**Is College Worth It?**

**Subject area**: Social Sciences, Macroeconomics

**Grade level/band**: 11–12

**INSTRUCTOR PROCEDURES**

1. **Task overview**:

The purpose of the task is to reinforce both marginal analysis and rational decision-making, as well as to emphasize the role of simplifying assumptions. Students find the costs and benefits of a college education and calculate the marginal costs and marginal benefits based on this information. Students will write a 2- to 3-page paper that examines the results of their decisions about whether to attend college, and how the effects of changes in assumptions might alter students’ decisions. They should come to the conclusion that, at the median, it is rational to continue to a bachelor’s degree. Students continue the analysis by adding other potential costs and benefits to the analysis, which might alter the decision to continue an education beyond high school.

1. **Prior knowledge required:**

Students should be able to:

* Understand the concepts of marginal analysis, opportunity cost, and rationality.
* Read data from a table and make inferences.
* Understand the role of simplifying instructions.

1. **Common Core State Standards aligned to this task:**

[CCSS.ELA-Literacy.RH.11-12.3](http://www.corestandards.org/ELA-Literacy/RH/11-12/3/) Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.

[CCSS.ELA-Literacy.RH.11-12.7](http://www.corestandards.org/ELA-Literacy/RH/11-12/7/) Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.

[CCSS.ELA-Literacy.WHST.11-12.2](http://www.corestandards.org/ELA-Literacy/WHST/11-12/2/) Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

[CCSS.ELA-Literacy.W.11-12.8](http://www.corestandards.org/ELA-Literacy/W/11-12/8/) Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

1. **Time requirements**:

This task may be implemented in a course after unit(s) of instruction on the topics of marginal analysis, rational thinking, and opportunity costs. In addition, students would require the following to complete the task:

* Allow for at least one 50-minute class period to walk through initial calculations and answer questions.
* Give students at least one week to complete the writing assignment.

1. **Instructor materials to use during administration**:

* Any macroeconomics textbook
* The College Board - Cost of a College Education:  
  <https://bigfuture.collegeboard.org/pay-for-college/college-costs/college-costs-faqs>
* The Bureau of Labor and Statistics - earnings and unemployment rates by level of education: <http://www.bls.gov/emp/ep_chart_001.htm>

1. **Instructor procedures during administration:**

Students are likely to be interested in this topic, as it has direct and impending relevance to a high school junior or senior. Make sure to build in enough class time to allow for discussion following initial calculations.

* Introduce the students to the relevant data and how to access that data on the Internet.
* Ask students to make a simplifying assumption about the cost of education, what kind of tuition (private vs. public, in-state vs. out-of-state).
* Show students how to make a table, with each line (row) of the table representing a level of education (high school, associate’s degree, and bachelor’s degree), and a column for each of total cost, marginal cost, total benefit, marginal benefit.
* If students need support to complete the assignment, you could ask some probing questions, but you shouldn’t walk them through the calculation for each cell.
  + Initially, have students consider only direct costs of education when making calculations – for instance, assuming an associate’s degree would take two years to complete at $3,131 per year, the direct costs of an associate’s degree are $6,262.
  + When calculating benefits, be sure to have them consider that they would not be earning anything while going to school.
  + When calculating marginal costs, be sure to point out that this is the additional cost beyond the level before. Since a high school level is the baseline, point out that this has no marginal cost or marginal benefit, as there is no previous cost or benefit to compare to.

Example Solution. (Note: slight differences in this will occur based on the assumptions that the class chooses to make. The example below is based on in-state, public tuition.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Explicit Cost** | **Marginal Cost** | **Total Benefit** | **Marginal Benefit** |
| High School | $0 | (not calculable) | $652\*52\*15 = $678,080 | (not calculable) |
| Associate’s Degree | 2\*$3,131 = $6,262 | $6,262 – 0 = $6,262 | $708\*52\*(20-2) = $662,688 | $662,688-$678,080 =  -$15392 |
| Bachelor’s Degree | 4\*$8,655 = $34,620 | $34,620 - $6,252 = $28,358 | $1,066\*52\*(20-4) = $886,912 | $609,752-$530,660 =  $224,224 |

* Repeat the exercise, now including opportunity costs in the cost calculations. At a minimum, opportunity cost should include the cost of the next best alternative.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Economic Costs (explicit + implicit)** | **Marginal Cost** | **Total Benefit** | **Marginal Benefit** |
| High School | $0 | (not calculable) | $652\*52\*15 =  $678,080 | (not calculable) |
| Associate’s Degree | (2\*$3,131)+2\*(652\*52\*2) = $15,648 | $15,648 - $0 = $15,648 | $708\*52\*(20-2) = $662,688 | $662,688-$678,080= -$15392 |
| Bachelor’s Degree | (4\*$8,655)+4\*($708\*52) = $181,844 | $34,620 - $6,252 = $28,358 | $1,066\*52\*(20-4) = $886,912 | $609,752-$530,660= $224,224 |

* Lead a discussion on the role of simplifying assumptions here, in particular the working lifetime, the assumption about median earnings, and other opportunity costs and/or implicit benefits that might not be included (such as prestige).
* Students should be directed to consider the effect of changing one or more of these assumptions in their paper to determine how it might alter an agent’s decision-making.
* The exercise can be returned to several times later in the semester, such as in modules on unemployment and economic growth.

Examples of potential extensions or changes to simplifying assumptions can include:

* Access to credit/cost of credit (can also be extended to very advanced students later on if the class covers time discounting, or expected value)
* Non-pecuniary aspects of education that might be considered – such as prestige, working conditions, etc.
* Lifetime earnings cycle – why including the median earnings for all 20 years may not be appropriate, and how length of time might affect the calculations.
* Median versus average

One possible activity would be to divide the class into groups, having each group address one particular assumption, alter their calculations accordingly, and present their findings to the class.

The Bureau of Labor and Statistics (BLS) web site provides the data in both table and chart formats. The instructor can choose which presentation style to have students extract data from.

1. **Student support:**

The following suggestions are examples of scaffolding that can be used to meet the diverse student needs within the classroom.

* Provide class time for research on students’ topics.
* Provide definitions of new vocabulary words ahead of time.
* For the final product, all learners will benefit from peer assistance while brainstorming their topics, as well as a peer- or teacher-edit of their papers before final submission.
* Some students will have good research skills, but some will need guidance in the determination of appropriate sources and where to look for them. It is important to spend class time in review of what constitutes an appropriate source in advance of students’ independent work time.

1. **Extensions or variations:**

* Students could present the results of their research to the class via an oral or multi-media presentation.
* If there is a particularly interesting and/or controversial topic, a debate could be organized where students choose sides on the topic and defend their views.

1. **Scoring and assessment considerations:**

EPIC developed the *College and Career Ready (CCR) Task Bank Scoring Rubric* to accompany this task. If your school or department uses a standardized rubric that would fit the content and requirements of this task, you may choose to use your existing rubric. The following notes and suggestions are meant to clarify the intent of the rubric and include considerations for the assessment of student work.

* When assigning the task, provide students with the rubric that will be used to score their final product and discuss it as a class.
* Unlike some rubrics, the *CCR Task Bank Rubric* does not predetermine “point values” for the scoring criteria. The rubric thus allows for flexibility with different instructors’ scoring systems and individual determination of the “weight” of each criterion.
* Student work that scores at the *Accomplished* level is considered to be entry-level college work.
* The *Exceeds* category on the rubric provides an example of how a student can go above and beyond the *Accomplished* level. These examples are intended to be only ONE way a work product can exceed expectations, thus allowing room for your professional judgment.
* If needed, consider including task-specific criteria as an additional scoring category to the rubric or providing a checklist of requirements for the task.