviewing the observations 54% of the sample used the wiki sticks successfully regardless of their multiple intelligences. This shows that at least half of the sample used the manipulative successfully.

With a larger sample I believe that the multiple intelligence component to this research would be more defined. The data would expose a "normal" distribution, which would provide a better understanding of specific multiple intelligence of the individuals within the group. With my observational data I was able to observe that over half of the bodily kinesthetic students used the manipulative successfully. With a more thorough implementation the students would have better understood how to appropriately used the tool.

### **Implications/Recommendations**

The use of a wiki stick, in the classroom setting would be best if it were to be implemented at the beginning of the year so it could be introduced as a tool not as a toy. Special

needs students require extra support, varying with their Independent educational plan or their 504. It appeared through observation that the additional time spent and higher parental participation reinforcing the proper use of the manipulative would have an outcome of more success. This group would likely have positive experiences especially if more time was spent on the implementation of the manipulative. If the wiki stick is introduced at the beginning of the year it could help certain students more effectively concentrate throughout the day. The data provided proves that the use of a manipulative properly implemented can be another tool in the teachers' bag of tricks.

By having each student take the multiple intelligence assessment the teacher is better able to reach the student. The study results of intelligence type and successful use of the manipulative contributed to the learning environment in the classroom. This study opens the door to better understanding of students needs in the classroom. With the observations made during my research I believe that the basic classroom may not be the ideal learning environment, it is important that teachers acknowledge students' unique learning styles. In the future if I had the chance to implement a larger study group I believe I would be able to better understand students use of a manipulative in accordance to their multiple intelligence.

## **Conclusion**

This study has confirmed part of my philosophy in teaching which is the importance of knowing how the students being taught learn best. There was a concentrated group of students with the intelligence of bodily kinesthetic that were successful using the wiki stick. Coming to a conclusion that only bodily kinesthetic students were able to use the wiki stick more successfully was not possible due to concentrated group. Regarding the secondary research question of student use of the manipulative by sex, unfortunately the sample was too small, making it

difficult to draw a strong conclusion. The existing writing and studies reviewed never suggested the existence of a “normal” distribution of multiple intelligences.

The data appears that my sample was predominately bodily kinesthetic types, which were male. I can safely conclude through my extensive observations that male students appeared to require constant stimulation in order to pay attention to the subject matter being covered. I believe that my research on the use of the wiki sticks, in a third grade classroom, appears to be a helpful tool to the bodily kinesthetic students. I also believe that students with other intelligence types could benefit from the use of a manipulative, if it is implemented and monitored properly.

The students from the sample were able to increase their attention and become involved with the topic at hand in a more appropriate fashion. There was a decrease in negative behavior problems during direct instruction and individual work time. Although this was a small sample the use of a manipulative was a helpful tool for the majority of the students.

In conclusion, this study highlights the importance of a manipulative in a classroom setting. Students appear to benefit with the use of the wiki stick, as it deflects excess energy students and teachers find cumbersome to develop successful learning environment. This is true during direct instruction and individual work time. There was no specific relationship between sex and the successful use of the wiki stick.

## Appendix

### A. Assessment: Multiple Intelligences Inventory

Name \_\_\_\_\_ Date \_\_\_\_\_

This assessment will give you information about yourself and what you most like to do. Put a check mark in the box that fits YOU best.

#### Verbal/Linguistic Intelligence

YOU:	YES	MAYBE	NO
Enjoy word games			
Enjoy reading			
Enjoy writing			
Like spelling			
Like to share stories and poems out loud			
Enjoy learning about new words			
Like listening to others read			
Like tongue twisters, rhymes, and riddles, or books like Dr. Seuss			
Like watching or performing in plays			
Like story problems in math			

Total: \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

#### Logical/Mathematical Intelligence

YOU:	YES	MAYBE	NO
Enjoy doing math problems			
Enjoy algebra-type math. Ec. 3+ =6			
Like playing math games			
Like games involving cards, numbers, and counting			
Like games using patterns and logic			
Enjoy following steps in the scientific process			
Like estimating size and distance			
Like asking questions about things you don't know			
Enjoy solving problems			
Enjoy doing science experiments or visiting places like the Science Center			

Total: \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

**Visual/spatial Intelligence**

YOU:	YES	MAYBE	NO
You like to draw or make designs			
Enjoy movies and videos			
Like to do jigsaw puzzles			
Like to add color to pictures or other work			
Enjoy working with shapes			
Like working with maps			
Prefer stories with some pictures			
Enjoy illustrating your written work			
Enjoy daydreaming and using your imagination			
Can understand diagrams, graphs and charts			

Total: \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

**Musical/Rhythmical Intelligence**

YOU:	YES	MAYBE	NO
Enjoy playing a piano or keyboard			
Enjoy listening to different kinds of music			
Are familiar with many musical artist, past & present			
Enjoy singing			
Enjoy playing musical instruments			
Like watching plays that have songs or other kinds of music as part of them			
Like participating in musical productions			
Enjoy games that have music as part of them			
Work well with background music playing			
Enjoy keeping time with music			

Total: \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

**Bodily/Kinesthetic Intelligence**

YOU:	YES	MAYBE	NO
Enjoy building things			
Enjoy games where you move things around			
Enjoy handwriting			
Like challenges of strength or movement			
Enjoy P.E., dancing, or recess			
Enjoy touching things when you are learning about them			
Enjoy participating in organized sports and games			
Like moving around			
Enjoy creating things out of clay, wood, paper Mache'			
Enjoy playing outdoors			

Total: \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

**Interpersonal Intelligence**

YOU:	YES	MAYBE	NO
Enjoy talking with other people			
Enjoy role-playing			
Enjoy expressing ideas in group discussions			
Like being a team leader			
Like to make new friends			
Enjoy being involved with large group of people			
Enjoy group/team sports and games			
Like to help other students			
Enjoy helping others solve problems			
Don't mind being the center of attention			

Total: \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

**Intrapersonal Intelligence**

YOU:	YES	MAYBE	NO
Feel good about yourself			
Can think about ideas without talking to others			
Prefer individual sports or games			
Like to think about what you might do when you grow up			
Make plans in order to accomplish a goal			
Enjoy writing about yourself or keeping a journal			
Like to do more than what is required on assignments			
Sometimes like to be by yourself			
Have a special place you like to visit by yourself			
Like to work by yourself			

Total: \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

Scoring: Give yourself 2 points for each “YES,” and 1 point for each “MAYBE.” Add the total of both those columns at the bottom of each section. The sections with the most points are your strongest intelligence strengths.

My strongest intelligence is \_\_\_\_\_

My second strongest intelligence is \_\_\_\_\_

The intelligence I need to work on most is \_\_\_\_\_

(K. Newbill 2009)

## B. Survey

The survey about the use of the wiki sticks will include these three questions:

Was the wiki stick distracting?

Yes or No

Did you like that you were able to play with it while the teacher was still teaching and while you were working by yourself?

Yes or No

Would you like to continue the use of the wiki stick?

Yes or No

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