

1. Title Page

Stock Market Mathematics  
Problem Solving/Data Gathering Unit  
Grades 6-8  
TEED 521- Math & Science  
March 17, 2005  
Audrey Roach & Michael Gustafson

2. Thematic framework

(a) Central Questions

The central questions the students will be addressing in this unit are:

- What qualities are important in the research and selection of your stock?
- In what ways can you mathematically interpret your stock (e.g. value, trends)?
- How will you visually represent the mathematical data pertaining to your stock?
- How will you use the data to make predictions?

In kid-friendly language: “You will buy shares in a stock. How will you decide which stock to invest in? Are there things to consider when investing in a stock? Once you buy a stock, you how will use math to see how your stock is doing? How will you show how your stock is doing? At the end of the unit, how will you take what you’ve learned from working with your stock to make predictions about the future of your stock?”

(b) Rationale

Our Problem Solving/Data Gathering Unit will connect our students to the NCTM math standards and the Washington State EALRs in many ways. We want our students to understand that mathematics are used extensively outside of the classroom and are applicable to daily life as stated in EALR 5.3. The stock market element in our unit brings various mathematical procedures into our lessons. Students will demonstrate understanding of integers, fractions, decimals, percents, ratios and averages.

We want students to have a hands-on experience gathering information and data and present it in ways that incorporate fractions, percentages, ratios and graphing. Bringing the stock market into the classroom can be a constructive experience for students to get a sense of how math, data gathering and problem solving can be used in real life situations. The stock market has complex elements that will allow students to investigate and practice statistical data gathering and plot changes and results daily.

Utilizing the stock market in a sixth and seventh grade classroom can be an insightful and responsive approach to mathematics. Students will participate in group work and demonstrate good communication skills and responsible group member attributes. We will look at the companies whose stock we “purchase” in regards to its business practices and contribution to our world. We can look at how the companies profit from their business practices and products, and how a company treats its employees. For example, we can look at how a service based company pays its lower level employees and concentrates its business to provide substantial results to its shareholders. Students will also come to understand that investing in the stock market is not always a sure way to make a profit, but learn that there are risks involved such as an unstable market and many economic variables.

(c) **Learners**

**Audrey Roach**

This unit is intended for four eighth grade classes of over 120 students. All of the students live in an urban setting with the majority living in the south end of Seattle. The students in my classroom are very diverse in areas of ability, socio-economic backgrounds, and race/ethnicity. The ages of the student range from twelve to fourteen.

Cognitively, these students seek equilibration by means of constructivism. Learning will occur for these students when they “create new ideas, or knowledge (rules and hypotheses that explain things), from existing information” (Snowman & Biehler, 37). According to Piaget, these students are intellectually in the formal operational stage. Students are moving away from the concrete operational stage and are able to “deal with abstractions, form hypotheses, solve problems systematically, and engage in mental manipulations” (Snowman & Biehler, 38). This unit will build on the students’ existing knowledge of concrete mathematical concepts and will require them to apply this knowledge to real world situations. In doing this, students will be functioning on both the concrete and abstract level. During this unit, students will also forming predictions (sort of a financial hypothesis) regarding their stocks. Students will use systematical problem solving skills and mathematical data (calculate and visual) to support their hypotheses.

One of the challenges in the classroom is that students may be at different levels within the formal operational stage. A solution to this would be to provide students with instruction and assignments that integrate the functions within the lower levels of the stage with the functions higher levels of the stage. The integration of instruction and curricula ensure that students of all levels can be productive and successful members of

the classroom community. For example, students use basic mathematical concepts and procedures (buying stock, calculating growth and loss among stocks) and apply this data in forming and supporting their hypotheses (higher level) as stockbrokers.

According to Erickson, students of this age are in the Identity versus Role Confusion stage. The ability for adolescents to concentrate more on possibilities than on realities (abstract vs. concrete) plays a large role in their social development. According to Erickson, this ability is “instrumental in the emergence of the identity crisis” (Snowman& Biehler, 43). In fact, the real danger of this stage is role confusion where students have “no clear conception of appropriate types of behaviors that others will react to favorably” (Snowman& Biehler, 28). It is during this time that students will look to others to establish what appropriate forms of behavior are. If reactions to particular behaviors are favorable in many different contexts, students will begin to develop a sense of self. Therefore, expectations regarding appropriate behavior must be explicitly stated, implemented and modeled in the classroom. To foster the development of self, students will participate in cooperative learning activities and the development of appropriate communication skills will be emphasized.

Since my classroom is so diverse, I will have to be careful to address the needs of all my students. I will incorporate many types of learners. Most students are not visual or auditory learners, but, rather, they are more kinesthetic and learn “by doing”. To acknowledge the diversity of learning styles in the classroom and provide a more inclusive classroom setting students will be allowed to move around (kinesthetic), work in groups (interpersonal), work independently (intrapersonal), construct graphs (visual), and express themselves mathematically (mathematic).

Also, while the socio-economic range is somewhat varied, most of my students come from low-income families. These students often have the most challenges with school work. Often the student does not receive the support from home needed to succeed. Therefore, I will allow students to help each other whenever possible. I will also be available before, during and after school if students need any additional help. Also, most of the work will be done in class rather than taking it home in the form of homework. Only when students need to finish something in order to continue along on a project, will homework be required.

It is also important that these students be engaged in their education. I surveyed the students to find out what their interests were. I then incorporated these interests in learning activities within the unit plan. Many of the students I surveyed were interested in hanging out with friends and being social. Due to this interest and the fact that youth of color are usually field dependent, I incorporated a great deal of cooperative group work into my unit. In addition, these students need to be active learners in order to be engaged in their learning. Therefore, some of my unit requires students to role-play a particular individual. These projects allow student to participate in active learning. Students need to feel that what they are learning will help develop useful skills. Therefore, the unit required students to develop their skills of mathematics, visually representing data/information, research, forming hypotheses, persuasive writing/debate, and synthesizing information because higher education and all types of employment require these skills.

**Michael Gustafson**

This unit is designed for a group of twenty-five students of a suburban school in Bellevue, WA. The ethnic make-up of the classroom and school is reflective of the strong Caucasian American influence of the surrounding community. About five percent of the classroom is of non-Caucasian/European descent. Still the classroom and the school strive to teach with comprehensive perspectives.

The class consists of 14 girls and 11 boys. The students' intellectual abilities vary relatively close from grade level ability to high ability. There are two students with Individual Education Plans. The students work in table groups of four and are accustomed to activities with group work or paired, peer learning. The table groups are arranged with students of diverse learning abilities that ultimately could compliment each student's learning process.

Elements of cooperative learning are influenced of the teaching style in the classroom and designed into my Problem Solving and Data Gathering unit. The groups are arranged of different ability levels with two male and two female students. Cooperative learning works well in the classroom for reasons that it works well in other classrooms. Around the nation cooperative learning constructs have been shown to be more effective than non-cooperative learning structures in raising the levels of variables that contribute to motivation, raising achievement, and producing positive social outcomes (Glasser p. 373 Psychology of Learning). The approach to learning about problem solving and data gathering through the stock market will enhance the learning experience of the many types of learners in the classroom. The cooperative structures our unit will lead students to focus on effort and cooperation as a basis of motivation, effort and contribution.

### 3. Assessment

#### (a) Learning Targets

1. *Students will understand that mathematics are used extensively outside the classroom and are applicable to daily life. (Concept/Generalization)*

**EALRs addressed:** *Mathematics 5.3-* Recognize the widespread use of mathematics in daily life and the extensive use of mathematics outside the classroom; *Writing 1.1-* Demonstrate consistency in focus; construct a logical argument.

**Evidence of Achievement:** Students will write a descriptive paragraph in answering the following questions of the theme “Math in Daily Life”: “Where do you see mathematics outside of the classroom? What kind of mathematics do you see outside of the classroom? Overall, is mathematics applicable to daily life? Please explain your reasoning”. Students must provide answers for all of the questions and provide at least two examples as evidence for each answer they provide.

2. *Students will be able to perform various mathematical procedures to calculate stock value, analyze stock trends, compare/contrast and average stock data. (Skill)*

**EALRs addressed:** *Mathematics 1.1-* Demonstrate understanding of integers, fractions, decimals, percents, place values of decimals, and properties of the rational number system using pictures and symbols; *Mathematics 1.1-* Understand and apply the concepts of ratio and direct proportion; *Mathematics 1.4-* Calculate

and appropriately use range and measures of central tendency to describe data; *Mathematics 3.1*- Compare, contrast, and interpret information from a variety of sources; *Mathematics 5.1*- Relate and use conceptual and procedural understandings among a variety of mathematical content areas.

**Evidence of achievement:** Students will correctly calculate the amount of shares they can purchase with allotted money. Students will correctly calculate and plot stock trends by fractional increments. Students will compare “similar” growth and loss with other students. Students will correctly use ratio/proportion to calculate who lost and gained more. Students will explain this using ratio/proportion. At the end of the unit, students will find the average growth of all of their stocks to find who had the highest growth. Students will correctly calculate the mean, mode and median of their stock growth.

3. *\*Students will be able to organize and visually represent mathematical data. (Skill)*

**EALRs addressed:** *Mathematics 1.4*- Organize and display data in appropriate forms.

**Evidence of achievement:** Students will correctly plot their stock growth or loss on a line graph throughout the unit. Students will also correctly develop a box and whisker plot using the range and averages of stock growth in the class.

**\*Please see formative assessment on page 14.**

4. *\*Students will work cooperatively in groups. (Skill)*

**EALRs addressed:** *Communication 3.2*- Work cooperatively as a member of a group; *Communication 3.3*- Seek agreement and solutions through discussion.

**\*Please see self-evaluation instrument on page 16.**

5. *Students will use mathematical data (both calculated and visual) to predict and make inferences regarding future trends of stock. (Skill)*

**EALRs addressed-** *Mathematics 1.1-* Demonstrate understanding of integers, fractions, decimals, percents, place values of decimals, and properties of the rational number system using pictures and symbols; *Mathematics 1.1-* Understand and apply the concepts of ratio and direct proportion; *Mathematics 1.4-* Understand and make inferences based on analysis of experimental results, statistical data, and simple graphical representations. *Mathematics 4.3-* Clearly and effectively express or present ideas and situations using both everyday and mathematical language such as models, tables, charts, graphs, written reflection, or algebraic notation. *Mathematics 5.1-* Relate and use conceptual and procedural understandings among a variety of mathematical content areas. *Writing 1.1-* *Demonstrate consistency in focus; construct a logical argument; Writing 2.2-* *Write for different purposes (e.g. to express him/herself, to inform others)*

**Evidence of achievement:** Students will “become” stockbrokers. Students will build a stock portfolio with assignments and data. In an essay, students will use prior research to explain and support their reasoning behind the selection of their stock. In the essay, students will use data in their stock portfolios to make a prediction regarding the future of their stock. From this prediction, student stockbrokers will either recommend or advise against shareholder investment in their stock. In addition to written rationale, student stockbrokers will use other evidence from their portfolio in the form of mathematical data (calculations) and visual representations (graphs) to support their predictions and rationales. If

necessary, stockbrokers can also use the concept of “social responsibility” to support retention of a stock despite financial loss.

**\*Please see summative performance assessment instrument (with rubric) on page 15.**

6. *Students will understand and appreciate the importance of choosing a socially responsible investment option. (Disposition)*

**EALRs addressed:** *Writing 1.1-* Demonstrate consistency in focus; construct a logical argument; *Writing 2.2-* Write for different purposes (e.g. to express him/herself, to inform others).

**Evidence of achievement:** Students will make a company brochure extolling the virtues of investing (buying shares) in a socially responsible company. Brochure must contain at least 3 pros/benefits of investing in socially responsible company. Brochure must contain at least 3 cons of investing in company that are not socially responsible (e.g. big polluters, poor treatment of their employees, disregard of child labor law, contributors to tobacco industry, etc.).

(c) **Assessment Instruments**

**Pre- Post Assessment**

Working individually, students will respond to the following questions.

1. Are mathematic used outside of the classroom? Can you use math in your daily life? Explain your answer.
2. If you were given the chance to invest in a company, what would be important for you to know about the company? Are there certain qualities a company might have that would make you want to invest (buy shares) in that company?

3. Do you know what it means for a company to be known as a “socially responsible” company? Why is this important to think about when you are investing?
4. If you were given \$1,000, how would you use math to purchase parts (shares) of a particular stock?
5. How do you use math to figure out how your stock is doing? How would you show others (in a graph) how your stock is doing?
6. How would you use math to compare/contrast how your stock is doing with others in the class?
7. How would you find the average of all the stocks’ growth? How would you graph this?
8. How would you predict how your stock will do in the future?

**After completion of final project, students will be asked to fill this out as a post-assessment to gauge individual student understanding of the major learning targets within the unit.**

Brief description

The pre-assessment will tell me how much each student knows about the concepts, skills, and dispositions found within the unit’s learning targets. Since the questions listed in the pre-assessment come directly from my learning targets, the amount that students know will dictate how much time I spend on each learning target. The pre-assessment

will also determine the depth of my lesson plans for each of my learning targets. For example, will a review of a concept or a skill suffice *or* am I introducing new material and concepts that need to be explored more deeply in order to continue with the unit? Only by assessing prior knowledge would I know how to proceed with my students to ensure a positive and productive learning experience.

The post assessment is one of the main determinants in whether you effectively met your learning targets. As a reflective teacher, the responses in the post-assessment would help me in the evaluation of my unit and analyze my curriculum and instruction. Using information from the post-assessment in changing and/or further developing your curriculum is essential; curriculum should never be static. Gauging student learning leads to teacher assessment and reflection. This assessment and reflection are essential in order to provide students with the optimal learning experience.

### **Formative Assessment**

For this assessment, I will assess student's ability to organize and visually represent mathematical data in their development and use of line plots. I will collect student plots and assess their understanding of this skill by using the following checklist:

- \_\_\_ Students have titled their line plots appropriately
- \_\_\_ Students correctly labeled the x and y axis
- \_\_\_ Students have put the correct information on the respective axes
- \_\_\_ Numbered increments on graph are formatted correctly (in fractions).
- \_\_\_ Students are plotting growth or loss of their stocks correctly on their graphs.

**Summative Performance Assessment (with rubric)**

Use your stock portfolio to advise a potential client. Your portfolio and essay will

be assessed using the rubric below:

<b><i>Criteria for Final Project</i></b>	Meets expectations	Does not meet expectations
<b>Stock Portfolio</b>	Contains <i>all</i> completed assignments: <ul style="list-style-type: none"> <li>• company brochure</li> <li>• graphs</li> <li>• complete calculations</li> </ul>	Portfolio is missing any of the assignments or assignments are incomplete.
<b>Essay</b>  * ALL portfolio evidence (with exception of company research/ brochure) <u>must</u> include written explanations describing the process you used to calculate your mathematical data.	<ul style="list-style-type: none"> <li>• <b><u>*Choosing stock:</u></b> Rationale for choosing stock. Two pieces of evidence from portfolio to support rationale.</li> <li>• <b><u>*Socially Responsible Investing:</u></b> Rationale for investing in a socially responsible stock. Two pieces of evidence from portfolio to support rationale.</li> <li>• <b><u>*Prediction:</u></b> Rationale for prediction. Two pieces of evidence from portfolio to support rationale. This evidence must include calculations and graphs.</li> <li>• <b><u>*Advising:</u></b> Rationale for advising investor to purchase or to not purchase stocks (include at least 3 pieces of evidence from portfolio mathematical, graphs, or use of concept of “social responsibility”)</li> <li>• <b><u>Last paragraph (Math in Daily Life):</u></b> All questions are addressed. Each answer has 2 examples.</li> </ul>	Rationale and examples are missing for any paragraph. Essay is incomplete. Insufficient evidence for rationales.
<b>Conventions</b>	Essay is in polished form and uses appropriate conventions.	Errors in conventions interfere with the fluidity of the essay.

## **Student Self-Evaluation**

### **Cooperative Group Skills: Self-Evaluation**

Rate yourself based upon how well you interacted with your group members today.

1= Disagree

2= Neutral or n/a

3= agree

1. I contributed thoughtful ideas and suggestions to my group.- 1 2 3
2. When I disagreed with someone in my group, I did so in a respectful way.- 1 2 3
3. I asked other members of my group questions when there was something I didn't understand.- 1 2 3
4. I helped my group stay on task and work toward achieving our goal.- 1 2 3
5. I listened to the ideas and suggestions of other group members with an open mind.- 1 2 3
6. I build onto the comments of others- 1 2 3

What can I do next time to help the group succeed?

#### (d) **Communication to Families/Students**

Dear Parents or Guardians,

This March our 6<sup>th</sup> grade class will spring into math and play a Stock Market game. The math unit we will begin will incorporate problem solving skill and data collection. Your student in the 6<sup>th</sup> grade will embark on a cooperative learning journey to investigate analyzing numbers, percentages, graphing, and predictions. Our students will invest a hypothetical \$1,000.00 to build a portfolio consisting of a common stock listed on the New York Stock Exchange or NASDAQ. The students will do their initial investing, record their stock transactions and graph the stocks daily activity. Students will develop a personal portfolio with information about their company, its product, its past activity in the stock market and inferences on future predictions.

The teachers will be designing this investigative, problem-solving lesson around an interdisciplinary approach to learning communications, writing and math.

Some of the learning objectives covered in this unit will include:

- Developing skills in critical thinking, research and decision-making
- Develop investigating and investment strategies
- Work cooperatively in groups
- Use the new paper to assess the impact of current events on the market
- Become proficient in math skills including:
  - Ratios, Decimals, Estimation, Fractions
  - Calculations, Percentages, Spread Sheets

As your child's teachers, we think this will be a positive experience in our classroom and we welcome your input. If you are someone who has experience to share about the stock market, we invite you to contact us and visit our classroom to share in our problem solving and data-collecting journey.

Sincerely, your child's teachers,

Audrey Roach and Michael Gustafson

#### **4. Unit Outline**

##### **(a) Unit Overview**

Over the course of two weeks, students will be participating in an engaging unit that incorporates the use of math in the context of the “real world”. In this unit, students will see first hand the applicability of mathematics in daily life. In addition, students will gain skills in mathematics, working in cooperative groups, synthesizing data, making and supporting predictions, and oral presentation.

In this unit, students will work in groups to research and select a stock to observe over a two week period. In their research, students are encouraged to research socially responsible investment opportunities. After research is completed and stocks have been selected, students will learn how to calculate data using different forms of mathematical calculations. Students will purchase stocks, calculate growth and loss, and compare/contrast growth and loss among other groups. Throughout the unit, students calculate results and will plot their data into visual representations (line graphs). At the end of the unit, students will apply their data and newly acquired knowledge in a culminating project.

Students will benefit from this project by understanding the importance of socially responsible investments. This unit will help students “use mathematics effectively as a tool in the construction of personal and shared meaning” (TEED 521 class- 3/01/05). It is my hope that this unit will provide students with the tools and knowledge to wonder and, ultimately, make sense of their world.

##### **(b) Outlines of Lessons:**

**Day 1: Math in Everyday Life & Introduction to the unit**

*Learning target #1*

*Mathematics 5.3*

**\*Students will take pre-assessment.** Students will review the concept that mathematics is widely used in daily life. Students will be given examples that they can relate to. For example, construction, traveling (speed X rate= distance), and basic concepts of addition, subtraction, multiplication, and division. This discussion will lead up to introduction to the unit. Students will be given a timeline detailing the assignments and projects of the unit.

This lesson will reinforce the concept that math is used in everyday life. This concept will be reinforced more strongly as students apply mathematics in a practical manner.

**\*Please see pre-post assessment on pages 11-12.**

**Day 2: Researching socially responsible companies**

*Learning target #4, #6*

*Communication 3.2, 3.3; Writing 1.1, 2.2*

Short lesson on what it means for a company to be socially responsible. I will provide a list of these companies to the students and encourage them to research these companies. In their research, students will be looking at the company's mission statement, stability, cost of shares, and overall satisfaction among its investors. Students will make company brochure.

This lesson introduces the concept of "socially responsible" investing. Students will have the opportunity to learn about the basic operations of companies and investing in these companies.

### **Day 3: Purchasing Stocks**

Learning Targets #1, #2, #4

*Mathematics 1.1; Mathematics 5.3; Communication 3.2, 3.3*

After students choose their company, they will then purchase shares with the \$1,000.00 that they have been allocated. Students' shares will differ due to varying share values. Students will employ basic math to determine how much stake (shares) they have in their company for \$1,000.00

Students will start (mathematically) in the unit with some basic operations and build on their skills as the unit progresses.

### **Day 4: Calculating Stock Growth/Loss, Developing Line Graphs, Plotting**

#### **Data**

Learning Targets #2, #3, #4, #5

*Mathematics 1.1; Mathematics 1.4; Communication 3.2, 3.3*

Lessons on how calculate growth or loss in stocks. For example (+3/4 indicates growth while -3/4 indicates loss). Students will calculate growth and loss of their stocks using fractions. After calculating data, students will develop line graphs with accurate axis. Student will then plot their data onto their line graphs.

**Students will plot data everyday.**

Students are now advancing to calculation of fractions and construct and using graphs to visually represent data.

### **Day 5: Who made more? Who lost more?: The Fascinating World of**

#### **Ratio/Proportions**

*Learning Targets #2, #5*

*Mathematics 1.1; Mathematics 3.1; Communication 3.2, 3.3*

I will review the concept of ratio and proportion. In analyzing class data, individuals will align themselves with other individuals that have had similar loss and growth trends/calculations. I will challenge the students to see how much they really lost by incorporating the value of their shares. Students will be surprised to see that, even with similar loss and growth, the total increase and decrease of the value of stock depends on the value of shares. The big concept is that true gain and loss is dependent upon the ratio/proportion of share values among the class.

Students will use basic calculations, more advanced calculations and visual representations to help them construct understanding of the concept of ratio/proportions.

### **Day 6: Range: Finding Average of Growth (Mean, Mode, and Median) &**

#### **Box and Whisker Plots**

*Learning Targets #2, #3, #5*

*Mathematics 1.1; Mathematics 1.4; Mathematics 3.1; Communication 3.2, 3.3*

Lesson regarding finding averages within a range. Students will calculate the average growth (mode, median, and mean) using the range of growth among all class members. The lesson will also explore the concept of box and whisker plots in visually representing data. Students will then plot individual stock growth data into the box and whisker plot.

Students will use whole class data to compute averages. They then will apply skills of visually representing mathematical data in developing box and whisker plot.

**Days 7-10: Life as a stockbroker: Rationalizing Investments, Building Portfolios, Predicting Future Trends, Advising Clients**

Learning Targets #1, #2, #3, #4, #5, #6

EALRs Mathematics 1.1; Mathematics 1.4; Mathematics 3.1; Mathematics 4.3; Mathematics 5.1; Mathematics 5.3; Communication 3.2.; Communication3.3; Writing 1.1; Writing 2.2

Student will “become” stockbrokers and begin putting together their stock portfolios. Students will write an essay and use their portfolios to provide rationale for choosing their company (brochure), make a prediction of future trends (calculations and visual representations), and to explain why potential “investors” should or should not purchase shares in the company. In final paragraph of paper, students will answer question posed in Learning Target #1 Evidence of Achievement section. These lessons will help students synthesize their data (mathematical and visual) to develop predictions and rationale. Students will apply skills and knowledge gained throughout the unit to successfully complete final project.

This culminating project will also serve as and a summative performance instrument (with a rubric) to evaluate students’ achievement of learning targets.

**\*Students will take post-assessment.**

**\*Please see post-assessment on pages 11-12.**

**\*Please see summative performance assessment with rubric on page 15.**

**Web-based resource**

Students and teachers can both use [www.library.thinkquest.org/3096/](http://www.library.thinkquest.org/3096/) as an introduction to investment and the stock market. The site provides a glossary of terms and is a great tutorial for kids who are new to investing. Teachers can use it to supplement their unit.

Students will also use the Web to check stock prices and for information regarding their company. Students will also use the computer to analyze and graphically represent their data.

**(c) Classroom Management**

We chose a stock market activity to enhance our learning of math because of its hands-on and constructivist way of learning. Classroom management will be a necessary component to guide the classroom through active, group learning. Students will be investigating, gathering data, computing and creating graphics in groups throughout the course of the unit. Procedures for handling materials and supplies will be well planned and explained to the students before they begin the process. Procedures will include: where the students are stationed, specific materials to be used and how they should be used, time limitations and movement around the classroom. Closely monitoring students also is essential. As teachers and facilitators, we will move around the classroom to give help to students as needed and answer any questions.

It is fortunate that Audrey and I have teachers who have classroom management plans that closely align with William Glasser's *Noncoercive Discipline* model. Students

have control of their own behavior. They know that they make their own choices regarding how they perform in the classroom. The role of the teacher is to facilitate learning through modeling and engaging students in quality curriculum. If behavior does get out of hand, students and teachers create a contract together to eliminate the problem. Encouraging students to be actively involved in the learning of this problem solving and data gathering unit and keeping them interested and engaged in the curriculum through “hands-on” learning will create a learning environment conducive to positive behavior.

**(d) Community Resources/Collaboration**

Community Resources/Collaboration

We are very excited about presenting this unit. Problem solving and data collecting are an everyday part of life. By having a hands-on experience with collecting data and interpreting results, students will better able to understand and evaluate the statistical problems they encounter daily. To allow students to better grasp the information in this unit, we will invite parents of our students who have experience in business and the stock market to share their expertise at the student’s level. Parents play an important part in presenting real life problem solving skills to their child’s learning. By inviting parents to visit our classroom during our problem-solving unit, we hope to encourage our student to make the connections of their classroom learning to real, daily life situations.

We will be utilizing the local daily newspaper in our classroom to gather our data about our stocks activity and analyzing current events that may affect our stocks future. We will invite a representative of a local business to visit our classroom to share with us their experience in data gathering and problem solving to implement, start and

operate their business. We believe it will be beneficial for our students to see how there work in the classroom will benefit them in their future problem solving strategies and decision-making.

**5. End stuff**

Overall development of unit theme- Michael & Audrey  
Thematic Framework- Audrey  
Rationale- Michael  
Learners- Michael and Audrey  
Assessment - Audrey  
Communications to Families and Learners- Michael  
Unit Outline- Audrey  
Classroom Management - Michael  
Community Resources/Collaboration- Michael  
Annotated Bibliography- Audrey

**Annotated Bibliography**

Bergeson, T., Heuschel, M., Lahmann, M., and Hardy, D. (2002). Essential Academic Learning Requirement Technical Manual. Olympia, WA: Office of the Superintendent of Public Instruction.

*I used this in developing and reinforcing my learning targets, evidence of achievement, and assessment.*

Lappan, Glenda et.al., (1988). Data about us: Statistics. Menlo Park, CA: Dale Seymour. *Resource in formulating ideas for lesson plans.*

Snowman, J. & Biehler, J. (2003). Psychology Applied to Teaching. Boston, MA: Houghton Mifflin Company. *Provided theories regarding cognitive and emotional/social development.*

Pendley, A. (2004). *What Life is Like in Our America: Statistical Investigations about Teens by Teens*. Retrieved March 11, 2005 from TEED 521 website

Math/Science/Technology:

[http://classes.seattleu.edu/masters\\_in\\_teaching/teed521/professor/DGPS/APendley/AmiPendleyClassStats7th.pdf](http://classes.seattleu.edu/masters_in_teaching/teed521/professor/DGPS/APendley/AmiPendleyClassStats7th.pdf)

*Used a resource in the development of themed unit plan.*

Charles, C.M. (2005). Building Classroom Discipline. Eighth Edition. Boston, MA: Pearson Education, Inc. *Main source for development of classroom management section of unit plan.*

[www.socialfund.com](http://www.socialfund.com)

*This site provides valuable information about investing in socially responsible companies.*

[www.library.thinkquest.org/3096/](http://www.library.thinkquest.org/3096/)

*This site is a very good site for kids to access to research about the basics of companies and investment. It also provides a glossary of terms.*

[www.lessonplancentral.com/lessons/Economics/stock\\_market](http://www.lessonplancentral.com/lessons/Economics/stock_market)

*This site provided ideas for structure of unit plan.*

[www.Learnc.org/lessonp.nsf](http://www.Learnc.org/lessonp.nsf)

*This site was a good resource for developing specific goals and lesson plans for students.*