Lesson Plan

Text: Financial Algebra   edblazevic@seattleschools.org
Volume: 1   **Chapter: Chapter 3_Banking Services**
Unit number   4   **Title of unit: Exploring Compound Interest**
Developed by: Eric D. Blazevic Date: 6/26/2012

Short Description (Be sure to include where in your unit this lesson takes place):

> **This section is to introduce the concept of compounding interest using the mastered skill of simple interest.**
> **Because these are simple formulas I plan to demonstrate the formula using the examples in the book. (1/2) day**
> - **Classwork: Students to do the applications from the book. One-on-one assessment and reteaching. (1 days)**
> - **Intro to Compounding Assignment (1/2 day)**

LESSON PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lesson Objectives (Students will be able to:)**
  …Understand the concept of getting interest on your interest
  …Compute compound interest using a table

- **List of prerequisite skills needed:**
  … Students will use simple interest formula to do compound interest calculations
  … do daily day-to-day accounts
  … measure growth of investments compared to simple interest
  … Calculator skills

- **Vocabulary:**

Compound Interest	Quarterly Compounding
Annual Compounding	Daily Compounding
Semi Annual Compounding	Crediting

- **S**tate Standards addressed: *(You may use your District's Power Standards if applicable, Highlight "Green" Standards)*
  Math: (Math) **Extend the properties of exponents to rational exponents**
  1. *Explain how the definition of meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.*
  Interpret the structure of expressions:
  1. *Interpret expressions that represent a quantity in terms of it's content*
  a. *Interpret parts of an expression, such as terms, factors, & coefficients*

b. *Interpret complicated expressions by viewing one or more of their parts as a single entry.*

c.

Reading: (Reading)
Writing: (Writing)
Leadership: FBLA

- **Teacher Preparation:** *(What materials and set-up are required for this lesson?)*
  … Text Book, Work Book, Whiteboard, Worksheets & Calculator
  … projector & excel
- **Content Delivery:** *(How will the lesson be delivered? List any grouping and instructional strategies as well.)*
  … Demonstrate lesson, do some together, have students work together as teacher monitors
- **Instructional Documents** *(Please attach any Worksheet, Quiz, Reading Guide, etc)*
  … see attached
- **Assessment Tool used in this Lesson** *(scoring method, guide, or rubric)*
  … Vocabulary Jeopardy – with Lesson 3.3
  … Worksheet Quiz, page 43-44 in student workbook
- **Reinforcement/Intervention/Extension Activities**
  … Go over examples in book with students
  … Assign selected applications on page 141-142 to work in class
  … One-on-one work with students
  … Re-visit based on quiz and worksheet results

- **Career Applications** *(When will this be used in "real life"?)*
  … Any fixed rate investment is now compounded and if not should be otherwise noted. So if exploring savings accounts, cds, or money market funds students should ask for details of the compounding in order to make accurate comparisons.
- Web Page:
  …Bankrate.com - http://www.bankrate.com/
  1. Can be used to show the power of compounding using larger numbers.
  2. Can be used to check work.
  …US News Finance
  http://money.usnews.com/money/blogs/my-money/2010/09/23/compound-interest-best-friend-or-worst-enemy
  1. An article with a contrary take on interest compounding, would also be good in the section on credit.

Lab Template

Text: Financial Algebra
Volume: 1   **Chapter:** Chapter 3_Banking Services
Unit number 4   **Title of unit:** Savings Accounts
Developed by: Eric D. Blazevic   **Date:** 6/26/2012
edblazevic@seattleschools.org

Attach the Following Documents:
     1. Lab Instructions Work sheet (Economic Time Machine)
     2. Student Handout(s) delivered via school class page system
     3. Rubric and/or Assessment Tool Answer sheet

Short Description (Be sure to include where in your unit this lab takes place):

> This is a very simple chapter with a very straight forward formula: I=prt.
> However, for students they struggle with the concept of money growth over time.
> Their experience is too short. In this scenario the students get to travel in time and
> try to beat the system by using the concept of the time value of money.
>
> This is customized to myself but details can be changed as it works for you.

Insert Title Here
**Time Machine or
How to get rich over time – maybe.**

LAB PLAN

TEACHER: *(Teacher Prep/Lab Plan)*
- **Lab Objective**
  …Reinforce the Simple Interest Formula
  … Concept of compounding
- **Statement of prerequisite skills needed** *(Vocabulary, Measurement Techniques, Formulas, etc.)*

- **Vocabulary**

Savings Account	Simple Interest formula
Interest	Minimum Balance
Interest Rate	Maturity
Principal	Simple Interest

- **State Standards addressed:** *(Highlight "Green" Standards, you may use your District's Power Standards if applicable)*
  Math: **Extend the properties of exponents to rational exponents**

1. *Explain how the definition of meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.*

Create equations that describe numbers or relationships

4. *Rearrange formulas to highlight a quantity of interest, using the same Reasoning as in solving equations.*

⚐ **Reading:**
⚐ **Writing:**
⚐ **Leadership: FBLA**
⚐ **SCAN Skills/Workplace Skills:**

⚐ **Teacher Preparation:** *(What materials and set-up are required for this lesson?)*
…Attached Worksheet – The Economic Time Machine
…Daily Compounding Worksheet

⚐ **Lab Organizational Strategies:**
⚐ Grouping/Leadership/Presentation Opportunities: Teams are done in teams of two
⚐ Cooperative Learning: Team members have to crunch the numbers together
⚐ Expectations: Reinforce the lessons, Students connect with the real world concept of time value of money & the idea that there is no easy fix for investing or savings.
⚐ Time-line: One Period

⚐ **Post Lab Follow-Up/Conclusions** *(to be covered after student completes lab)*
⚐ Discuss real world application of learning from lab: Discuss the following
…Flaws in original plan (paradox of time travel)
…What would it take to have had the plan work.
…Examine the rose colored nature of glasses when you look back.
…What other historic events were taking place that caused the high savings rates.
…Introduce concept of inflation

I=prt

Using the Simple Interest Calculator above we are going to explore the

Power of Compounding

In the chart below we going to set up a comparison showing simple (annual), semi-annual, quarterly and monthly compounding interest. We have $2,500.00 at 5% interest.

	Interest				Total Wealth
Annually	125.00				$2625.00
Semi Annually	At 6 months	At 1 year			2626.56
	62.50	64.06			
Quarterly	At 3 months	At 6 months	At 9 months	At 1 year	2627.37
	31.25	31.64	32.04	32.44	
Monthly	Jan	Feb	Mar	Apr	
	May	June	July	Aug	
	Sept	Oct	Nov	Dec	
Daily	1/1	1/2	1/3	1/4	
	1/5	1/6	1/7	1/8	
	1/9	1/10	1/11	1/12	

Financial education needs to become a part of our national curriculum and scoring systems so that it's not just the rich kids that learn about money.. it's all of us.
David Bach author of "The Armchaire Millionaire"

	1/13	1/14	1/15	1/16
	1/17	1/18	1/19	1/20
	1/21	1/22	1/23	1/24
	1/25	1/26	1/27	1/28
	1/29	1/30	1/31	2/1

Did you really think I was going to make you do 365 days of calculations out by hand.
I'm hurt.
But there are two ways you can find out. What do you think they are?

Answer: formula in the next chapter – duh?
&
Using a shreadsheet – double duh!

Hear Ye! Hear Ye! Credit Union
Step right up and get the deal of a century!
Don't get sucked into those complicated
compound interest accounts of those evil BIG
BANKS!
We'll offer you a bigger, simpler interest rate!

4%

CD

Good for
5
Years

If it sounds to good to be true
it probably is!
Play it safe and go with the
standard savings account at
1.5% compounded daily!

You need to compare these offers
Answer the following questions.
1. Which is a better deal?
2. At what point (if ever) does one get better then the other?
3. What is the disadvantage of the Her Ye! Here Ye! Credit Union offer
compared to Big Bank's offer?

(You can use the spread sheet)
(really – use the spreadsheet)

My classroom is equipped with a set of clickers. This quiz would be preloaded into the system and the students will use these devises to answer the definitions with the correct word. I can tell who gave the first correct answer. I combined Vocabulary from 3.3 & 3.4 for this quiz.
The definitions are randomly delivered.
They don't need to answer in the form of a question.

Definitions	Vocabulary
Bank account that pays interest	Savings Account
Amount of money a bank pays depositors	Interest
The amount of money in bank	Interest Rate
Percentage paid to depositors	Principal
Interest based on a 1 time annual payment	Simple Interest
How to figure Simple Interest	Simple Interest formula
Document from your bank detailing your deposits, withdraws & balances	Statement Savings
Amount your bank requires you to keep in your account	Minimum Balance
An account that requires large initial deposit and limits withdraws	Money Market Account
An account that requires a set amount and has strict time duration.	Certificate of Deposit (CD)
Date when a CD reaches its maximum value or what many teens lack. OOOOOOOOOOOOH!	Maturity
Interest earned on your principal and previously earned interest	Compound Interest
Another term for simple interest	Annual Compounding
Interest compounded twice a year	Semi Annual Compounding
Interest compounded four times a year	Quarterly Compounding
Interest compounded twelve times a year	Daily Compounding
Interest compounded each and everyday	Crediting