OMW
ON MY WAY
PERSONAL FINANCE LESSONS
For the high school classroom
Lesson 2: Why am I going to school for so long?

Introduction
Individually earn income in a market or mixed economy by developing a skill or talent – human capital – then using it to provide a good or service to others in exchange for payment. But not all skills and talents are equally valued in the economy, and not all skills and talents are in equal supply.

The key to increasing one’s personal income is to develop a skill or talent that is in high demand – in other words, many consumers or firms want it – and also in low supply. Physicians, corporate CEOs and professional athletes do very different jobs, but they are all highly paid because they have developed highly specialized human capital, and other people are willing to pay a lot for their services. Retail workers are not well paid, despite being in high demand, because the skills they have are not uncommon.

What can students do to develop their own human capital and earning potential? Education is key, and teenagers should evaluate how the human capital they develop in high school, technical school, college or other training opportunities will make them valuable in the workforce. Decisions teenagers make about education and training today will have a huge impact on how much they will earn in the future.

Concepts
Income
Human capital
Productivity
Education and training
Median income

Content Standards
Voluntary National Standards for Financial Literacy
Standard 1: Income for most people is determined by the market value of their labor, paid as wages and salaries. People can increase their income and job opportunities by choosing to acquire more education, work experience, and job skills. The decision to undertake an activity that increases income or job opportunities is affected by the expected benefits and costs of such an activity. Income also is obtained from other sources such as interest, rents, capital gains, dividends, and profits.

Ohio Content Standards in Economic and Financial Literacy
Standard 11: Income is determined by many factors including individual skills and abilities, work ethic and market conditions.

Objectives
Students will be able to:
Explain why improvements in human capital lead to increased productivity in the workplace
Explain why a firm or customer would be willing to pay higher wages or salary to a more productive worker
Evaluate the correlation between increased levels of education and increased levels of income
Explain the benefits and costs an individual worker should consider before deciding whether to undertake additional education or training

**Description**
The lesson begins with a paper airplane-making activity. Students are assigned to groups with different levels of human capital, and they will find resulting differences in output. Students will then calculate productivity (output per worker) for each level of human capital and consider how payments for their work would differ, if these differences existed in the workplace. In debriefing this activity, students will consider the relationships between human capital, productivity and wages. Next, students will look at graphic representations of the correlation between education levels and median incomes, then work in groups to evaluate the costs and benefits of attending college. Students will return to the large group for a short discussion of other strategies individuals can use to improve their human capital, such as apprenticeships and self-study.

**Time Required**
One 45- to 50-minute class period.

**Materials**
Slides 2.1 to 2.8 (the teacher may wish to add information about local programs to Slide 2.8)
Activity 2.1 - several copies of each set of instructions, enough for all of the students in each group to be able to read them at the same time. Each group will receive only their own instructions.
White copy paper, approximately 5 sheets per student.
Activity 2.2, one copy for every two students
Before the lesson, the teacher may want to pre-assign students to four groups.

**Procedure**
Show Slide 2.1 and ask students to brainstorm reasons why they spend so many hours, days and years in school.

*Answers will vary. Students will likely point out that they are learning skills they need for college or for future jobs, but they may also complain about school or say they don’t know why – just that they are required to attend.*

Explain to students that they are going to participate in a brief simulation of a workplace. Divide students into four groups, and make sure that the groups are as far removed from each other as possible. Distribute a pile of paper to each group (approximately 5 sheets per student) and explain that this is a resource they will be using to make a product. Each group’s product will be slightly different, so they must pay attention only to the instructions that they are given.
(Note to teacher: Each group is actually making the same product, a specific type of paper airplane pictured on Slide 2.2. Their instructions are very different. Be sure that students follow only their own instructions, even if they are frustrated.

Group 1’s instructions are unreadable
Group 2’s instructions require them to use only their right hand
Group 3’s instructions are adequate but not specific
Group 4’s instructions are illustrated, step-by-step, and very clear)

Give each group its instructions from Activity 2.1 and tell them they have five minutes to work. Explain that you will not answer any questions during the production period. You should circulate among the groups to make sure they are following only their own instructions. Encourage Group 1 to try to figure out what the instructions say. Criticize Group 2 (gently) for their messy folding and ask them to spend time ensuring quality. It is OK if they work together. Tell Group 3 to keep trying, but make clear that their planes are not exactly right. Compliment Group 4 (quietly).

After five minutes, ask students to put down any unused paper and stop working. Show Slide 2.2 and ask students to count how many airplanes they have produced that look like this model. Ask one student from each group to come to the front of the room to test their product. Praise the students whose planes look right and can fly the length of the room. Remind the students that only these planes should be counted.

Tell students that you are going to calculate the productivity of each group. Productivity = outputs/inputs. Show Slide 2.3 and ask each group to report their output (number of planes produced) and inputs (number of workers).

Group 1 probably didn’t produce any planes. Group 2 probably produced a few. Group 3 should produce a lot of planes, but there may be a number of different types. Only count those that are pretty close to the illustration. Group 4 should produce the most planes.

Ask students the following questions:

Why was Group 4 so much more productive than the other groups?

They had much clearer instructions; they knew exactly what they were supposed to do. There will be complaining about unfairness; explain that you will address that very soon.

Why was Group 1 unable to make any planes?

They could not understand the instructions; they didn’t know what they were supposed to do at all.

Why did Group 2 have difficulty making planes?

They could only use one hand, so they did not have as much physical ability as the other groups.

Which group would get paid the most, if these productivity differences existed in the real world?

Group 4 would get paid the most because they produced the most output.
Was this activity fair to all of the groups?

No because students had no opportunity to choose which group they were in; Group 4 had a lot more information as well as the ability to use both hands.

Show Slide 2.4 and explain that the four groups represented different skills and education levels – or human capital – that workers possess in the real world.

Group 1 – lacking basic education – These students were unable to read their instructions. Most Americans are literate, but that is not true in all nations. Also, some Americans struggle to read in English, since it is a second language to them.

Group 2 – lacking physical ability – These students could read the instructions, but following the instructions was difficult because they could use only one hand. Most Americans can handle basic physical tasks, but many cannot do the more demanding tasks required in jobs like construction or precision work required in jobs like blood analysis.

Group 3 – basic education and physical ability – These students represented the typical high school graduate, who faces no specific barriers but lacks specialized training in any field.

Group 4 – advanced education/training – These students had clearer instructions, which represented the advantage workers have with more years of training, education or job experience.

Show Slide 2.5 and explain that even though the students themselves are literate, they do not necessarily have the training and skills to follow the specialized instructions that a highly skilled worker might need to understand. These instructions, published in the New England Journal of Medicine, describe the procedures followed in a study on a dengue vaccine.

Explain that this simulation was unfair because it randomly awarded some students higher levels of human capital than others. Ask students: In the real world, are workers able to choose their own level of human capital?

Some students may be confident that they can develop their human capital in any way they choose; others may point out limits such as physical abilities, IQ, cultural restrictions, and educational opportunities. Although such limits exist, individuals in western societies do have a great deal of choice about how to develop their own skills and abilities.

Ask students to think back to Lesson 1 or reflect on their own experiences to answer the following questions:

What kinds of workers earn the most income in our economy?

Answers will vary. The most highly paid workers from Lesson 1 were the physician and software developer, although the medical researcher and physical therapist were also well paid. A waiter at a high-end restaurant could also be very well paid. Students may also mention athletes, lawyers and others.

What kinds of skills and training do these highly paid workers have?

Higher levels of education, licensing tests, internships and experience
Is it true, in general, that workers with more human capital are better paid?

Students will likely think of some exceptions, but in general workers with more human capital are better paid. Students like to bring up the cases of “Harvard dropouts,” like Bill Gates, but it is important to point out that even though he didn’t earn a degree, Bill Gates had spent thousands of hours working on computers and developing his human capital even before he went to college.

Show Slide 2.6 and explain that **median income** is the middle or typical income earned by people in a particular group. Ask students: What can you tell about the relationship between education and median income level from this graph?

**Workers who have a high school diploma (or who were dropouts) typically earn much less than those who have earned college degrees. The higher the level of education, such as a professional degree, the higher the income level.**

Ask students: Why do you think better educated workers earn more?

They have more unique skills, so they are not competing with everyone. They are also more productive; they are like Group 4 in the activity. They can contribute more to the overall output of a firm.

Explain the relationship shown on this graph is a correlation. In general, the more education a person has, the more income they earn. However, it does not prove that for any specific individual, more education will lead to greater income. In fact, if everyone in the United States had a college degree, that degree would no longer serve to differentiate individuals in the job market. Also, restaurants would still need waiters, and builders would still need construction workers, and everyone would feel overqualified for those jobs. Ask students: How should an individual decide whether going to college or graduate school is right for him/her?

It depends on the career they want, whether they like being school, whether they or their family can afford it

Explain that students are going to work with a partner to evaluate some facts about college. Ask students to pair up, and distribute a copy of Activity 2.2 to each pair. Give students 10-15 minutes to read the facts and answer the questions.

Ask students to return their attention to the large group. Show Slide 2.7 and ask several students to share the benefits and costs they identified in Activity 2.2. Ask the following questions:

What are some of the benefits of college?

Higher median incomes, higher lifetime earnings, less likely to lose your job in a recession, many jobs require higher education now, many other people are going to college, so you need to keep up
What are some of the costs of college?

*Tuition, room and board are very expensive, many students have a lot of debt, college is very difficult/not everyone graduates, not all degrees result in high incomes.*

Based on this information, would the benefits outweigh the costs to you?

*Answers will vary*

What other information do you need to research before making this decision?

*Answers will vary. Students will need to know more about career options, about what kinds of schools they could get into, financial aid opportunities, parent support, etc.*

Explain to students that even though Fact 12 is correct (only about 40% of jobs today require a high school diploma or less), that does not mean that 60% of jobs require a college degree. Ask students to brainstorm some of the other kinds of training they could obtain that would improve their human capital for the workforce.

*Community college, technical schools, apprenticeships, internships and job experience (working your way into a management position) are all opportunities students should consider, particularly if they are interested in a trade. Mechanics, electricians, opticians, dental hygienists and many other workers earn higher incomes without college degrees. These are other types of specialized training, which result in more human capital.*

Show Slide 2.8. The teacher may offer additional information about local schools and training opportunities, including costs and types of courses offered.

**Debrief/Closure**

Use the following questions to review the key points of the lesson, either orally or as an exit slip.

What is human capital, and how does it relate to productivity?

*Human capital is the accumulated skills, talents, and education a worker has. Workers with higher levels of human capital are more productive, meaning they can produce greater levels of output.*

Why are more skilled/educated workers generally paid more?

*More skilled/educated workers are more productive, which means firms will get more output or results from hiring them. Also, they have more specialized skills, which firms need but not everyone has.*

What are some factors an individual should consider when deciding whether to apply to college?

*Individuals should consider whether they are likely to complete a college degree, whether their degree will lead to more opportunities or a better-paying job, what other alternatives might be useful and less costly*
Activity 2.1

Group 1 Instructions
It is important that you follow ONLY your group instructions. Other groups have different instructions, and you will be penalized if you follow their instructions instead.

Group 2 Instructions
It is important that you follow ONLY your group instructions. Other groups have different instructions, and you will be penalized if you follow their instructions instead or let them see yours.

Put your left hand behind your back and use only your right hand. Take one sheet of paper and make it into a paper airplane. It is important that the folds on your paper airplane be crisp and precise. Your airplane should be able to fly at least 30 feet. It is not important that your airplane look like a real plane - what really matters is how well it flies. Make as many airplanes as you can using this model in 5 minutes.

Group 3 Instructions
It is important that you follow ONLY your group instructions. Other groups have different instructions, and you will be penalized if you follow their instructions instead or let them see yours.

Take one sheet of paper and make it into a paper airplane. It is important that the folds on your paper airplane be crisp and precise. Your airplane should be able to fly at least 30 feet. It is not important that your airplane look like a real plane - what really matters is how well it flies. Make as many airplanes as you can using this model in 5 minutes.

Group 4 Instructions
It is important that you follow ONLY your group instructions. Other groups have different instructions, and you will be penalized if you follow their instructions instead or let them see yours.

Take one sheet of paper and make it into a paper airplane. First, fold the paper in half (see Step 1). Then fold in two of the top flaps (see Step 2). Fold the two sides in together, so the flaps are inside (see Step 3). Carefully fold each side back once from the tip (see Step 4). Try to keep the tip as sharp as possible. Then fold each side back one more time (see Step 5).
Step 1 Fold in half  
Step 2 Fold flaps in  
Step 3 Fold 2 sides in together  
Step 4 Fold back from tip  
Step 5 Fold back one more time

It is important that the folds on your paper airplane be crisp and precise. Your airplane should be able to fly at least 30 feet. It is not important that your airplane look like a real plane - what really matters is how well it flies.

Make as many airplanes as you can using this model in 5 minutes
Activity 2.2

Names ________________________________

1. Working with a partner read the 12 Facts about College and evaluate whether the benefits of college outweigh the costs, for you.

Identify three facts that indicate benefits (for you) of going to college

Identify three facts that indicate costs (to you) of going to college

Explain which fact you think is the most important piece of information that a high school student should consider when deciding whether to apply to college

2. On your own paper (not with your partner), write 3-5 sentences explaining whether the benefits of a college education outweigh the costs for you, personally.
12 Facts about College

Fact 1:
The average published price for a year of tuition, fees, room and board for an in-state student at a public university was $18,943 in 2014-15. Overall, college costs have increased 35 percent in real terms over a decade. Many students pay less than this price, due to scholarships, financial aid and tax benefits. Still, this is about 70% of a year’s income for a high school graduate.

Fact 2:
About 1/4 of American adults have a four-year college degree, but that proportion is rising. Enrollment at 4-year colleges increased by about 37% between 2000 and 2010. The number of 18- to 24-year-olds in the population increased by 13%, so the number of college-age individuals attending college far exceeded the population growth rate.

Fact 3:
Student debt in 2014 was at about $1 trillion, more than three times the amount owed in 2004. Not only are more students borrowing money, but they are also borrowing more money. Average debt per borrower increased from $16,000 in 2005 to $25,000 in 2012.

Fact 4:
A college-educated worker earns a median annual income of $48,000, while a worker with only a high school diploma earns a median annual income of $27,000. This adds up over a lifetime of earnings. The college-educated worker can expect to earn $2.3 million in a lifetime, compared to $1.3 million for the high-school educated worker.

Fact 5:
In the 2007-2010 recession the highest unemployment rate experienced by college-educated workers was 5.1 percent. The highest unemployment rate experience for workers with only a high school diploma was 11 percent.

Fact 6:
The relationship between education and income is a correlation, not causation. Some research suggests that students who enroll in and complete college are already different in some ways from their peers who do not. For example, they may be more persistent. This characteristic may have more to do with their outcomes in the workforce than the fact that they earned a degree.

Fact 7:
Although college-educated workers have higher median incomes, not all college degrees have the same payoff. The median income for a college graduate with a degree in counseling psychology is $29,000, compared to $27,000 for a high school graduate. A college graduate with a degree in petroleum engineering, however, can expect a median income of $120,000.
Fact 8:
Students who attend college for a few years but do not graduate get very little benefit in terms of increased future earnings. The median income for workers with some college but no degree is $31,050, about 15 percent more than the median income for workers with only a high school diploma.

Fact 9:
A little more than 50 percent of students who start at a four-year college finish their degree within six years. The six-year completion rate is lower for African-American and Hispanic students, as well as for students from poor families or who are the first in their family to attend college. On average, college dropouts leave school more than $7,000 in debt and with little improvement to their future earning potential.

Fact 10:
Surveys show that most students who enroll in college are “highly optimistic” that they will earn good grades, complete a bachelor’s degree and graduate within four years. Within 1-2 years of enrolling, when they realize how difficult college courses are and begin to get some low grades, they lose confidence and become pessimistic about their ability to finish.

Fact 11:
Many students, especially those from low-income families, tend to overestimate the costs of college and underestimate the opportunities to get financial aid. A recent study of high school seniors in New Hampshire found that many who thought they were not prepared for college were in fact ready, according to their test scores. When they were given mentors and assistance in applying, they were as likely to remain in college as their peers with similar qualifications.

Fact 12:
In 1973, 72 percent of jobs required a high school diploma or less, compared to 40 percent today.

Sources: “Human Capital Investment as a Major Financial Decision” (a speech by Jeffrey M. Lacker, president of the Federal Reserve Bank of Richmond, to the CEE 52nd Annual Conference, Oct. 4, 2013), collegeboard.org
Why am I in school for so long?

Lesson 2
Brainstorm

• Why do young people have to spend so much time going to school?
The Product

- Count your total output. Count only planes that look like the plane in this picture.
Productivity

Group 1  _____planes / _____workers =

Group 2  _____planes / _____workers =

Group 3  _____planes / _____workers =

Group 4  _____planes / _____workers =
What was your human capital?

Group 1  lacking basic education

Group 2  lacking physical ability

Group 3  basic education and physical ability

Group 4  advanced education/training
Can you follow these instructions?

“The investigational vaccine consists of four recombinant dengue vaccine viruses (CYD 1 through 4), each constructed by substituting genes encoding the premembrane and envelope proteins of the yellow fever 17D vaccine virus with those from wild-type dengue viruses. These formulations are combined into a single preparation containing 5.0 log10 median cell-culture infectious doses (CCID50) per serotype and are formulated as a powder and solvent (0.4% sodium chloride) for suspension. The vaccine must be stored at a temperature between 2°C and 8°C and was reconstituted immediately before administration. The placebo is a 0.9% solution of sodium chloride. Doses of vaccine or placebo will be administered subcutaneously above the deltoid.”

(excerpted from New England Journal of Medicine, “Efficacy of a Tetravalent Dengue Vaccine in Children in Latin America”)
FIGURE 1.1
Median Earnings and Tax Payments of Full-Time Year-Round Workers Ages 25 and Older, by Education Level, 2011

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Taxes Paid</th>
<th>After-Tax Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Degree (2%)</td>
<td>$23,400</td>
<td>$78,800</td>
</tr>
<tr>
<td>Doctoral Degree (2%)</td>
<td>$20,300</td>
<td>$70,700</td>
</tr>
<tr>
<td>Master's Degree (10%)</td>
<td>$14,800</td>
<td>$55,200</td>
</tr>
<tr>
<td>Bachelor's Degree (25%)</td>
<td>$11,400</td>
<td>$45,100</td>
</tr>
<tr>
<td>Associate Degree (11%)</td>
<td>$8,800</td>
<td>$36,200</td>
</tr>
<tr>
<td>Some College, No Degree (17%)</td>
<td>$7,500</td>
<td>$32,900</td>
</tr>
<tr>
<td>High School Diploma (27%)</td>
<td>$6,400</td>
<td>$29,000</td>
</tr>
<tr>
<td>Less than a High School Diploma (7%)</td>
<td>$4,100</td>
<td>$25,100</td>
</tr>
</tbody>
</table>

The bars in this graph show median earnings at each education level. The blue segments represent the estimated average federal, state, and local taxes paid at these income levels. The orange segments show after-tax earnings.

Source: College Board, Education Pays
Should I go to college?

Benefits   Costs
Other ways to gain skills/training

• Community College
• Technical School
• Apprenticeship
• Internship
• Job experience