Other than the Textbook

I. Introduction

This text set was developed as a companion to the ordinary seventh grade mathematics textbook. This text set is unlike others, in that the teacher is to read the books to the students before they begin each lesson on the corresponding Standard of Learning. It was designed to present an interesting and exciting view of the different areas of mathematics being studied. Students are able to enjoy a story about mathematics. This will hopefully rid them of boredom or a fear of the math they are being introduced to. Each of the books in this text set are focused or have a passage that is focused on one of the SOLs. The books are all different and have different stories for every reader. One reader may benefit from a story about the Mississippi River while another is intrigued by a story about dreams. The books also vary in readability for every learner in the seventh grade classroom.
II. Text Set

1. #1 Go Figure Fractions

Go Figure?

Producer: Mark Brewer

VA SOL: 7.1-Equivalent Relationships

a. Introduction and Summary

Mark Brewer along with eTech out of Ohio has created an interactive multimedia project to help students in grades 5-7 with the Ohio academic achievement tests. There are a few videos that include “Go Figure Fractions”. This video will be helpful when dealing with the first seventh grade Virginia Standard of Learning requirement.

This video discusses several different aspects of comparing fractions and decimals. Two students, Chris and Carter, come in contact with these different math problems as they search to solve the mystery of the disappearance of over 500 Etna High School staff and students. They meet Pythagileo who teaches them things such as three ways to write the same number, baseball and basketball statistics, and discounts and sales when dealing with fractions. They must improve their math skills to receive clues to solve the mystery.

b. Rationale

This video is a great tool for grasping the attention of even the most unfocused of learners. Students who enjoy mystery will be intrigued by the story and in turn be focused when the different math is being used and taught. Some of the mathematics that students should already know is reviewed. With this review students schema is activated and used to build a better understanding of the new material. Students will be less reluctant to learn the new material when they are able to see how it can be used in even the most mysterious of ways.
c. Usage of Text

Go Figure Fractions will be used as an introduction to the lesson on equivalent relationships between decimals, fractions and percents. It will augment the textbook in this case. The video will be played after a brief introduction on equivalences. All students will come together then and discuss what they have seen and how it relates to what they are learning. The teacher can then answer questions about the material and connect it directly to the lesson in the textbook.

d. Readability

Since this is a video, there is no readability for this tool. However it is developed for fifth to seventh graders, so the content is easily understandable for them.

e. Reference

Brewer, Mark. “#1 Go Figure Fractions.” Go Figure? WOUB Center for Public Media, 2008.

<http://www.youtube.com/watch?v=7LeHD2ibGPQ>

2. Secret, Lies, and Algebra

Author: Wendy Lichtman

Pages: 128-139

VA SOL: 7.3c-The Additive Identity

Readability (Fry): 7th grade

a. Introduction and Summary

Wendy Lichtman has written this book, Secret, Lies, and Algebra as a cute story about a young middle school aged child. Lichtman’s story is about a young girl, Tess, who struggles with typical middle school problems. They include things such as friends breaking promises, peers cheating on tests, and boys that may or may not be interested. She also has to deal with her
home life. Tess uses mathematics to examine the things she must deal with. Lichtman’s unique use of mathematics to describe the world of middle school child will be used to introduce the Standard of Learning dealing with the additive identity.

b. Rationale

This story will be a great introduction to the additive identity for middle school age children. It may however prove more useful with the girls in the classroom, since it is about a young girl and her struggles. However, the problems encountered in it can be understood by all students. It may then be able to activate an interest in all kids in the classroom. It fits with what students are dealing with in daily life and with the mathematics they are learning. It will build a personal bridge to what the students are learning.

c. Usage of Text

As with the other text is this set, this passage will be used as preparation to introduce the lesson on the additive identity. It can be used as a silent reading or partner reading activity. It is at level of the majority of readers in the classroom. This will allow the teacher some time and give the kids something new in the mathematics classroom. The story will engage the readers and open their minds to the new material. Again the information will need to be discussed and related to the lesson.

d. Readability

This book, according the Fry readability, is at a seventh grade reading level. This is the level where most of the students should be reading at for this text set. With this average level the book will be simple for the students. The book is also presented in a simplistic manner and the print is very large. Pictures are also included. This book is perfect for most average seventh grade readers.
e. Reference

3. The Phantom Tollbooth
   
   Author: Norton Juster
   
   Pages: 171-182
   
   VA SOL: 7.5-Rules for Solving Practical Problems
   
   Readability (Fry): 8th grade
a. Introduction and Summary
   
   The Phantom Tollbooth was written for a young audience to make learning more fun and interesting. It can be used in several different areas of study but for this text set will be used as an introduction to formulating rules for solving practical problems. The main character comes into contact with several unique characters and is asked to help them solve problems.

   Milo, the main character is a bored and disinterested young boy. He magically travels to a new world known as the Lands Beyond through a magically tollbooth which appears in his room. Things are very different from the real world because everything and everyone are unhappy. This is due to the banishment of two princesses. Milo makes it his purpose to release the two princesses. He is aided by a watchdog, Tock, and a Humbug. Along his journey, he realizes that life is far from dull.

b. Rationale
   
   This book is great for students who lack the desire and drive to work hard or just have trouble with learning. It is directly related to these children due to the main character’s boredom with school. Students can relate with him and at the same time follow him as he begins to enjoy learning. This may increase the students desire to learn and open their minds to the new material
being presented. Students can put together the new idea of solving practical problems and enjoy using it everyday.

c. Usage of Text

This text will be used as a part of the preparation for the lesson on rules for solving practical problems. It will be used in conjunction with the textbook. The book will be read by the students individually before the lesson. Students can discuss the story after they read with other students in groups or as a whole class, using an activity such as DR-TA. It will be better for the students to come together since the reading is a little above the level of many of the readers in the class. The discussion will help bring together all the ideas in the section being used in the book.

d. Readability

The book rates on an eighth grade reading level according to the Fry Readability. It may be a little above some of the readers in the class but the concepts are designed for students from grades six to eight. This makes the reading a little easier for the struggling students, if they are able to understand the concepts.

e. Reference


4. The Borrowers

Author: Mary Norton

VA SOL: 7.6-Proportions

Readability (Fry): 4th grade
a. Introduction and Summary

The Borrowers is a wonderful book with adventure and new ideas for young children. The whole book is filled with potential for comparisons of proportions. They small people can be compared with the normal people as students read their story. The things they find to use as furnishing can also be compared with real life household furniture.

The Borrowers are four-inch people who live under the floorboards of a quiet country house. The family, the Clocks, borrow things, such as spools of thread, matchboxes and postage stamps, from the “human beans” to furnish their own home. This all becomes a problem when a little boy who moves into the house discovers the family. More problems occur when the house is going to be demolished by an evil relater who steals the deed to the house. But with help, the family is able to escape to a new life and further adventures.

b. Rationale

This book is an excellent story to start the lesson on proportions. Students can visualize these smaller people and compare then with human proportions. Reluctant readers will be engaged and encouraged to learn more about proportions after reading this story. Students’ schema may not necessarily be activated but they will be more interested in the material. They will be open to continue learning and discovering what new things can be compared proportionally.

c. Usage of Text

The text will be used as an introduction and in preparation for the lesson on proportions. It will be used alongside with the textbook. Students will be asked to read the book after the lesson has been briefly introduced. It can be taken home as a personal reading assignment. The students will then be asked to find and compare different aspects of regular life and the
Borrowers life. They can then take these comparisons and write them as proportions. Students can then be put into groups to check the different relationships that can be created.

d. Readability

This book is on a fourth grade reading level according to the Fry Readability. It is easy to read and follow. The concepts are simple enough for readers at all levels. All seventh grade students should be able to read this book and completely understand the story. For the few that may be above the average reading level, it will be a simple read but the story should keep them from getting bored.

e. Reference


5. The Number Devil

Author: Hans Magnus Enzensberger

Pages: 203-210

VA SOL: 7.10-Polygons

Readability (Fry): 3rd grade

a. Introduction and Summary

Hans Enzensberger has written this book to share his love for mathematics to those who find it quite boring. It is all about a young boy who learns to enjoy and do math. An excerpt from this book will be used to initiate the lesson on polygons for the seventh grade Virginia Standard of Learning.

The Number Devil is written as twelve different dreams of a little boy, Robert, who hates mathematics. He is upset with a teacher who does not allow him to use a calculator on some word problems. However, a number devil shows up in his dreams to help him discover the
wonderful world of mathematics. The encounter things such as infinite numbers, prime numbers, Fibonacci numbers, numbers that magically appear in triangles, and numbers that expand. Robert becomes engaged in solving these mathematical questions using new means.

b. Rationale

This book will be useful for many students. It describes a boy who dislikes mathematics, which matches with most students feelings. They can see themselves in the boy who is feeling disgusted and wishes he no longer needed to learn math. This will build the bridge between the student and learning about polygons. Students will enjoy the descriptions given by the number devil on how to better understand mathematics and the importance behind it.

c. Usage of Text

This text will be used as an augment to the official textbook. It will be used again inside the classroom as preparation for the lesson on polygons. This passage, however, can be used as a read-aloud by the teacher or as a silent reading activity. The text is easy to read at a third grade level making it easy for all students. The teacher must present the material for the lesson on polygons after the story has been read by all the students.

d. Readability

This book is at a third grade reading level according to the Fry Readability. It is a very simple book and an easy read. There are many pictures and graphics that help the reader through the story. The concepts are a little more difficult for the third grade readers but will match with the learning of a seventh grade mathematics classroom.

e. Reference

6. **Similarity**

Project Mathematics

Producer: Tom M. Apostol

VA SOL: 7.11-Similar Figures

a. **Introduction and Summary**

Tom M. Apostol out of the California Institute of Technology produced a set of videos which he called Project Mathematics. These videos are designed to present certain topics in mathematics in a much easier to visualize way. This video on similar figures will be used to present the topic in a new way that will build students schema and create a better understanding of similarities.

This tool discusses how scaling multiplies length by the same factor and produces a similar figure. It also explains how angles and ratios of length of corresponding line segments are preserved. The video also uses animation to show what happens to perimeters, areas, and volumes after scaling. It includes various applications from real life.

b. **Rationale**

This video is designed to engage the reluctant learners in the classroom. It was created to connect students’ schema with the material being taught. The children’s eyes will be open with this different way of visualizing mathematics. Students can picture how triangles, squares and other shapes are similar through the video. They will be engaged in the unique ways the video describes how to determine if the figures are similar. The bridge is built with a new way of learning from the regular textbook.

c. **Usage of Text**
This video will be used as a replacement for the textbook for this lesson. The producers have presented the material that would be found in the section on similar figures. Students will only need the further instruction from the teacher afterwards. This video acts as the lesson and then work can be given from it. The video will be shown after a brief introduction on similar figures. Students can then be asked to discuss what they have learned and ask questions they may have on the new material.

d. Readability

Since this is a video, there is no readability for this tool. However it is developed for seventh graders, so the content is easily understandable for them.

e. Reference


<http://www.projectmathematics.com/pythag.htm>

7. Life on the Mississippi

Author: Mark Twain

Pages: 153-156

VA SOL: 7.12- Graphing linear equations using ordered pairs

Readability (Fry): 12th grade

a. Introduction and Summary

Mark Twain wrote Life on the Mississippi as a memoir, a travel book and a loose collection of history and geography. This book will be used for the historical information about the Mississippi River. Twain discusses the differing lengths of the river throughout the years, which will be used as an introduction to the seventh grade Standard of Learning on graphing linear equations using ordered pairs.
This book by Twain discusses his life on the Mississippi River. It begins with an introduction about the history and geography of the river. Then it presents the story of Sam Clemens, who is a cub steamboat pilot. During this memoir, Twain recalls the explosion of the steamboat Pennsylvania. The book continues with Twain’s return to the Mississippi River after twenty-one years. During this return, Mark Twain comes in contact with several people such as travelers from St. Louis. He also meets the pilot. As Twain travels, detailed descriptions and numerous anecdotes are recalled. The story continues as Mark Twain reaches New Orleans for Mardi Gras and then heads home to Hannibal, Missouri. The trip and story end in St. Paul, Minnesota.

b. Rationale

This story is extremely entertaining and will be useful for all students. The excerpt being used is just as fun as the rest of the story. It will be important in the introduction of the SOL on graphing. It will also be used to gain the attention of those students who just do not find mathematics entertaining. The description of the Mississippi River can not only be used as a read-aloud but also as part of the lesson. The points given by Mark Twain can be used as the first step in learning to plot points using ordered pairs. Students not only listen but do with this text.

c. Usage of Text

As with the other books in this text set, it will not replace any textbook but act as a supplementary tool. This excerpt from Life on the Mississippi will be used in the classroom as a read aloud because of the difficulty in readability. It can then be used outside of the classroom as a homework assignment. Students after having heard the story once can go back and find the different points needed to graph the decrease in the Mississippi River as described by Twain. It
may also be useful to have the students go over it again in pairs before turning it into a lesson. As always it must be discussed afterwards with regards to the relationship to the lesson.

d. Readability

This book and passage are fairly difficult and have a readability according to Fry at the twelfth grade level. It is too hard to leave just for the students to read, that is why it is to be read by the teacher. The words will present the most struggles for students but the teacher can clarify any problems. The passage can then be rewritten by the teacher if they wish to use it in the lesson.

e. Reference


8. Do You Wanna Bet?

Author: Jean Cushman

Pages: 3-7

VA SOL: 7.14-Probability through simulation versus theoretical probability

Readability (Fry): 7th grade

a. Introduction and Summary

Do You Wanna Bet? by Cushman is a book that takes two boys through different ways of finding probability and chance. The great adventures these two boys find will be used to build and create interest in seventh grade students. Two boys, Danny and Brian take ordinary events and turn them into chance and probability. These events include card games, coin flips, sports scores and statistics, and weather predictions. The boys use probability everywhere; from home, to school, to play. They ask questions such as, if the weather forecaster predicts a 60 percent
chance of snow, should Danny count on a snow day? The story will go along with the seventh
grade Virginia Standard of Learning on probability through simulation versus theoretical
probability.

b. Rationale

This text is ideal for the learners who may be struggling with their reading. It is a much
easier read then some of the other texts in this set. There are several different stories and uses of
probability in this book and can therefore be used for many students. The book focuses on two
boys but their activities are what many children do in the seventh grade. It will greatly help
students see how probability and chance are used in their everyday lives. Also it will help them
see future chances for learning about probability. Students will have a greater desire to learn
how to determine the difference between simulation and theoretical probability.

c. Usage of Text

This text will be used in conjunction with the regular textbook. It will serve as an
opening reading for the lesson on probability through simulation versus theoretical probability.
It will act as a preparation according to the PAR lesson framework. The book will be read as
part of a buddy reading between two students. The students can then test the boys work in the
story by doing the exercise on their own. This turns the reading into part of the lesson making it
even more enjoyable for students.

d. Readability

This book averages at a seventh grade reading level according to the Fry Readability.
The concepts and word usage in the text agrees with this level. Students can easily understand
what the two boys are doing as they read through the book. Students may need a little
clarification on the words that deal directly with probability, which can also be added to part of
the lesson. As an entirety, the book could be easy to read for even some of the lower level readers.

e. Reference


9. “The Olympic Games Summary”

Pearson Education

VA SOL: 7.17-Students will collect, analyze, display, and interpret data

Readability (Fry): 12th grade

a. Introduction and Summary

This article on the Olympic Games will give students a chance to interpret and graph data that they would enjoy. The article gives an introduction on the history of the Olympic Games and then gives data to the different games. The information includes past games locations and years. Then it looks at the gold medals of the past winter and summer games. It also gives the distribution of the medals for the 2004 summer games in sports such as swimming, track and field and basketball.

b. Rationale

“The Olympic Games Summary” will be extremely useful for the most reluctant learners. Students have several different sports they can use to help them interpret new data. Their schema is activated with the unique source of information from the different sports along with an increased interest in the material being taught. Theirs eyes are opened to the unique ways that mathematicians used statistics and data. They will be more interested due to the data that involves sports and the most watched sporting event. A bridge will be built between the student and the new material.
c. Usage of Text

This text will be used alongside the regular textbook and read aloud by the teacher. It will be most useful for creating problems that go along with the text. The data can be collected from this article and site. It will then be put into different graphs that students are learning about. The article can be read by the teacher to the students and then given to them to re-read with a partner. The two students can then find different ways to graph the data in different sections on the website. It will be a part of the reflection stage of the PAR framework since the students will use it after the have received the lesson. It will be a unique way to give them homework as an alternative to drill and practice.

d. Readability

This article is rated on a twelfth grade reading level according to the Fry Readability assessment. This is due to some of the larger words such as names of people and places. However, students will be able to easily understand the data which will be used for graphing. The teacher will be reading the article section. Students can then go to the teacher with any problems they encounter when dealing with the names in the statistics section.

e. Reference


<http://www.infoplease.com/ipsa/A0106400.html>

10. The Eight

Author: Katherine Neville

VA SOL: 7.22- Solving Equations

Readability (Fry): 12th grade

a. Introduction and Summary
**The Eight** written by Neville is a fairly long and complicated book, written for an adult audience. It will, however, be used in this text set as an introduction to the seventh grade Standard of Learning on solving equations. There are a few passages that will, hopefully spark an interest with the students and introduce them to the unit on solving equations.

This book is about the exploration and mixed times of two different stories. The first story is told during the years of 1790-1799 and a leap to 1830. The second story takes place in 1972-1973. Both stories are related to a search for the legendary Montglance Service. This is a chess set and board that was possibly presented to Charlemagne by North African Arabs in the 10th century. The pieces have several symbols imbedded in them and along with the service and board itself, there is believed to be some astonishing secret landing to unimagined power contained in it. The forces of good and evil, the black and white pieces respectively, in both centuries of the novel, seek the physical service itself, along with the key to unlocking this secret power.

**b. Rationale**

This story will be useful for the most reluctant of learners. Even though the whole story will not be read, the excerpt is extremely engaging and exciting. The story is full of mystery and involves math at the same time. It will be used to gain and possibly peak the students interest in the unit on solving equations. Many different problems involving solving equations can be developed from this simple excerpt. The players are forced to make decisions about equations which the students will also be required to do. If the students enjoy chess and mystery they will most definitely enjoy this passage. This will in turn involve them in solving equations.

**c. Usage of Text**
This text, because of the difficulty, will be used strictly in the classroom. It will not replace any textbook work but be used as an introduction to the unit on equations. This is part of the preparation stage of the PAR framework since it is being used to build an interest and spark schema in students. The story will be read in class by the teacher before starting the lesson for the day. It could also be given a silent reading activity before the lesson. It must then be discussed with the students and the connection must be presented.

d. Readability

This book came in on a twelfth grade reading level according to the Fry Readability. The level is quite high for seventh grade students which average eighth to tenth grade. However, since it will be read by the teacher, the more difficult words can be easily clarified. It does contain a lot of difficult words which may need to be revised for ease of understanding. Also the concepts may be a little hard to comprehend, but again the teacher is reading it only to build interest and possible schema for the unit. It is also a very large book but only a passage is being read.

e. Reference