

Explicit Vocabulary Instruction to Increase Reading Comprehension
And Improve Mathematical Problem Solving Skills:
A Literacy Case Study of Two K-8 Students

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TE 846
Summer 2012

I. **Background and Project Focus**

The two students selected for this focus project are incoming 5th grader Ashley and incoming 7th grader Alexis. These students are siblings and are 10 and 12 years old. Much of the reading that is done in the early elementary grades is narrative driven once students begin to move into later elementary grades, usually by grade four they begin to shift into reading to gather information. In order for students to be successful they must be taught how to do each and to be able to comprehend what it is that they are reading.

A different kind of reading that is often not taught or not taught well enough is reading in the content areas. According to Fisher and Fray (2011), students have to be taught how to read, write, speak, listen, and think in each of the disciplines in which they are expected to perform. This case study will focus on improving content vocabulary skills to enhance reading comprehension and improve Mathematical problem solving. According to Flick and Lederman (2002), students who can identify the main points of a multistep mathematics problem and explain them in their own words have taken a significant step in planning an approach to a solution. In this case study I will be exploring how explicit content vocabulary instruction leads to increased reading comprehension that will result in enhanced problem solving skills.

I am currently a Lecturer at the University of Michigan-Flint. I teach an undergraduate Mathematics course-Problem Solving for College Students. A reason for this project is to investigate where a student begins to build an apprehension for word problems in their educational career. In my most recent elementary education context I was student teaching in the 4th grade and found that when students had to attempt word problems there was a visible breakdown in their attitudes. For example when working

with numbers students generally grasped a concept and could continue working with little to no teacher intervention however when the concept was translated into word problems the students were quick to throw their hands up and ask for help without trying to understand what the problem was asking. In my current position most students come into the class with an attitude of already being defeated without having attempted the first problem in the book. Through this case study I hope to discover what leads to this apprehension and why students carry this attitude with them well into their college years.

II. **Home and Family**

Ashley is an independent reader and reads up to three hours each day she is currently reading *Harry Potter and The Goblet of Fire* which is book four in the series. Her interests as a reader vary she likes fantasy as well as realistic fiction and anything that has to do with animals. Her most current independent reading level is 9th grade according to her classroom teacher based on the spring DRA assessment.

Alexis, by her own admission does not care for reading too much, although she is currently reading a young adult novel, *By the Time You Read This I'll be Dead* by Julie Ann Peters which discusses the issues of bullying as a young teen contemplates suicide to escape her tormentors. Although she just completed 6th grade her most current independent reading level according to her Language Arts teacher is 11th grade based on the Spring DRA assessment. After many discussions with her teacher we agree that with guidance and discussions Alexis should be able to handle the content in these older level books. If she is going to read she reads for about one half hour before bedtime.

Our home is quickly becoming a bookstore or mini library of sorts. We have all kinds of books ranging from murder mysteries to historical religious fiction to

autobiographies of President and First Ladies we even have The 9/11 Commission Report. In the more kid friendly arena we have National Geographic for Kids magazines, cooking magazines, pictures books, biographies, books series such as Harry Potter and Junie B. Jones, as well as Shel Silverstein, we have adult Bibles as well as children's bibles and dictionaries to go with each. Most of the books in our home are ours however we do enjoy visiting the library, used bookstores and retail giants.

The most recent conversation we had was an informal book club gathering. We discussed the book *Out of My Mind* by Sharon Draper. I had originally read the book about three years ago and was waiting for the appropriate time for them to read it. The book is about an eleven year old girl with cerebral palsy she cannot walk, talk or write, she is trapped in her own body and confined to a wheel chair. Even with these physical limitations Melody is extremely smart, there is nothing wrong with her brain but her doctors and parents do not know this. She has quite the adventure in the book and we discussed the themes of acceptance, bullying and overcoming adversities that we all face in our daily lives. It was an eye opening discussion and I cannot recommend this book enough to my friends and colleagues that interact with children of this age.

As most children of this age my children engage with varying modalities of text from reading online, reading off a Kindle, and iPods they also enjoy reading the Sunday comics directly off the actual newspaper aside from formal print based texts. Depending on what they are reading I always remind them to come to me or their father with any questions they may have. Before they read the Sunday comics for example, I am always sure to read them first as some can have content or double meanings not appropriate for my children. For scaffolding purposes I always try to read a little bit about what they are

reading so that I can ask them comprehension or prediction type questions. Once they are done with whatever they are reading we have discussions about what they have read.

As a teacher and a student my children consistently see me reading something, a text, an article, a trade book, a graphic novel, most of the time it has to do with my profession as a teacher but also as a student. Unfortunately right now I do not have the time to read for pleasure so they do not see too much of that, although I have been known to take a break on my couch and read an entire *Oprah* magazine from cover to cover on a Sunday afternoon. I personally love books and am resourceful therefore buying books online or at the used bookstore is a common occurrence, my kids know that it is my weakness so if they show interest in a particular book, it is coming home, especially when Alexis picks one up.

My kids lovingly call me *the book nerd* and I am a proud member of an informal club my mentor teacher and I started last year, *The Cool Geek club*, we absolutely love books and love to read not only for pleasure but to gain knowledge and information, we both admit to having books like *The Café Book* by Boushey and Moser, Jonathan Kozol's *Letters to a Young Teacher* and Delpits's *Other People's Children* on our bed side tables. Mathematics is another passion, therefore trade books and research books on that are abundant as well. It goes without saying that my children are aware that books are a part of everyday life they see that they are important as a student but also because I am a teacher I have to read to learn as well. They see that reading is not an activity that is done only at school, reading can be done for pleasure not just to be informed and learning and information is attained and retained along the way.

III. Emotional Climate

As stated above the students that are participating in this case study are also my daughters. In regards to rewards for reading they do not happen. I do not believe that a student needs a reward for reading besides the pleasure or information they glean from reading. I believe in intrinsic motivation and therefore I do not follow, "If you read this then..." I have been known to buy more books or do more trips to the library or bookstores if I notice that there is an interest in a particular subject or author. They are also encouraged to do research online on subject matters that interest them.

Regarding Alexis, as we progress through this case study her main frustrations with reading seem to stem from fluency, she often states, "I read slowly enough as it is." Therefore after this summer semester is done I have the unique opportunity to continue working with her to continue to reinforce her fluency skills. She is actually excited about this! Another area of frustration for her appears to be the fact that she has not yet come to understand that reading is something that can and should be done for personal satisfaction. She is still of the mindset that she has done "enough reading in school." My general attitude with her is to give a little and take a little, I as a parent have to understand that all children are different and not all develop a love for reading at a young age. As a teacher however I will not deny the feelings of worry when I know that she may actually lose reading comprehension ability if she does not continue to practice this skill especially during the summer months.

Ashley is a different story, her frustration seems to be apparent when I begin to ask her questions about what she is reading sometimes she will say, "Didn't you read this already, you know what happened?" I have to figure out an outlet for her to "discuss" what she is reading, perhaps through drawing or even blogging about her reading adventures.

IV. Literacy History

Both of these students have been read to since they were infants. They both have had speech therapy before they entered Kindergarten, Alexis for difficulty with consonant clusters and Ashley for a lisp. At the current time Alexis continues to have difficulty when saying words such as “hold” she does not pronounce the /l/. Ashley’s lisp is only apparent if she is extremely tired and thus has become a verbal cue to me as a parent that she is tired.

During their pre-school years both girls were not only read to but we did all kinds of activities with letter magnets, sand, shaving cream to develop their knowledge of letters and numbers. We watched shows like Sesame Street and Dora the Explorer as well as Pinky Dinky Doo on the Spanish language station to develop their bilingual and translating skills. As they entered school we would have family conversations discussing what they learned in school on that particular day and usually tried to focus on one or two subjects of interest to have them reflect on different topics or subjects. Throughout the years they have both participated in Science fairs to pique their interests in other subjects as well.

Currently my approach has been more laid back as they are getting a little bit older and we can have different kinds of interactivity. I am focusing now on their understanding of Spanish as I am a native speaker and would love to have them be bilingual as well. I try to discuss bilingual trade books that we have in the home to help them in their process of understanding Spanish. Unfortunately the school district in which we reside removed Spanish from their elementary curriculum, Ashley has not received formal instruction in three years and Alexis had a one year interruption but did complete Spanish I during her sixth grade year in Middle School.

V. Assessments Given and Summary of Test Results

Several Assessments were given to both students throughout the course of the past week. The purpose of the assessment was to gauge each of the student's attitudes and motivation for reading. The assessments given were The Elementary Reading Attitude Survey, The MLPP Student Response Sheet: Thinking about Yourself as a Reader, and The Reading Attitude Survey (Artifacts 1-6). I purposefully spread out these assessments to gauge whether they would have different answers to similar questions depending on a particular day. Because these students are a bit older they answered the questions on their own.

From Alexis' assessment I learned that she is indifferent to reading for fun and circled the angry Garfield if she were to receive a book for a gift. She definitely prefers playing over reading and prefers to do gymnastics overall as she stated in the Student Response Sheet. She did respond with the happy Garfield when asked about discussing the book with her teacher as well as reading out loud in class. This actually surprised me because as her parent I would have predicted that she would be indifferent to these activities as well, however it also reinforces the fact that students like it when teachers take interest in their student's interests. She stated that *The Miraculous Journey of Eduard Tulane* by Kate DiCamillo was one of her favorite books.

Ashley's assessments were interesting as well I knew that I would see all the happy Garfield's circled when asked about reading during free time and for fun however she still prefers playing over reading. To my surprise she circled the indifferent Garfield when responding to the question regarding teacher questions as well as reading out loud in class, she went on to say in the Reading Attitude survey that "she feels sick when asked to read aloud to the class."

As I analyzed these tests I was very surprised with some of their answers, for example Ashley's fluency is quiet amazing, where Alexis sounds choppy when reading, although I did not assess for fluency I have heard them read aloud, and it surprised me that Ashley, who adores reading, can't stand to read aloud, and Alexis who does not care for reading, enjoys reading aloud and discussing what she reads. These findings certainly changed my view of them as readers and perhaps with this background knowledge I can increase Alexis' motivation and have to find different ways of engaging Ashley in discussing her books, perhaps by writing or drawing. Although this is not the focus of this case study specifically it provides interesting parental insight.

Because this case study deals specifically with Mathematics vocabulary I also generated a Word Problem Attitude Survey (Artifacts 7 & 8) as well as a pre and post vocabulary matching quiz (Artifacts 9 & 10). After reflecting on the above assessments I felt that these were not specific enough to the topic of this case study. After analyzing the Word Problem Attitude Survey it appears that both students agree in their views of word problems, they neither think they are fun nor do they care for doing them in school. This does not surprise me as the general attitude appears to be as Toher (2001) states in *Making Sense of Math* "When will we ever need to know (or use) this stuff" (p.5)? She goes on to say "In the real world, the terms and the examples are in disguise, encoded, because school mathematics examines little of daily living and uses less of its vocabulary. Consequently, students view mathematics as something you do in school, nowhere else" (p.5). This also corresponds with their views on the importance of being able to solve math problems, Alexis stated she "disagreed a little" and Ashley stated she "agreed a little." They were both confident in their knowledge of "math words" included in math word problems thus peaking my interest in what the results of the quiz would be.

I generated a vocabulary matching activity to determine where they are in their content vocabulary knowledge and I included several definitions for some of the words including quarter and radius for example to determine what context they would associate with the word. After analyzing the results I found that Ashley only associated the word quarter with equivalence to fifteen minutes of an hour, but Alexis associated it with one of four equal parts as well as equal to one fourth of a dollar, but put a question mark to its equivalence of fifteen minutes of an hour. When answering the question for “multiple” Ashley left the answer blank and Alexis answered incorrectly. When answering the question for “dividend” Ashley answered the question correctly and Alexis did not. They both answered the “radius” and “diameter” questions correctly Alexis also associated the “radius” definition to the name of the outer bone in the human forearm. These results were interesting to me because according The Common Core State Standards for Mathematics by grade four students will “Use the four operations with whole numbers to solve problems and gain familiarity with factors and multiples” (p.28).

I will restate that Ashley is an incoming fifth grader and Alexis is an incoming seventh grader, if these students are supposed to already be fluent in four operations with whole numbers and be familiar with factors and multiples, it should be that they also know what each of these words mean, namely quotient, dividend and divisor. As Pierce and Fontaine (2009) state, “The depth and breadth of a child’s mathematical vocabulary is more likely than ever to influence a child’s success in math. Yet few elementary teachers bring effective vocabulary instruction into their math lesson” (p.239).

As another way of assessing their content vocabulary knowledge and provide explicit instruction the students participated in an activity called *Math Vocabulary Bingo* in which they will solve quick mathematical problems that will demonstrate their knowledge of the terms

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should they be able to solve it correctly. (The description of the activity can be found in the Differentiated Lesson Plans portion of this case study.) While participating in this activity the students were allowed to use paper/pencil or calculators to calculate the answers, if they were not able to answer correctly I would have them write down the words they did not know on a piece of paper, if they did answer correctly I would reinforce the vocabulary word by saying for example, “The answer is two because the dividend in $12/6$ is?” to which they replied “12.” I had anticipated on “playing” this game with them only two times, however we ended up playing for about an hour and half and went through six games. Artifacts 11 and 12 are pictures of the game board and sample questions.

After reflecting on this activity I realized that when they were in “game mode” they actually made more of an effort to recall or figure out what the definition of the term was. I also kept track of their answers to compare to the matching activity they did before the game. In most instances they were able to figure out the answer to some of the questions they had initially answered incorrectly. Pierce and Fontaine (2009) state “teachers should engage the students in “rich and lively” activities that encourage deep processing of the word’s meaning” (p.239). It was interesting to observe their body language during both activities and my observations align with what I have read not only in our texts but with the research that states that children engage when their perception is that they are having fun and learning happens as a result.

VI. Differentiated Lesson Plans

Lesson Foci/Date	Objectives (including performance, conditions, criterion. State <i>Common Core State Standards</i> at the end of each objective.	Instructional Materials (what will be used to deliver the main objectives of the lesson)	Ongoing assessment (to measure attainment of objectives)
7/20/2012	Students participate in a Word Problem Attitude Survey where I assessed their attitudes toward problem solving	Word Problem Attitude Survey (Artifacts 7-8) (original document)	Used to obtain overall student attitude when solving word problems.
7/20/2012	Students participated in a pre test/math vocabulary quiz.	Math Vocabulary Quiz (Artifacts 9) (original document)	Used to assess knowledge of particular mathematics vocabulary.
7/25/2012	Students will participate in <i>Math Vocabulary Bingo</i> (http://illuminations.nctm.org/LessonDetail.aspx?id=L806)	Math Bingo Clue Cards/Bingo Cards/ Buttons, beans or other markers (Artifacts 11-12)	Associate vocabulary terms to specific examples, communicate mathematical thinking verbally/written
7/25/2012	Students will participate in a post lesson vocabulary quiz to determine acquisition of vocabulary terms.	Math Vocabulary Quiz (Artifacts 10)	Students should be able to understand vocabulary after activity and explicit instruction.

VII. Reflection on Differentiated Lesson Plans

After reflecting on the lesson activity it is fair to say that I believe the explicit instruction following the activity helped both students in their vocabulary knowledge. The activity either helped them learn the word or reinforce their knowledge of the word. I know the activity helped because as part of the explicit instruction that happened after the lesson I asked “If I asked you to draw one-fourth, how would you draw it?” (Artifacts 13-19) By their drawings, I knew they

understood what the word meant and that it is used in different contexts. One of the overall themes in all of the readings and discussions throughout the course was the need for explicit instruction which is a key aspect of teaching and learning. One of those is teaching vocabulary and in this case content specific vocabulary, by explicitly using these words during the activity and then talking about the word the students were able to reinforce their knowledge of the word.

There were several moments throughout the lessons where I had to contain the overall competitiveness not only because the point of the activity was not a competition but I did not want them to lose focus on the purpose of the lesson. In a classroom environment it is very important to establish a feeling of safety therefore I would not recommend this lesson be done during the opening weeks of school as it is very important for students to feel comfortable in their learning environment. A teacher has to take great care in establishing the emotional climate and team atmosphere in her classroom before engaging in activities that are perceived as competitions.

While many things went well with this particular lesson, there would be things that I would change if this were to happen in an actual classroom. For example I would have target words that the students should definitely know, probably know, and possibly know. I would contain the words to perhaps a relevant topic in mathematics that we had either just covered or are getting ready to cover. This particular activity would serve well as a pre and post activity to gauge background knowledge before a lesson and to reinforce vocabulary after a lesson or unit lesson. While I was doing this lesson I realized we were using vocabulary words from different realms in mathematics from topics like geometry to academic vocabulary. If I were doing this in my classroom I would tweak that portion of the activity as well. This activity can be tailored to meet specific classroom needs.

VIII. Recommendations to Teachers

Recommendations to Teachers

The focus of this study was to include explicit vocabulary instruction in Mathematics that would increase reading comprehension with the goal of improving student ability to successfully solve word problems. As teachers we all know that students struggle when given word problems to solve during classroom activities and during required standardized state testing, for the most part students run into trouble because they do not understand what is being asked of them. Pierce and Fontaine (2009) state, “Language skills have become increasingly important in mathematics classrooms. The National Council of Teachers of Mathematics (NCTM) *Principles and Standards for School Mathematics* now includes Communication as a process strand. Students need to be able to explain their problem-solving methods orally and in written form, both in the classroom and on high-stakes tests” (p.239).

Mathematics is often seen as a subject that is only “done” in school often times a connection is not made with Mathematics and our everyday life it can then become a struggle to make this connection. Toher (2009) states, “We need to reveal the mathematical ideas, concepts, applications and problems hidden beneath the trappings of everyday life. In the real world, the terms and the examples are in disguise, encoded, because school mathematics examines little of daily living and uses less of its vocabulary. Consequently, students view mathematics as something you do in school, nowhere else” (p.5). This notion of teaching content specific vocabulary can be overwhelming to elementary school teachers and the reverse can be true of middle school and high school teachers who do not view themselves as literacy specialists, however vocabulary knowledge is not only vital for reading it is also vital for mathematics learning.

At this point you may be questioning how this should be done, how elementary school teachers or content area teachers successfully teach students how to “read math.” During his research Peter Fuentes (1998) found that in order to improve students’ mathematics, their reading had to be improved as well. He states, “We also need to teach our students how to process new information in such a way that it becomes stored in an organized and accessible fashion in long-term memory. Various instructional strategies increase comprehension by enhancing the organization of knowledge – for example, “advance organizers,” “structured overviews,” and “concept maps.” Current researchers suggest that the regular use of such strategies in the classroom is the best way to increase comprehension, retention, and use of information gained by reading” (p.82). Much in the same way that students “turn and talk” and write about what they are reading during their instructional block of Language Arts the same techniques can be applied while they are learning during math. It is important to keep in mind that for some children solving the algorithm can be an easier process to understand because they quickly realize how to manipulate the symbols it is when this process is then presented in words and sentences that students must first comprehend the language of the text (p.81).

Mathematics classrooms must become an environment of collaborative learning gone are the days where students “do math” on their own. Through conversations and communication with each other students begin to build their knowledge of mathematics employing the same techniques they have learned in their Language Arts classes. Fuentes has compiled a list of effective instructional practices (p. 83-84):

1. Instruction is hands-on, with students using materials to experience mathematics instead of just memorizing facts.
2. Students communicate, which includes listening, speaking, reading and writing about mathematics.
3. Students are expected to justify their answers, think aloud, and consider different possibilities for solving problems.

4. As students are involved in hands-on activities, they construct their own tables, graphs and charts. This helps them record and organize their thinking.
5. Students work in cooperative groups, where they discuss mathematics and reason out problems together.
6. Students are given opportunities to practice revision, self-reflection, self-assessment.
7. Students are given opportunities to develop the art of questioning. Once they have learned how to ask relevant and appropriate questions, they have learned how to learn.
8. Instruction incorporates higher-order, divergent questions and not just recall.
9. As risk free, nonjudgmental learning environment exists in the classroom.
10. Present a variety of first-step strategies that assist and guide students when they engage a problem for the first time.

Quite often it is forgotten that Mathematics is also a language that must be learned as well, students must be able to translate between the words and symbols they see on the page while understanding the process of their actions. When students begin to process the words and vocabulary of a word problem they must construct their own meaning, not what the teacher understanding is. All too often teachers are at the front of the room providing the thinking for their students, by allowing them to work with each other and fostering an environment for learning in the long run our students are at an advantage because they have constructed their own understanding.

Another strategy used in Language Arts classrooms that can translate directly into Mathematics classroom is the read-aloud. There are many books that now have math themes and can be used to introduce a topic. In my undergraduate class for example I have used *Sir Cumference and the Dragon of Pi* by Cindy Neuschwander to introduce the lesson on the exploration of circumference of a circle and determine the calculation of Pi. Even at this level, when students are allowed to explore through the story they can begin to construct their understanding of a topic.

My final thought would be to remember that math is not the paper/pencil/worksheet subject of years ago, it is fun, exciting, frustrating, confusing, detailed but most of all discovery based, let your students discover math and own their “ah-ha” moments, it will be the greatest reward in the end!

Personal Thoughts

Very often as parents we immerse our children in literature, however many times we do not include books about specific subjects like Mathematics, Science and History often times believing that these things will get covered in school. My recommendation would be therefore to include books that have content based themes as there are many traditional story type books that are available for K-12 students. As parents we like to read traditional stories to our children, perhaps the kind that we grew up reading but it is important to remember that children have to be made aware of the physical world around them and this includes the above mentioned subjects. I believe that if children were exposed to these kinds of stories at an earlier age their potential for success would increase and their apprehension towards particular subjects would diminish. The words they would be exposed to would no longer be words that are only “used in math” for example. The sooner students begin to familiarize themselves with non-fiction books the easier it will be for them to relate to these topics when they come up in school.

IX. Additional Materials

Outline for a Daily Lesson Plan

Date: 7/25/2012

Objective(s) for today's lesson: Alexis and Ashley will be able to demonstrate their knowledge of Mathematics content vocabulary words.

Rationale (Explain why this content and/or skill is important and worthwhile, and how you will work to make it relevant to your students' lives): According to Pierce and Fontaine (2009), "The depth and breadth of a child's mathematical vocabulary is more likely than ever to influence a child's success in math" (p.239). It is essential therefore that these students understand content vocabulary as they progress in their academic careers. This activity can be tailored to pre and post lesson and unit lesson studies.

Materials & supplies needed:

Math Bingo Clue Cards, Bingo Cards, beans, buttons or other markers, paper, pencil, calculators.

Procedures and approximate time allocated for each event

• **Introduction to the lesson** (5 minutes)

Remember you answered questions in that survey? You both said that you knew most math words in a math word problem. You also did a matching activity where you had to match the vocabulary word to its definition. When I looked at your responses to the survey you both said that solving math word problems in school were not necessarily fun and that being able to solve word problems outside of school was not very important.

Today we are going to play a bingo game, but instead of me calling out numbers you guys are going to figure out what the number is by figuring out a clue in the form of a word problem!

Because children generally like playing games it was easy to motivate them to play with me and each other.

• **OUTLINE of key events during the lesson** (5 minutes)

- Distribute bingo cards
- Distribute scrap paper, pencils, calculators and stress that they can use them to figure out the answers

Academic, Social and Linguistic Support during each event

- Remind/Reinforce that although this is a game and we all like to win, the purpose is to make sure we can answer each of the questions. (It is vital to establish a **safe** atmosphere for these activities.)
- If one student can't answer question ask the other student to show or explain how they answered the question.

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<ul style="list-style-type: none">• <i>If one student does not know the answer, ask the other student “How did you figure that out?” Make sure they use the content vocabulary to reinforce their understanding of the term.</i>• <i>Remind them that the goal of the lesson is to play the game for understanding and we all win when we understand the vocabulary not who gets a “bingo” first.</i>• <i>After the activity is over, discuss with students the problems that they answered incorrectly. For example, the clue was “one <u>quarter</u> of four” ask, “If I asked you to draw one quarter, what would you draw?” Please see artifact 15 for pictures of what these students provided! Although they did not answer the question correctly for the activity and had varying answers in their pre-activity quiz, when asked to draw a quarter, they included all three definitions in their drawings!</i> <p>• <u>Closing summary for the lesson</u> 5 minutes</p> <p><i>I will ask them what they liked and did not like about the activities they did. I will also ask them to explain why they liked the Bingo activity versus the matching activity. I will also like whether or not they liked having another student explain to them how they got their answer.</i></p> <p>• <u>Transition to next learning activity</u></p> <p>Say to them, “O.k. now that we have done the bingo, and you’ve drawn pictures to describe these words, you will now do the same matching activity you did a few days ago. Remember to think about what we talked about, what the other person said or drew to help you answer the questions.”</p> <p>Students can begin to build a personal glossary of math vocabulary terms where they include pictures and descriptions of the words “in action.”</p>	
<p>Assessment</p> <p>The students learning will be gauged by observing them during the lesson/activity. I will also assess them by the kinds of questions they ask and by taking notes of terms that they did not understand in the pre-activity lesson and during the lesson. After the activity is over I will have them represent the terms to be visually or discuss with them what the term means explicitly, but in a manner that they will understand by using friendly words and explanations.</p> <p>The students will also do a post-activity matching quiz to formally assess what vocabulary terms they understand and which ones they are still not comfortable with. As this would be an ongoing process the teacher should record or have the student’s record which words they still do not understand.</p>	<p>Academic, Social, and Linguistic Support during assessment</p> <ul style="list-style-type: none">• <i>Use the vocabulary words when asking the students direct questions.</i>• <i>Have students use the vocabulary words when answering questions to reinforce the word in context.</i>

ARTIFACTS (1-6)


Elementary Reading Attitude Survey

Date 7-12-12 Grade 7 Name Alexis Trinidad


1. How do you feel when you read a book on a rainy Saturday?




2. How do you feel when you read a book in school during free time?




3. How do you feel about reading for fun at home?




4. How do you feel about getting a book for a present?




5. How do you feel about spending free time reading?



6. How do you feel about starting a new book?




7. How do you feel about reading during summer vacation?




8. How do you feel about reading instead of playing?



9. How do you feel about going to a bookstore?



10. How do you feel about reading different kinds of books?



11. How do you feel when the teacher asks you questions about what you read?



12. How do you feel about doing reading workbook pages and worksheets?



13. How do you feel about reading in school?




14. How do you feel about reading your school books?




15. How do you feel about learning from a book?




16. How do you feel when it time for reading class?




17. How do you feel about the stories you read in reading class?




18. How do you feel when you read out loud in class?



19. How do you feel about using a dictionary?



20. How do you feel about taking a reading test?



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Kear, D.J. & McKenna, M.C. (1999). Measuring attitude toward reading: A new tool for teachers. In S. J. Bannertine (Ed.), Reading assessment: principles and practices for elementary teachers. A collection of articles from "The Reading Teacher." p. 199-214. Newark, NJ: International Reading Association.

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Reading Attitude Survey

Name: Alexis Trinidad

Date: _____

A fiction book is not real

A nonfiction book is true

When I have time to relax, I usually (Circle the letter of your choice.)

a. Take a nap d. Go skateboarding
 b. Read a book e. Play a video game
 c. Watch TV f. Other watch youtube videos and that

I read because most of the time cause i have to, even if i can pick my book

The kind of book I would buy with my own money would be something with murder (at least 185 pages)

School reading assignments and what I read in my free time are different because the books at school dont have alot of murder a ghosts. It doesnt keep me entertained.

School reading assignments would be more interesting if _____

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F. The kind of books I most like to read are: (Circle your three favorite types).

poetry my story
 science fiction history
~~romance~~ sports
 nonfiction science
 autobiography/biography historical fiction
~~horror~~ myths/legends
 adventure assassinations
 others _____

G. The newspapers I read are: _____
I dont read the newspaper

H. The sections of the newspaper I prefer are: (Check your choices).

____ sports comics _____ editorials
 _____ news articles other (list) _____

I. The magazines I read are: gymnastics (sometimes American girl)

J. Answer each of the following questions briefly.

1) I have pets: Yes _____ No
 What kind? 1 dog

2) I collect the following things: _____

3) I own books: Yes _____ No
 Approximately how many? 100
 I borrow books from the library: _____ Yes _____ No sometimes
 Approximately how many each week? 1-2 when i go

4) I enjoy having someone read to me: _____ Yes No

5) When asked to read aloud I feel: _____

6) My favourite school subject is: math
 Reason: I'm good at it and its e-asy A

7) The best book I have ever read is: The Miraculous Journey of Edward Tulane, The Ice Cream Girls, Out of My Mind
 Reason: they were really good and i didnt want to put them down

8) A book that I would like to own is: _____

Student Response Sheet

Student's Name _____ Date _____ Grade _____

Thinking About Yourself as a Reader	
Prompt	Student Response
1. What kinds of reading have you done?	
2. What kinds of reading do you like to do most?	<u>I mostly like reading murder and some mysteries about murder or ghost/story stuff</u>
3. What kinds of reading do you least like to do?	<u>Books like Harry Potter and text from a book</u>
4. What do you think about as you choose what you will read?	<u>I read the and decide if it looks like something i would like</u>
5. After you have read a book, what do you talk about with others?	
6. What things do you think carefully about as a reader?	<u>I just read book</u>
7. What have you learned about yourself as a reader?	<u>What kind of job i want have (something with murder stuff)</u>
8. What are your future goals as a reader?	<u>I dont know</u>
9. Looking back over your answers in questions number 2 and 3, what do you notice?	<u>I didnt notice anything special</u>

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Mixsy Trinidad: Case Study

Elementary Reading Attitude Survey

Date July 8, 2012 Grade 5 Name Ashley

1. How do you feel when you read a book on a rainy Saturday?

2. How do you feel when you read a book in school during free time?

3. How do you feel about reading for fun at home?

4. How do you feel about getting a book for a present?

5. How do you feel about spending free time reading?

6. How do you feel about starting a new book?

7. How do you feel about reading during summer vacation?

8. How do you feel about reading instead of playing?

9. How do you feel about going to a bookstore?

10. How do you feel about reading different kinds of books?

11. How do you feel when the teacher asks you questions about what you read?

12. How do you feel about doing reading workbook pages and worksheets?

13. How do you feel about reading in school?

14. How do you feel about reading your school books?

15. How do you feel about learning from a book?

16. How do you feel when it time for reading class?

17. How do you feel about the stories you read in reading class?

18. How do you feel when you read out loud in class?

19. How do you feel about using a dictionary?

20. How do you feel about taking a reading test?

GANFIELD © 1978 United Paper Systems, Inc.
Kear, D.J. & McKenna, M.C. (1983). Measuring attitude toward reading: A new tool for teachers. In S.J. Bamnolter (Ed.), *Reading assessment: principles and practices for elementary teachers*. A collection of articles from "The Reading Teacher" p. 199-214.
Newark, DE: International Reading Association.
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Mixsy Trinidad: Case Study

Student Response Sheet

Student's Name Ashley Trinidad Date June 8, 2012 Grade 5

Thinking About Yourself as a Reader	
Prompt	Student Response
1. What kinds of reading have you done?	more fiction and adventure books
2. What kinds of reading do you like to do most?	fantasy, adventure and legends
3. What kinds of reading do you least like to do?	non-fiction and biography
4. What do you think about as you choose what you will read?	I think is it going to interest me
5. After you have read a book, what do you talk about with others?	I don't talk about the book.
6. What things do you think carefully about as a reader?	Nothing really
7. What have you learned about yourself as a reader?	I prefer bigger thicker books
8. What are your future goals as a reader?	to read, read, read and keep reading
9. Looking back over your answers in questions number 2 and 3, what do you notice?	that I prefer fiction over non-fiction

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Reading Attitude Survey

Name: Ashley Trinidad

Date: June 8, 2012

A fiction book is made up, like fantasy.

A nonfiction book is real true facts

When I have time to relax, I usually (Circle the letter of your choice.)

a. Take a nap d. Go skateboarding

b. Read a book e. Play a video game

c. Watch TV f. Other _____

I read because it is really fun and it gives me something to do

The kind of book I would buy with my own money would be fantasy like fiction

School reading assignments and what I read in my free time are different because school reading focus on what we do in class and what I read is what ever I want

School reading assignments would be more interesting if they were focused on books we read for fun.

read-write think
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7. The kind of books I most like to read are: (Circle your three favorite types.)

poetry	autobiography
science fiction	fiction
fantasy	sports
adventure	science
autobiography/biography	historical fiction
horror	myth/legends
reference	others _____

8. The newspapers I read are: _____

9. The sections of the newspaper I prefer are: (Check your choices.)

_____ sports comics _____ editorials

_____ news articles _____ other (list) _____

10. The magazines I read are: _____

11. Answer each of the following questions briefly.

1) I have pets: Yes _____ No
What kind? a dog

2) I collect the following things: nothing

3) I own books: Yes _____ No
Approximately how many? 2, 100
I borrow books from the library: Yes _____ No
Approximately how many each week? 2 a week

4) I enjoy having someone read to me: Yes _____ No

5) When asked to read aloud I feel: stuck because I don't like reading aloud

6) My favorite school subject is: reading

Reason: I enjoy the book I read

7) The best book I have ever read is: The "Charlie Brown" series

Reason: they were enjoyable to read

8) A book that I would like to own is: none

Artifacts 5-6

Artifacts 7 & 8



1. I like doing word problems in math class.

Strongly Agree	Agree a little	No Opinion	Disagree a little	Strongly Disagree
----------------	----------------	------------	-------------------	-------------------

2. I think word problems are fun.

Strongly Agree	Agree a little	No Opinion	Disagree a little	Strongly Disagree
----------------	----------------	------------	-------------------	-------------------

3. When I solve word problems, I usually know what to do to get the correct answer.

Strongly Agree	Agree a little	No Opinion	Disagree a little	Strongly Disagree
----------------	----------------	------------	-------------------	-------------------

4. When I solve a word problem, I usually know what all of the "math words" mean.

Strongly Agree	Agree a little	No Opinion	Disagree a little	Strongly Disagree
----------------	----------------	------------	-------------------	-------------------

5. I think being able to solve word problems in math is important.

Strongly Agree	Agree a little	No Opinion	Disagree a little	Strongly Disagree
----------------	----------------	------------	-------------------	-------------------

Mixsy Trinidad: Case Study

Word Problem Attitude Survey
July 2012

Ashley

- I like doing word problems in math class.

Strongly Agree	Agree a little	No Opinion	Disagree a little	Strongly Disagree
----------------	----------------	------------	-------------------	-------------------
- I think word problems are fun.

Strongly Agree	Agree a little	No Opinion	Disagree a little	Strongly Disagree
----------------	----------------	------------	-------------------	-------------------
- When I solve word problems, I usually know what to do to get the correct answer.

Strongly Agree	Agree a little	No Opinion	Disagree a little	Strongly Disagree
----------------	----------------	------------	-------------------	-------------------
- When I solve a word problem, I usually know what all of the "math words" mean.

Strongly Agree	Agree a little	No Opinion	Disagree a little	Strongly Disagree
----------------	----------------	------------	-------------------	-------------------
- I think being able to solve word problems in math is important.

Strongly Agree	Agree a little	No Opinion	Disagree a little	Strongly Disagree
----------------	----------------	------------	-------------------	-------------------

Artifact 9 Pre-Test

Alexis T. 10

MATCHING ACTIVITY

Pre-Lesson

Please match each term to its definition.

- 1. Quarter
- 2. Diameter
- 3. Greatest Common Factor
- 4. Prime Number
- 5. Radius
- 6. Exponent
- 7. Quotient
- 8. Multiple
- 9. Dividend
- 10. Equivalent

a. one of four equal parts 1 ✓	b. equal to one fourth of a dollar 1 ✓	c. equal to 15 minutes of an hour 8 1? ✓
d. the answer to a division problem 7 ✓	e. including several of the same things 3 ✓	f. the product of that number and any other number 8 ✓
g. having equal value 10 ✓	h. a number or symbol placed to the right of and above another number or symbol indicating the power it is to be raised 6 ✓	i. the largest number that divides two or more numbers evenly. 9 ✓
j. the number that is being divided 7 ✓	k. a number that can only be divided by 1 and itself 4 ✓	m. a line segment that joins the center of the circle with any point on its circumference 5 ✓
n. a bone in a human forearm 5 ✓	o. a line that passes through the center of the circle from its perimeter 2 ✓	

MATCHING ACTIVITY

Pre-Lesson

Ashley

Please match each term to its definition.

* but when asked to show or illustrate a quarter see picture #

1. Quarter
2. Diameter
3. Greatest Common Factor
4. Prime Number
5. Radius
6. Exponent
7. Quotient
8. Multiple
9. Dividend
10. Equivalent

a. one of four equal parts	b. equal to one fourth of a dollar	c. equal to 15 minutes of an hour <u>1</u>
d. the answer to a division problem <u>6</u> ^x	e. including several of the same things	f. the product of that number and any other number <u>4</u> ^x
g. having equal value <u>10</u>	h. a number or symbol placed to the right of and above another number or symbol indicating the power it is to be raised <u>3</u>	i. the largest number that divides two or more numbers evenly. <u>7</u>
j. the number that is being divided <u>9</u>	k. a number that can only be divided by 1 and itself <u>8</u>	m. a line segment that joins the center of the circle with any point on its circumference <u>5</u>
n. a bone in a human forearm	o. a line that passes through the center of the circle from its perimeter <u>2</u>	

Artifact 10 Post-Test

MATCHING ACTIVITY

Post-Lesson + Activity

Alexis
100%
good job 😊

Please match each term to its definition.

- ~~1.~~ Quarter
- ~~2.~~ Diameter
- ~~3.~~ Greatest Common Factor
- ~~4.~~ Prime Number
- ~~5.~~ Radius
- ~~6.~~ Exponent
- ~~7.~~ Quotient
- ~~8.~~ Multiple
- ~~9.~~ Dividend
- ~~10.~~ Equivalent

a. one of four equal parts 1	b. equal to one fourth of a dollar 1	c. equal to 15 minutes of an hour 1	✓
d. the answer to a division problem 7	e. including several of the same things 8	f. the product of that number and any other number 8	✓
g. having equal value 10	h. a number or symbol placed to the right of and above another number or symbol indicating the power it is to be raised 6	i. the largest number that divides two or more numbers evenly. 3	✓
j. the number that is being divided 9	k. a number that can only be divided by 1 and itself 4	m. a line segment that joins the center of the circle with any point on its circumference 5	✓
n. a bone in a human forearm 5	o. a line that passes through the center of the circle from its perimeter 2		✓

Ashley ☺

MATCHING ACTIVITY

Post-Lesson + Activity

Please match each term to its definition.

1. Quarter
2. Diameter
3. Greatest Common Factor
4. Prime Number
5. Radius
6. Exponent
7. Quotient
8. Multiple
9. Dividend
10. Equivalent

a. one of four equal parts	b. equal to one fourth of a dollar	c. equal to 15 minutes of an hour
d. the answer to a division problem	e. including several of the same things	f. the product of that number and any other number
g. having equal value	h. a number or symbol placed to the right of and above another number or symbol indicating the power it is to be raised	i. the largest number that divides two or more numbers evenly.
j. the number that is being divided	k. a number that can only be divided by 1 and itself	m. a line segment that joins the center of the circle with any point on its circumference
n. a bone in a human forearm	o. a line that passes through the center of the circle from its perimeter	

Handwritten annotations on the table:

- Red checkmarks next to items 1, 2, 4, 9, and 10 in the list.
- Red question mark next to item 3.
- Red exclamation marks next to items 5, 6, 7, and 8.
- Red numbers written in the table cells: '1' under 'a', '10' under 'g', '9' under 'j', '1' under 'b', '4' under 'k', '5' under 'm', and '2' under 'o'.
- Red checkmarks in the right margin of the table.

Artifacts 11 & 12

Math Bingo Clue Cards

<p>1</p> <p>One <u>quarter</u> of four</p>	<p>2</p> <p>The <u>quotient</u> of twelve divided by six</p>	<p>3</p> <p>Six, nine and twelve are <u>multiples</u> of this number</p>	<p>4</p> <p>The <u>exponent</u> in two to the fourth power</p>	<p>5</p> <p>The <u>greatest common factor</u> of ten and fifteen</p>
<p>6</p> <p>The <u>divisor</u> in twelve divided by six</p>	<p>7</p> <p>The number represented by the <u>Roman numeral</u> VII</p>	<p>8</p> <p>The <u>denominator</u> of seven-eighths</p>	<p>9</p> <p>The <u>square root</u> of eighty-one</p>	<p>10</p> <p>The fifth <u>multiple</u> of two</p>
<p>11</p> <p><u>Half</u> of twenty-two</p>	<p>12</p> <p>The <u>dividend</u> in twelve divided by six</p>	<p>13</p> <p>The number <u>equivalent</u> to one ten and three ones</p>	<p>14</p> <p>The <u>numerator</u> of fourteen-nineteenths</p>	<p>15</p> <p>The next number in the <u>sequence</u> zero, five, ten, ...</p>
<p>16</p> <p>The number of <u>ounces</u> in one <u>pound</u></p>	<p>17</p> <p>A <u>prime number</u> less than nineteen and greater than thirteen</p>	<p>18</p> <p>The sum of twenty and <u>negative two</u></p>	<p>19</p> <p>The largest <u>prime number</u> less than twenty</p>	<p>20</p> <p><u>Round</u> nineteen to the nearest <u>tens</u></p>

B	I	N	G	O
4	17	39	54	74
8	25	44	56	73
1	24	illuminations	48	69
5	16	41	46	64
12	29	42	59	66

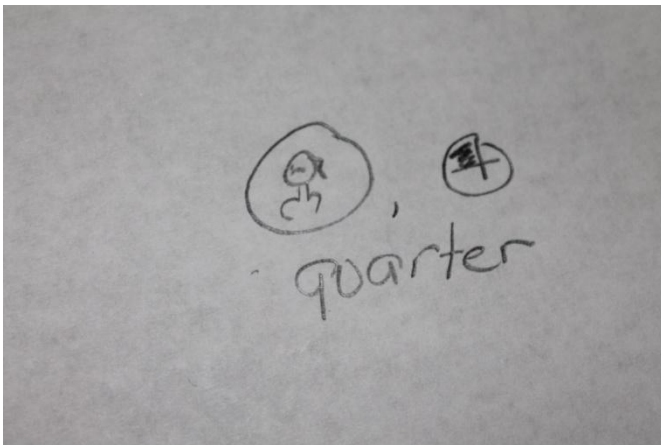
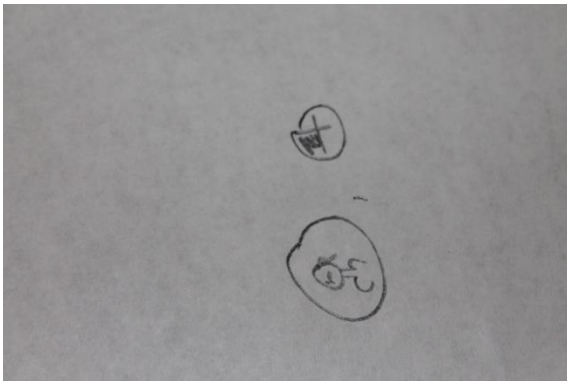
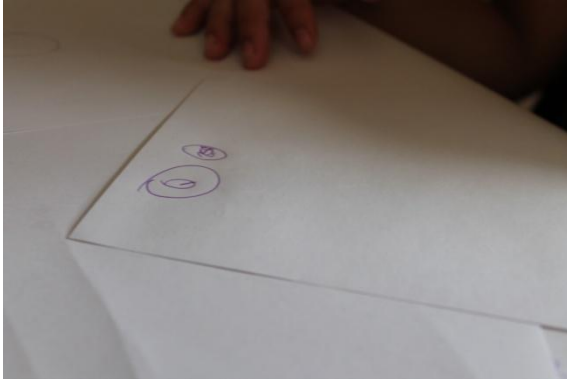
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Mac Users: Press Cmd + = to generate a new card

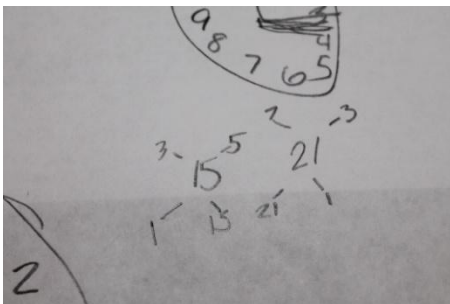
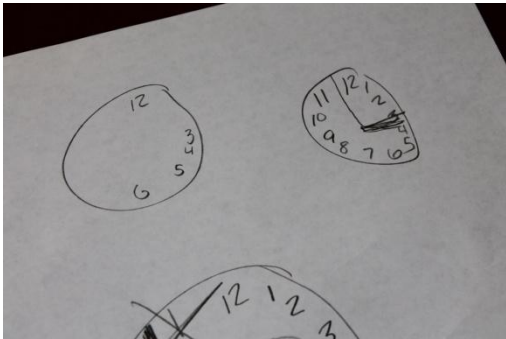
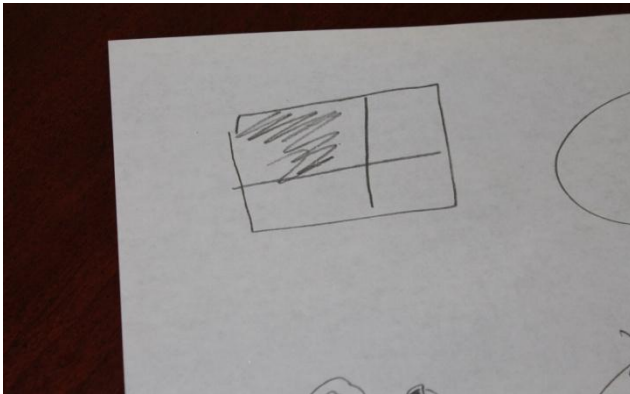
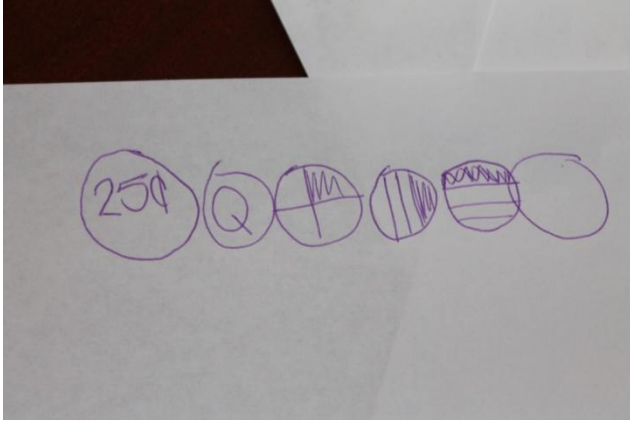
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Artifacts 13-19

Pictures demonstrating: "What does one-fourth look like?"



Mixsy Trinidad: Case Study



Showing demonstration of “factors”

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