LESSON 2
INVEST IN YOURSELF

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LESSON DESCRIPTION

To explore the concept that people invest in themselves through education, the students work in two groups and participate in a mathematics game. Both groups are assigned mathematics problems to solve. One group is told about a special technique for solving the problems. The other group is not. The game helps the students recognize that improved human capital allows people to produce more in a given amount of time—in this example, more correct answers in the time provided, or in less time. Next, the students identify the human capital required for a variety of jobs. Finally, they learn about the connections among investment in human capital, careers, and earning potential.

INTRODUCTION

Investment takes many forms. One form is the development of human capital—the knowledge, skills, health, and values that individuals possess. People develop their human capital through formal and informal education. To obtain education, people give up something in the short run (time, effort, and money, for example) in order to gain larger returns (a good job, for example) in the future. This sort of exchange—giving up something now in order to realize gains later—is the essence of investment behavior, whether it involves putting money into a mutual fund or putting resources into education.

CONCEPTS

Human capital

Income

Investment in human capital

Opportunity cost

OBJECTIVES

Students will be able to:

- Define *human capital* and give examples of it.

- Explain how human capital is related to career choices, opportunities, and income.

- Define *opportunity cost* and give examples of it.

CONTENT STANDARDS

Voluntary National Content Standards in Economics, **2nd Edition**

- **Standard 2:** Income for most people is determined by the market value of the productive resources they sell. What workers earn primarily depends on the market value of what they produce.

National Standards in K-12 Personal Finance Education, **3rd edition**

- **Financial Responsibility and Decision Making Standard 1:** Take responsibility for personal financial decisions.

- **Income and Careers Standard 1:** Explore career options.

- **Income and Careers Standard 2:** Identify sources of personal income.

- **Credit and Debt Standard 1:** Identify the costs and benefits of various types of credit.

TIME REQUIRED

60 minutes

MATERIALS

- Slides 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, and 2.7

- A copy of Activity 2.1-A for half the class

- A copy of Activity 2.1-B for half the class

- A watch, clock, or timer to count off seconds

PROCEDURE

1. Tell the students that the purpose of this lesson is to help them understand an important economic term, *human capital. Human capital* refers to the knowledge, skills, and health that individuals possess. Explain that developing human capital—through formal and informal education—is a form of investing. In devoting time, effort, and perhaps money to education, for example, students give something up now in order to gain something of value in the future.

2. Organize the class into two groups, A and B. Explain the rules for the activity to follow:

   - Each person in each group will receive some problems to solve.

   - Nobody in either group may begin to work on the problems until they are told to.

   - Everybody will have five minutes to solve the problems.

   - When a student has solved all of the problems, she or he should stand.

3. **Distribute a copy of Activity 2.1-A** *face down* to each student in group A and a copy of **Activity 2.1-B** *face down* to each student in group B.

4. Tell the students in group B that they may turn their papers over and read the instructions. They may not begin working on the problems; they may read only the instructions.

5. After several minutes, tell the members of group A to turn their papers over. Tell all the students that they may begin working to solve their problems. Keep track of time.

6. As the students finish and stand up, tell each student how much time it took him or her to solve the problems.

7. When all the students are standing, or after five minutes have elapsed, tell the students to stop working. Have them sit down.

8. **Display Slide 2.1** and have the students check their answers.

9. **Display Slide 2.2**. Ask the following questions and record the answers on Slide 2.2:

   A. How many students in group A completed the problems in less than one minute?

      (Answers will vary.)

   B. How many correct answers did you have?

      (Answers will vary.)

   C. Add the number of correct answers for those who completed the problems in less than one minute and record the total on Slide 2.2.

   D. How many students in group A took more than one minute but less than two minutes to complete the problems?

      (Answers will vary.)

   E. How many correct answers did you have?

      (Answers will vary.)

   F. Add the number of correct answers for those who completed the problems in more than one but less than two minutes and record the total on Slide 2.2.

G. How many students in group A took more than two minutes but less than three minutes to complete the problems?

(Answers will vary.)

H. How many correct answers did you have?

(Answers will vary.)

I. Add the number of correct answers for those who completed the problems in more than two but less than three minutes and record the total on Slide 2.2.

J. How many students in group A took more than three minutes but less than four minutes to complete the problems?

(Answers will vary.)

K. How many correct answers did you have?

(Answers will vary.)

L. Add the number of correct answers for those who completed the problems in more than three but less than four minutes and record the total on Slide 2.2.

M. How many students in group A took more than four minutes but less than five minutes to complete the problems?

(Answers will vary.)

N. How many correct answers did you have?

(Answers will vary.)

O. Add the number of correct answers for those who completed the problems in more than four but less than five minutes and record the total Slide on 2.2.

10. Repeat the steps in Procedure 9 for students in group B. **Ask:**

A. In general, which students had more correct answers?

(Most likely those in group B had more correct answers).

B. In general, which students were able to complete the problems faster?

(Most likely those in group B were able to complete the problems faster.)

11. Ask a student from group A and a student from group B to go to the board and show their work for the first problem. Point out that the group A and group B students used different methods to solve the problem.

12. Ask the students in group B where they learned the method they used.

(From the instructions on the handout.)

13. Ask a student from group A to read the directions on his or her handout.

14. Ask a student from group B to read the directions on his or her handout. Tell the students these were the directions provided for group B.

15. Explain that the students in group B received knowledge and skills to help them solve the problems more quickly. The knowledge and skills improved the students' human capital. Human capital is the knowledge, skills, and health that individuals possess. With improved human capital, people can produce more and better products than other people can—in the same amount of time or less. In this example, the students in group B were able to produce more correct answers than students in group A—in the same amount of time or less—because students in group B had more human capital.

16. **Display Slide 2.3**. Explain that the column on the right provides examples of human capital and the column on the left provides examples of occupations. Invite the students to speculate on what sorts of human capital people might need in order to work competently for each occupation on the list.

17. **Display Slide 2.4**. Invite the students to describe examples of how each occupation requires particular types of human capital. **Ask:**

A. What similarities are there in the human capital required for each job listed?

(Communication and mathematics skills.)

B. What mathematics skills might an automotive technician/mechanic need?

(Convert from standard to metric measures, calculate costs of labor and parts.)

C. What are some examples of communication skills needed by a school bus driver?

(Reading maps, street signs, schedules, a vehicle manual, a safety manual, employment information; speaking with students and co-workers; writing safety evaluations, completing the written portion of a licensure test.)

D. Give examples of mathematics skills needed by a retail sales clerk.

(Understanding of decimals and percents, ability to count money and make change.)

E. For the most part, how do people obtain basic mathematics and communication skills?

(By going to school and staying in school until graduation.)

F. What differences are there in the human capital required for the jobs listed?

(Some require apprenticeships and special training; some require college degrees; some require advanced degrees.)

G. How does a carpenter acquire the education and special skills needed for the job?

(Carpenter training programs, apprenticeship programs.)

H. How does a mechanical engineer obtain the education and special skills needed for the job?

(By attending college and earning a degree in mechanical engineering.)

I. How does a medical doctor obtain the education and special skills needed for the job?

(Graduating from college, attending medical school, completing an internship and a residency.)

J. What are some examples of human capital that you have?

(Answers will vary. They may include ability to read, write, work in groups, solve problems, play an instrument, use the computer, draw, sing, play a sport, and so on.)

18. **Display Slide 2.5** and explain that it shows the median yearly incomes for people holding certain jobs in 2011. Explain that *median* means that half of the workers in a particular group earn more than the median income and half earn less than the median income. Thus some people working at a given job earned more and some earned less than the amount shown.

19. Point out that, in general, high-paying occupations require more education and training than low-paying occupations. For example, doctors earn higher incomes and require more education than retail sales clerks. Tell the students that, in general, investment in human capital leads to higher pay.

20. **Display Slide 2.6** and tell the students that it shows median annual income and the unemployment rate for people by level of educational attainment. Discuss the information on Slide 2.6.

    • Associate's degrees require two years of education. These degrees are most often earned at a community college or technical college.

    • Bachelor's degrees require four years of education or more at a college or university.

    • Master's degrees require two or more years of additional education at a college or university.

    • Professional degrees require additional years of study and, often, additional training. Lawyers, medical doctors, nurses, and engineers are examples of people with professional degrees.

    • Ph. D. degrees require additional study beyond a master's degree, plus the completion of a major research project called a dissertation. College professors and research scientists usually have Ph. D. degrees.

    • Unemployment is the number of people without jobs who are actively seeking work. The unemployment rate is the number of unemployed people, expressed as a percentage of the labor force.

21. Discuss the information on Slide 2.6. **Ask:**

    A. What appears to be the relationship between educational attainment and income?

       (Higher levels of educational attainment are associated with higher levels of income.)

    B. Why might this be the case?

       (Individuals with higher levels of formal education—such as having some post-secondary education—have knowledge and skills for which employers are willing to pay more. Individuals with very low levels of formal education—such as a high school dropout—have less knowledge and fewer skills. Employers pay less to people who have a lower level of skills.)

    C. What appears to be the relationship between educational attainment and unemployment?

       (Individuals with higher levels of formal education have lower unemployment rates. Individuals with low levels of formal education have higher unemployment rates.)

    D. Why might this be the case?

       (Apparently the skills of individuals with higher levels of formal education are in greater demand by employers. Apparently the skills of individuals with lower levels of formal education are in less demand by employers.)

22. Ask the students to explore further the information provided on Slide 2.6. **Ask:** In 2010, how much more would a high school graduate expect to earn per year than an eleventh-grade dropout?

    ($31,300 – $22,200 = $9,100 more.)

23. Assuming a 40-year work life and no pay increases, how much more might a high school graduate expect to earn over a lifetime than an eleventh-grade dropout?

    ($9,100 x 40 years = $364,000 more.)

24. In 2010, how much more would a college graduate with a bachelor's degree expect to earn per year as compared to a high school graduate's annual earnings?

    ($51,900 – $31,300 = $20,600 more.)

25. Assuming a 40-year work life and no pay increases, how much more might a college graduate with a bachelor's degree expect to earn over a lifetime, as compared to a high school graduate's lifetime earnings?

    ($20,600 x 40 years = $824,000 more.)

26. **Ask:** Is education a good investment?

    (Yes. Most people with higher levels of educational attainment will earn higher incomes.)

27. Point out that there are costs associated with investment in human capital. For example, when people attend college, they must pay for tuition and fees, they must buy books, and they give up the opportunity to earn income while they are in school. (Note: Room and board costs are not included here because they are costs people pay whether they attend school or not.)

28. Explain that these costs are the opportunity cost associated with attending college. An opportunity cost is the next-best alternative a person gives up when she or he makes a choice. If people choose to attend college full-time, they give up the income that they could otherwise have earned while working. When they use money to pay for their tuition and fees and to buy books, they give up the other things they could have bought with that money (the next-best alternative use for the money).

29. **Display Slide 2.7**. Point out that there are other factors to consider when thinking about investing in your own post-secondary education. One factor is that the choice of a college major may affect the income a graduate will earn. College students who major in mathematics, chemistry, or engineering are likely to earn more income than students who major in art, history, or education. Another factor to consider is that levels of student-loan debt have been increasing. In 2011, average student-loan debt was $25,250. While taking out student loans to pay for post-secondary education often pays off, it remains wise to use debt prudently. Some students graduate with very high levels of debt—sometimes well over $100,000.

CLOSURE

30. Review the important points of the lesson by asking the following questions:

    A. What is human capital?

       (The knowledge, skills, health, and values individuals possess.)

    B. Give an example of human capital that you possess.

       (Accept a variety of answers. Some examples include the ability to read, write, compute, work in groups, play a sport, or play an instrument.)

    C. How do people invest in their human capital?

       (By going to school, finishing high school, going to college, attending training programs, practicing their skills, and living a healthy lifestyle.)

D. Why do people invest in their human capital?

   (To learn new skills, to obtain a new job, to earn more income, or to improve skills and talents they already have.)

E. What is opportunity cost?

   (The next-best alternative that people give up when they make a choice.)

F. What is the opportunity cost of being a full-time student after high school?

   (The opportunity cost of being a full-time student is giving up the income that the individual could otherwise have earned while working. When students use money to pay for tuition and books, they give up the other things they could have bought with that money.)

G. What are the benefits associated with finishing high school and going on for additional education?

   (More career options, the possibility of earning more income, and a better chance of finding a good job.)

ASSESSMENT
Multiple-Choice Questions

1. Which of the following is an example of human capital?

   a. money
   b. a factory
   c. stocks
   d. *the ability to read*

2. Each day after school, Tom practices piano for an hour. Tom could spend this hour playing video games with his friends. Playing video games with his friends is Tom's

   a. income.
   b. *opportunity cost.*
   c. favorite thing to do.
   d. investment in human capital.

3. All of the following are investments in human capital except

   a. finishing high school.
   b. attending a trade school.
   c. practicing to improve a skill.
   d. *buying a new computer.*

Constructed-Response Items

1. Your friend is a senior in high school. He has been working part-time for a local company. He enters data into the company's computer system and does other related work. He could work full-time for the company when he graduates. His starting salary would be $22,000. The idea of earning $22,000 a year is very appealing. He has also applied to a local college that offers a computer-systems degree. He would attend full-time. College is expensive; however, some financial aid is available. Based on what you've learned about investment in human capital, income, and opportunity cost, tell your friend what you think he should do, and why.

   (Your friend's best choice is probably to use financial aid and go to college. The opportunity cost of this decision is the income given up over the four years and the cost of tuition, fees, and books. Over a lifetime, the additional income earned will be greater than the costs of going to college. Investment in human capital—earning a degree in computer systems—will provide skills and knowl-

edge for many different jobs, and allow for higher income in the future.)

2. The high school you attend offers students who take foreign language classes an opportunity to travel to a country in which one of the foreign languages is spoken. Students with the best ability to communicate in the second language are selected. You want to participate in the program. You studied German in middle school, but you want to make sure your written and oral communication skills in German are the very best. In terms of investment in human capital, what could you do improve your ability to write and speak in German?

    (Students might suggest the following: Ask the German teacher to tutor you. Practice speaking in German with others in the class. Enroll in German class during the summer. Listen to German CDs or DVDs obtained from the library.)

Gen i Connection

The current lesson, "Invest in Yourself," connects well with Missions 2 and 3 of the Gen i Revolution game. Both game missions explore investing in human capital, careers, and opportunity cost.

In Mission 2, students take on the role of operatives advising Veronica in making a tentative career choice. Veronica is a first-year high school student who has many different interests. She is good at math and computer subjects, enjoys art and music, and loves working with people. She is starting to think about what she'd like to do to earn a living when she finishes college. The 4-1-1 tutorial shows students how to use career-choice materials and match skills with career clusters. In the conclusion, students recommend a tentative career cluster and a tentative career for Veronica, understanding that her career goals may change over time.

Mission 3 of the Gen i Revolution game involves further exploration of investment in human capital, opportunity cost, and income. In this mission students assume the role of operatives advising Matt as he decides what to do after graduating from high school. Matt has the grades to go to college, but he is tired of school work. Should he continue his formal education or go to work full-time? Students work through a 4-1-1 tutorial to calculate earnings differences across different levels of education. The mission conclusion requires students to make specific recommendations to Matt on his education after high school.

Gen i Reflection

Now that you have helped Veronica and Matt explore future careers, what are you thinking about for your own career? What can you do to better prepare yourself for a career? What sort of education after high school might be best to help you prepare for your career?

ACTIVITY 2.1-A
BUYING WITH DIMES

Directions: For each problem below, determine how many dimes you would need to buy each item. Please show your work.

1. A new DVD that sells for $17.99.

2. A top-of-the-line 52-inch TV surround-sound home-theater system that sells for $1,898.59.

3. Three candy bars that sell for $1.50.

4. Three front-row tickets to a playoff game, snacks at the game, and parking, for a total of $595.78.

5. A new pair of jeans priced at $35.99.

ACTIVITY 2.1-B
BUYING WITH DIMES

Directions: For each problem below, determine how many dimes you would need to buy each item. Use the following information:

- Write the item's price as a number without decimals. For example, $18.95 becomes 1895.

- Erase the last digit. So, 1895 becomes 189.

- Add a 1. So 189 + 1 = 190

- It would take 190 dimes to buy the item.

- There is one exception to this rule. If the number erased is 0, don't add the extra dime. For example, if the price is $18.90, simply eliminate the decimal and erase the zero. It should take 189 dimes to buy the item.

1. A new DVD that sells for $17.99.

2. A top-of-the-line 52-inch TV surround-sound home-theater system that sells for $1,898.59.

3. Three candy bars that sell for $1.50.

4. Three front-row tickets to a playoff game, snacks at the game, and parking, for a total of $595.78.

5. A new pair of jeans priced at $35.99.

SLIDE 2.1

Human Capital Production Report

Answers to the problems on Activity 2.1-A and 2.1-B

1. 180 dimes

2. 18,986 dimes

3. 15 dimes

4. 5,958 dimes

5. 360 dimes

SLIDE 2.2

LESSON 2 - INVEST IN YOURSELF

Human Capital Production Report

Time	Group A		Group B	
	Number of Students	Number of Correct Answers	Number of Students	Number of Correct Answers
0 to 59 sec.				
60 to 119 sec.				
120 to 179 sec.				
180 to 239 sec.				
240 to 299 sec.				

SLIDE 2.3

Examples of Occupations and Human Capital

Examples of Occupations

- Automotive technician/mechanic
- Carpenter
- Family doctor
- Graphic designer
- Interpreter
- Mechanical engineer
- Retail Sales clerk

Examples of Human Capital

- Ability to use special tools or equipment
- Apprenticeship
- Communication skills
- Community college or trade school
- Four-year college degree
- Mathematics skills
- Medical school
- Special certification
- Special license

SLIDE 2.4

Connecting Occupations and Human Capital

Examples of Occupations	Examples of Human Capital
Automotive technician/mechanic	Mathematics and communications skills plus trade school, apprenticeship, and ability to work with special tools
Carpenter	Mathematics and communications skills plus trade school, apprenticeship, and ability to work with special tools
Family doctor	Mathematics and communications skills plus medical school, internship, residency, and ability to use special tools and equipment
Graphic designer	Mathematics and communications skills plus community college or trade school and ability to work with special tools
Interpreter	Mathematics and communications skills plus college degree
Mechanical engineer	Mathematics and communications skills plus college degree and ability to work with special tools
Retail sales clerk	Mathematics and communications skills

SLIDE 2.5

Connecting Occupations and Wages

Occupations	Median Annual Wage
Automotive technician/mechanic	$ 35,110
Carpenter	$ 38,938
Family doctor	$ 153,510
Graphic designer	$ 42,400
Interpreter	$ 43,200
Mechanical engineer	$ 74,920
Retail sales clerk	$ 20,670

SLIDE 2.6

LESSON 2 - INVEST IN YOURSELF

Educational Attainment: Earnings and Unemployment Rate

Educational Attainment Level	Annual Earnings	Unemployment Rate
Less than a high school diploma	$ 22, 200	14.9%
High school diploma or equivalent	$ 31,300	10.3%
Associate's degree	$ 38,350	7%
Bachelor's degree	$51,900	5.4%
Master's degree	$63,600	4.0%
Professional degree	$80,500	2.4%
Doctoral degree (Ph.D.)	$77,500	1.9%

Source: Bureau of Labor Statistics
2010 Annual averages for persons 25 and over; full-time wage and salary workers

SLIDE 2.7

But Be Careful Out There

- The Institute for College Access & Success estimates that college gradates recently finished with an average of $25,250 in student-loan debt.

- Average student-loan debt varies by state from a high of $31,048 to a low of $20,571.

- Student-loan debt levels vary according to several factors including:

  - Differences in tuition costs and fees

  - Living expenses in the local area

  - Financial aid policies of college and universities

- While investing in human capital usually pays off, it is smart to avoid accumulating high levels of student-loan debt.