Lesson plan: "Money grows over time." Kawānanakoa Middle School, 8th grade visit

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Lesson Plan: "Money Grows Over Time"

Kawananakoa Middle School, 8th Grade Visit

April 27, 2011 – 10:00am

Purpose: To teach the students that the value of money changes over time – for better or for worse. It is not enough to think about money only in the current moment because the current value may not reflect the total value of something over time.

I. When did Senator learn the importance of saving?

   a. Tell "piggy bank story"
   b. How would you earn money for your piggy bank?
   c. What did the piggy bank lesson teach you?
      i. Good: Saving can help you achieve long-term goals
      ii. Bad: My money wasn't safe because it wasn't in a bank. If the piggy bank was lost or stolen, I would have lost everything.
      iii. Bad: My piggy bank savings was not earning interest, so it wasn't growing in value.

II. Savings goals

   a. Have the students brainstorm about reasons to save.
      i. Examples: save for college, new clothes, shoes, toys, to travel, to go out to eat, etc.
   b. Discuss other reasons to save that the students probably will not think of.
      i. Examples: buying a home, buying a car, surviving unexpected events like a tsunami, hurricane, job loss, etc.

III. What is interest?

   a. Interest is the additional value that money earns over time when it is borrowed or saved.
   b. Interest can be good and bad.
      i. Good interest: money in bank accounts earns interest. If you have savings in a bank account, the bank pays you.
      ii. Bad interest: money that is borrowed accumulates interest. When you repay money that you borrow, you have to pay back more than you borrow because of interest.

IV. How do costs change because of interest?

   a. Savings account example:
      i. Put $100 into the bank.
      ii. Bank pays 5% interest.
      iii. In the first year, your bank account will grow by $5

iv. In the second year, your bank account will grow by $5.25
v. It grows by more the second year because of compounding interest – the amount that you earn is added to your bank account – the more money you save, the more you can earn

b. Calculating interest
    i. Convert the interest rate from a percentage to decimals
    ii. Multiply the amount by the decimals ($100 x 0.05 = $5)
    iii. You just calculated the interest. Add that to the total amount to find out how much money you will have in total ($100 + $5 = $105)
    iv. For year two: $105 x 0.05 = $5.25……. $105 + $5.25 = $110.25

V. Bad interest – in that last example, interest is good. But, when we buy things, interest can harm us.

a. iPad example
    i. Cost is $699 (round to $700)
    ii. People are buying the iPad with credit cards because they haven't saved enough to pay with cash.
    iii. They will need to pay for the iPad over a longer period of time – it will cost more because they need to pay interest to the credit card company.
    iv. Handout 1 – cost of iPad if you pay just the minimum
    v. Handout 2 – cost of iPad if you pay more than the minimum – you will own the iPad quicker and pay less
    vi. Handout 3 – cost of the iPad if you have a higher interest rate – the iPad will cost much more over time.

Example 1:

iPad cost: $699

Interest rate on Senator Akaka's credit card: 7%

Senator Akaka pays $15 per month.

Senator Akaka will pay $818.13 for his iPad.

He will pay $119.13 in interest.

It will take him 4 years and 7 months to own his iPad.

Credit Card calculator

The true cost of paying the minimum

What is your credit card balance? $ 699

What is the interest rate on your credit card? 7%

How is your minimum payment calculated? Interest + 1% of balance

Your minimum payment $ 15.00

What fixed payment could you make each month? $ 25

Select a payment schedule based on: Minimum payment / Fixed payment

Calculate Clear All

It will take you 55 months to be rid of your debt. In that time, you will pay $119.13 in interest.

Month	Minimum Payment	Interest Paid	Principal Paid	Remaining Balance
1	$15.00	$4.08	$6.99	$688.08
2	$15.00	$4.01	$6.88	$677.09
3	$15.00	$3.95	$6.77	$666.04
4	$15.00	$3.89	$6.66	$654.93
5	$15.00	$3.82	$6.55	$643.75
6	$15.00	$3.76	$6.44	$632.51
7	$15.00	$3.69	$6.33	$621.20
8	$15.00	$3.62	$6.21	$609.82
9	$15.00	$3.56	$6.10	$598.38
10	$15.00	$3.49	$5.98	$586.87
11	$15.00	$3.42	$5.87	$575.29
12	$15.00	$3.36	$5.75	$563.65
13	$15.00	$3.29	$5.64	$551.94
14	$15.00	$3.22	$5.52	$540.16
15	$15.00	$3.15	$5.40	$528.31
16	$15.00	$3.08	$5.28	$516.39
17	$15.00	$3.01	$5.16	$504.40
18	$15.00	$2.94	$5.04	$492.34
19	$15.00	$2.87	$4.92	$480.21
20	$15.00	$2.80	$4.80	$468.01
21	$15.00	$2.73	$4.68	$455.74
22	$15.00	$2.66	$4.56	$443.40
23	$15.00	$2.59	$4.43	$430.99
24	$15.00	$2.51	$4.31	$418.50
25	$15.00	$2.44	$4.19	$405.94
26	$15.00	$2.37	$4.06	$393.31
27	$15.00	$2.29	$3.93	$380.60
28	$15.00	$2.22	$3.81	$367.82
29	$15.00	$2.15	$3.68	$354.97
30	$15.00	$2.07	$3.55	$342.04
31	$15.00	$2.00	$3.42	$329.04
32	$15.00	$1.92	$3.29	$315.96
33	$15.00	$1.84	$3.16	$302.80
34	$15.00	$1.77	$3.03	$289.57
35	$15.00	$1.69	$2.90	$276.26
36	$15.00	$1.61	$2.76	$262.87
37	$15.00	$1.53	$2.63	$249.40
38	$15.00	$1.45	$2.49	$235.85
39	$15.00	$1.38	$2.36	$222.23
40	$15.00	$1.30	$2.22	$208.53
41	$15.00	$1.22	$2.09	$194.75
42	$15.00	$1.14	$1.95	$180.89
43	$15.00	$1.06	$1.81	$166.95
44	$15.00	$0.97	$1.67	$152.92
45	$15.00	$0.89	$1.53	$138.81
46	$15.00	$0.81	$1.39	$124.62
47	$15.00	$0.73	$1.25	$110.35
48	$15.00	$0.64	$1.10	$95.99
49	$15.00	$0.56	$0.96	$81.55
50	$15.00	$0.48	$0.82	$67.03
51	$15.00	$0.39	$0.67	$52.42
52	$15.00	$0.31	$0.52	$37.73
53	$15.00	$0.22	$0.38	$22.95
54	$15.00	$0.13	$0.23	$8.08
55	$8.13	$0.05	$0.08	$0.00

Example 2:

iPad cost: $699

Interest rate on Senator Akaka's credit card: 7%

Senator Akaka pays $25 per month.

Senator Akaka will pay $765.31 for his iPad.

He will pay $66.31 in interest.

It will take him 2 years and 7 months to own his iPad.

Credit Card calculator

The true cost of paying the minimum

What is your credit card balance? $ 699

What is the interest rate on your credit card? 7%

How is your minimum payment calculated? Interest + 1% of balance

Your minimum payment: $ 15.00

What fixed payment could you make each month? $ 25

Select a payment schedule based on:
- ○ Minimum payment
- ● Fixed payment

Calculate | Clear All

It will take you 31 months to be rid of your debt. In that time, you will pay $66.31 in interest.

If you paid the minimum payment every month, it would take you 55 months, to pay off your debit and you would pay $119.13.

Month	Fixed Payment	Interest Paid	Principal Paid	Remaining Balance
1	$25.00	$4.08	$20.92	$678.08
2	$25.00	$3.96	$21.04	$657.03
3	$25.00	$3.83	$21.17	$635.86
4	$25.00	$3.71	$21.29	$614.57
5	$25.00	$3.58	$21.42	$593.16
6	$25.00	$3.46	$21.54	$571.62
7	$25.00	$3.33	$21.67	$549.95
8	$25.00	$3.21	$21.79	$528.16
9	$25.00	$3.08	$21.92	$506.24
10	$25.00	$2.95	$22.05	$484.19
11	$25.00	$2.82	$22.18	$462.02
12	$25.00	$2.69	$22.31	$439.71
13	$25.00	$2.56	$22.44	$417.28
14	$25.00	$2.43	$22.57	$394.71
15	$25.00	$2.30	$22.70	$372.01
16	$25.00	$2.17	$22.83	$349.18
17	$25.00	$2.04	$22.96	$326.22
18	$25.00	$1.90	$23.10	$303.12
19	$25.00	$1.77	$23.23	$279.89
20	$25.00	$1.63	$23.37	$256.53
21	$25.00	$1.50	$23.50	$233.02
22	$25.00	$1.36	$23.64	$209.38
23	$25.00	$1.22	$23.78	$185.60
24	$25.00	$1.08	$23.92	$161.68
25	$25.00	$0.94	$24.06	$137.63
26	$25.00	$0.80	$24.20	$113.43
27	$25.00	$0.66	$24.34	$89.09
28	$25.00	$0.52	$24.48	$64.61
29	$25.00	$0.38	$24.62	$39.99
30	$25.00	$0.23	$24.77	$15.22
31	$15.31	$0.09	$15.22	$0.00

Example 3:

iPad cost: $699

Interest rate on Senator Akaka's credit card: 18%

Senator Akaka pays $17.48 per month (the minimum payment his bank allows).

Senator Akaka will pay $1,170.62 for his iPad.

He will pay $471.62 in interest.

It will take him 6 years and 5 months to own his iPad.

Credit Card calculator

The true cost of paying the minimum

What is your credit card balance? $ 699

What is the interest rate on your credit card? 18%

How is your minimum payment calculated? Interest + 1% of balance

Your minimum payment: $ 17.48

What fixed payment could you make each month? $ 25

Select a payment schedule based on:
- Minimum payment
- Fixed payment

Calculate | Clear All

It will take you 37 months to be rid of your debt. In that time, you will pay $213.98 in interest.

If you paid the minimum payment every month, it would take you 77 months, to pay off your debit and you would pay $471.62.

Month	Fixed Payment	Interest Paid	Principal Paid	Remaining Balance
1	$25.00	$10.49	$14.52	$684.49
2	$25.00	$10.27	$14.73	$669.75
3	$25.00	$10.05	$14.95	$654.80
4	$25.00	$9.82	$15.18	$639.62
5	$25.00	$9.59	$15.41	$624.21
6	$25.00	$9.36	$15.64	$608.58
7	$25.00	$9.13	$15.87	$592.71
8	$25.00	$8.89	$16.11	$576.60
9	$25.00	$8.65	$16.35	$560.25
10	$25.00	$8.40	$16.60	$543.65
11	$25.00	$8.15	$16.85	$526.80
12	$25.00	$7.90	$17.10	$509.71
13	$25.00	$7.65	$17.35	$492.35
14	$25.00	$7.39	$17.61	$474.74
15	$25.00	$7.12	$17.88	$456.86
16	$25.00	$6.85	$18.15	$438.71
17	$25.00	$6.58	$18.42	$420.29
18	$25.00	$6.30	$18.70	$401.60
19	$25.00	$6.02	$18.98	$382.62
20	$25.00	$5.74	$19.26	$363.36
21	$25.00	$5.45	$19.55	$343.81
22	$25.00	$5.16	$19.84	$323.97
23	$25.00	$4.86	$20.14	$303.83
24	$25.00	$4.56	$20.44	$283.38
25	$25.00	$4.25	$20.75	$262.64
26	$25.00	$3.94	$21.06	$241.57
27	$25.00	$3.62	$21.38	$220.20
28	$25.00	$3.30	$21.70	$198.50
29	$25.00	$2.98	$22.02	$176.48
30	$25.00	$2.65	$22.35	$154.13
31	$25.00	$2.31	$22.69	$131.44
32	$25.00	$1.97	$23.03	$108.41
33	$25.00	$1.63	$23.37	$85.04
34	$25.00	$1.28	$23.72	$61.31
35	$25.00	$0.92	$24.08	$37.23
36	$25.00	$0.56	$24.44	$12.79
37	$12.98	$0.19	$12.79	$0.00

- The whole thing is so silly - offensive even - and a waste of everyone's time. An intentional distraction from important issues affecting our country.

→ Aside from the mountain of evidence, I know he's from Hawaii because when he was in the Senate he used to stop by my office and ask for Li Hing Mui. Only a keiki o ka aina would do that!

- And when I flew back to Washington with him in January on Air Force One - they served us fresh Manapua.