STOCKTON CENTER FOR
ECONOMIC & FINANCIAL LITERACY

THE RICHARD STOCKTON COLLEGE OF NEW JERSEY

An affiliate of SRI & ETTC and the NJCFE

Education Pay$

Education Pays

Grade Level(s): 11 - 12

Key concepts:

Income and earning power
Educational achievement and impact
Employment trends
Poverty rate

Objectives:

The source of household income and the potential for wealth accumulation for the majority of Americans is earnings (wages and salaries). This lesson will help students assess the role that education plays in affecting wages and salaries, household income, and other measures of living standards.

NJ Core Curriculum Content Standards:

Standard 6: Social Studies, Strand C, Economics, Innovation, and Technology
Standard 9: 21st Century Life and Careers
9.2 A. Income and Careers
9.3 A. Career Awareness
9.3 B. Career Exploration

National Standards in K – 12 Personal Finance Education (from Jump$tart Coalition):

Income and Careers:
Standard 3, "Describe factors affecting take-home pay."

National Content Standards in Economics (from Council for Economic Education):

Standard 6, specialization and exchange (of skills)
Standard 13, education, training, and earnings

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Lesson:

Between years of the decennial Census of the U.S. Population, the United States Census Bureau publishes the annual American Community Survey using statistical sampling. These statistics about the U.S. population are available from "American FactFinder" at http://factfinder.census.gov/home/saff/main.html?_lang=en.

The 2008 American Community Survey provides information on 2008 median earnings by level of educational attainment. Median is the midpoint where half earn above that dollar amount and half earn below that dollar amount. Economists use "median" as a measure of earnings because it is much more reliable than "average" ("mean"); the average can be distorted or skewed by persons with very high earnings (like professional athletes, for example).

Table 1. Median Annual Earnings by Level of Education in the U.S., 2008

Population ≥ 25 years with earnings	Total (M + W)	Men	Women
All levels of education combined	$34,737	$41,108	$28,512
Less than High School graduate	$20,268	$23,675	$14,944
High School graduate (including equivalency)	$27,479	$33,109	$21,856
Some college or Associate's degree	$33,447	$41,325	$27,555
Bachelor's degree	$47,094	$58,062	$39,346
Graduate or professional degree	$62,179	$79,342	$51,824

1. Use Microsoft Excel to graph a bar or column chart of earnings by level of education for the U.S. population age 25 years and older (total).

2. Calculate the following:

   - How much more in *dollars* per year does a college graduate earn compared to a high school graduate? This is called an absolute gap.
   - How much more in *percentage* terms does a college graduate earn compared to a high school graduate? This is called a relative gap.
   - What level(s) of education do you need to earn more than the amount for "All levels of education" combined for persons over 25 years of age?
   - What level of education do women need to earn greater than the amount that men earn who possess high school diplomas?
   - What level of educational attainment for the population (Total) results in the greatest percentage gain or *premium* over the previous level, that is: completing High School versus dropping out? getting an Associates' degree versus a High school diploma? completing the Bachelor's degree over an Associate's degree? Or finishing graduate school of professional school (like law school) instead of just an undergraduate degree?

3. Let's try to calculate the premium of a college degree over a career or lifetime, with some basic assumptions:

(a) a continuous professional work history of 44 years for a high school graduate and 40 years for a college graduate who started working 4 years later after going to college full-time;
(b) a salary = $27,479 per year for a High School grad and = $47,094 per year for a College grad; and
(c) wages increases (raises) equal to 3% per year for each of 40 years or 44 years, compounded.[1]

Complete the following:

- Set up an Excel chart with 40 and 44 rows for years and a row for Total at the bottom. The 2 columns would be the earnings of a High School graduate and a college graduate.
- Calculate the lifetime earnings of a High school graduate and (versus) college graduate in each of the 40 or 44 years.
- Add up the Totals and show the lifetime premium of completing college as a dollar amount (absolute terms) and as a percentage (relative terms)?

Optional Advanced Work:

This can also be done by mathematical formula, $a\,(1 - r)^t / (1 - r)$ where a = 1st year salary, r = 1.00 multiplied by the rate of wage increases, and t = number of years of work.

For example, for college grads:
$\$47{,}094\,[1 - (1.03)^{40} / (1 - (1.03)]$

4. Using Table 2 below, discuss the likelihood of being poor in America (the poverty rate) by level of education.

Table 2. Poverty Rate by Level of Education, 2008

Population ≥ 25 years with earnings	Total (M + W)	Men	Women
Less than High School graduate	23.9%	19.8%	28.0%
High School graduate (including equivalency)	11.6%	9.5%	13.5%
Some college or Associate's degree	8.1%	6.2%	9.8%
Bachelor's degree	4.2%	3.8%	4.6%
Graduate or professional degree	3.0%	2.8%	3.3%

[1] In reality, higher educated workers tend to receive greater wage increases over time than lower educated workers, in order words, they have a steeper earnings curve over the life cycle.

Extension Activities:

The bar charts and calculations can be done with men and women separately. Students can compare the pay-off to each additional level of educational attainment for men and women.

The federal minimum wage in the U.S. is equal to $7.25 per hour. If a minimum wage worker works a 40-hour work week full-time and year round, even without a vacation, what would be their gross annual salary? With this dollar amount, what is the likely level of educational attainment of the average U.S. minimum wage worker? Compare this to the information about the characteristics of minimum wage workers published annually by the U.S. Department of Labor's, Bureau of Labor Statistics, at http://www.bls.gov/cps/earnings.htm#demographics. Discuss who is likely to be a minimum wage worker by age, gender, U.S. state of residence, occupation, level of education, etc.

Instead of the incidence or likelihood of poverty by educational attainment, students can assess the relationship between education level and unemployment. The U.S. Department of Labor, Bureau of Labor Statistics, publishes an "Annual table: Employment status by educational attainment, sex, race, and Hispanic ethnicity" at http://www.bls.gov/cps/demographics.htm#education.

According to the 2008 American Community Survey, only 27.7% of the total U.S. population age 25 and older possessed a Bachelor's degree or higher, but this percent is increasing as more and more students attend college over time.

Students may use the Census Bureau's American FactFinder to acquire the data in their home state or even county. The data for the State of New Jersey appears as Table 3 below.

Table 3. Median Annual Earnings by Level of Education in New Jersey, 2008

Population ≥ 25 years with earnings	Total (M + W)	Men	Women
All levels of education combined	$43,639	$51,382	$36,213
Less than High School graduate	$22,759	$26,933	$17,444
High School graduate (including equivalency)	$33,230	$40,739	$26,938
Some college or Associate's degree	$40,825	$50,060	$33,541
Bachelor's degree	$56,560	$70,406	$48,809
Graduate or professional degree	$79,940	$97,295	$62,423