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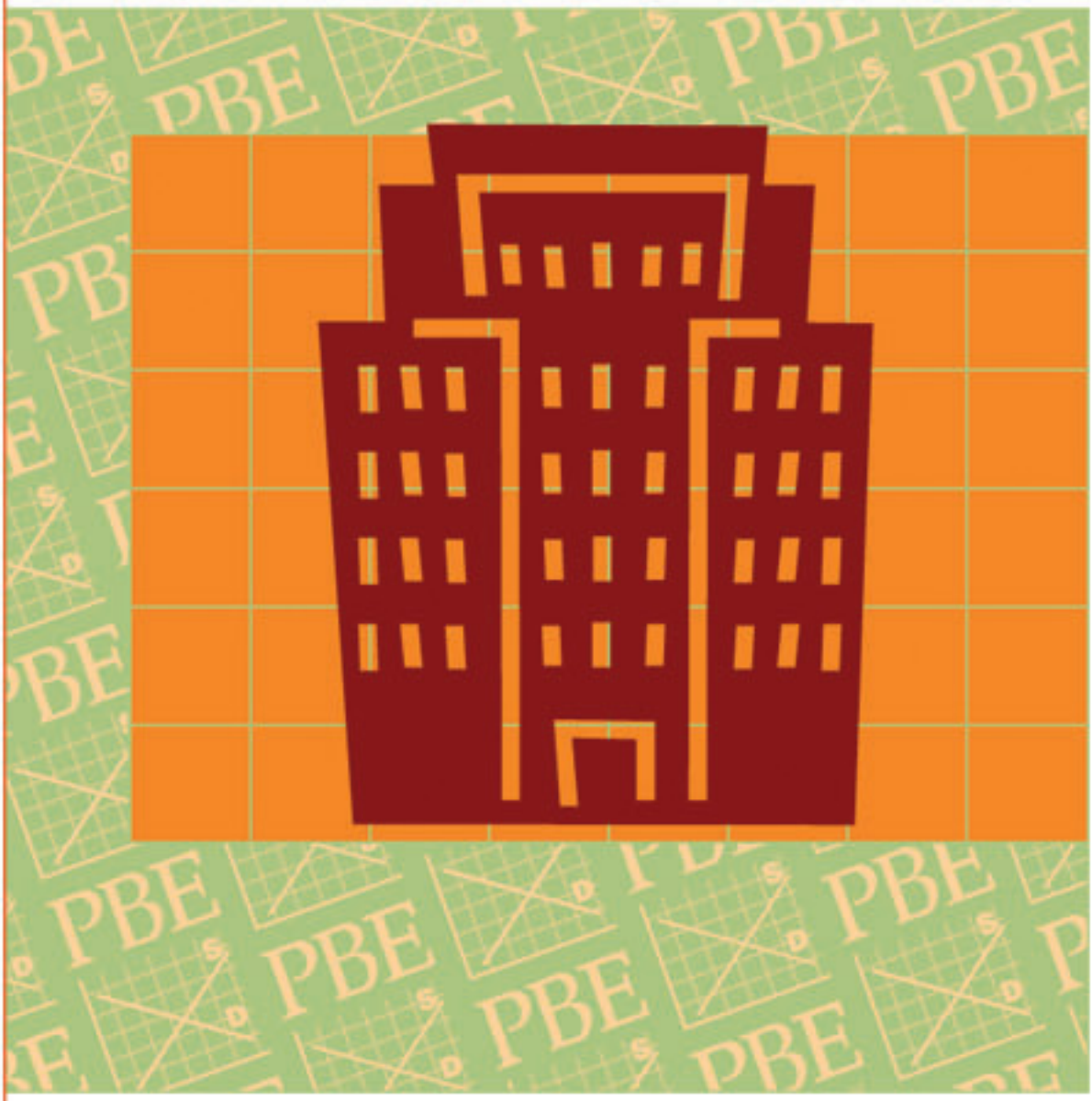

Evaluating Public and Private Investment Possibilities to Determine the Best Use of Land

Matildaville

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Learn Through Experience

About the Buck Institute for Education

The Buck Institute for Education (BIE) is dedicated to improving 21st-century teaching and learning by creating and disseminating products, practices, and knowledge for effective Project Based Learning. Founded in 1987, BIE is a not-for-profit 501(c)3 organization that receives operational funding from the Leonard and Beryl Buck Trust, and funding from other education organizations, foundations, schools and school districts, state educational agencies, and national governments for product development, professional development, and research.

Project Based Economics

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Foreword

Students learn more when they care about what they are learning. Students understand concepts better if they see how these concepts apply to the world outside of school. Students retain information longer if they are actively engaged in discussion and demonstration of what they are learning.

These are hardly new ideas, but too much of what happens in American classrooms does not meet this ideal. *Project Based Economics (PBE)* is built upon these principles. It addresses the concepts and content defined by the *Voluntary National Content Standards in Economics*, but does it in such a way that this material becomes meaningful and involving to students. *PBE* reverses the traditional method of "teach the concepts first, then give students the opportunity to apply them." Instead, *PBE* places students in an interesting scenario with an open-ended problem to solve and asks them to arrive at a justifiable solution using economic concepts. The project thus "pulls" students through the content. The teacher's role is to clarify, facilitate, and guide, rather than "push" unmotivated students toward the learning objectives.

Additionally, the *PBE* methodology helps teachers build valuable interdisciplinary "21st-century skills" including collaboration, critical thinking/problem solving, and making a presentation. We have found that *PBE* works well for diverse students in a variety of school settings. Research comparing students' economic knowledge gained from *PBE* versus that gained by students who received traditional instruction has demonstrated that the *PBE* students learn more, and that this difference is statistically significant.

These units were developed collaboratively by the Buck Institute for Education, and the HIRE Center, California State University–East Bay. They have been pilot-tested and critiqued by a group of energetic and insightful teachers throughout California. Although too many teachers have been involved in the development of these units to thank each teacher by name, we are extremely grateful for their time, insight, and contributions to making these units successful. In addition, there have been a number of university professors, staff developers, and school district staff who have contributed to unit development. We have benefited from their observations and suggestions, and offer a collective "Thank you!"

Please visit the Interact website (www.teachinteract.com) to find out about professional development offerings and conference presentations.

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Introduction

Chapter One

What is Project Based Learning?

Project Based Learning (PBL) is an instructional method in which students:

- Engage in a rigorous, extended process of inquiry focused on complex, authentic questions and problems
- Work as independently from the teacher as possible, and have some degree of "voice and choice"
- Demonstrate in-depth understanding of academic knowledge and skills
- Build 21st-century skills such as collaboration, presentation, and critical thinking/problem solving
- Create high-quality products and performances which are presented to a public audience

PBL is often cited as a valuable method by educators promoting differentiated instruction, multiple intelligences theory, learning-styles theory, 21st-century skills, and the "new 3 Rs" of rigor, relevance, and relationships.

In PBL, the project *drives* the curriculum—it provides the structure for teaching and learning. A project is not just an "applied learning activity" that follows a traditionally taught unit of instruction. Nor is it like discovery learning in its most basic form, in which students are provided with tools and activities that allow them to "discover" knowledge and skills with minimal guidance from a teacher. Instead, PBL challenges students to solve a problem through the application of content knowledge and collaborative resource-gathering, investigation, discussion, and decision-making.

Each project in *Project Based Economics* is a complete unit of instruction centered on a scenario that presents students with an engaging, realistic problem with more than one possible reasonable solution. To resolve the problem successfully, students realize they need to understand economics. This increases their motivation to learn the curriculum. Coaching students to resolve the problem posed in each unit requires a teacher to weave together a number of instructional components while remaining focused on the economic concepts around which the project is organized.

Phases of a Project Based Economics unit: how learning unfolds

Although structured flexibly enough to allow for student discovery and

independent learning, all *PBE* projects follow a series of steps or phases. These phases may sometimes overlap, but can generally be defined as follows:

Project launch—the Entry Event

At the start of each *PBE* project, students either receive some type of authentic correspondence or have an authentic experience intended to engage them in the project scenario. The "Entry Event" provokes interest and generates curiosity, leading naturally to the next phase.

Framing the inquiry—Driving Question and Knowledge Inventory

To begin the inquiry and problem-solving process, students as a class analyze their task and write a "Driving Question" that guides the project. The teacher coaches students in the construction of a Driving Question that summarizes the problem to be resolved, which in *PBE* is written according to the model:

"How can we, as _____?, (do) _____?, so that _____?"

The teacher also leads the class through a discussion and recording of knowledge that the students already have (know) and information that they still require (need to know) in order to arrive at a solution to the problem. This process is repeated periodically throughout the lesson.

Problem-solving and learning activities

The project scenario unfolds as students receive additional information about the problem to be solved. Students work in teams to conduct independent investigation and complete project tasks, while the teacher provides resources and lessons, guided by the students' "Need-to-Know List." A Project Log is used to check for student understanding of key economic terms and concepts. The class revises the knowledge inventory periodically and revisits the Driving Question to help stay on track toward a reasonable resolution to the scenario. The teacher monitors students' progress and watches for "teachable moments" when students recognize their need to know more about economics.

Presentation, assessment, and debrief

The project culminates as students finalize their solution to the problem posed in the scenario. Students prepare authentic products and present them to an audience and/or publicly discuss each group's work. The teacher uses a rubric to evaluate the students' work, and may also choose to administer a test to assess learning. The last step is to debrief the project with students, discussing both economics content and the process by which it was learned.

Teaching in the PBL environment

Although Project Based Learning is designed to foster active, engaged learning, students do not work completely on their own or exclusively with their peers when addressing the problem presented in a scenario. PBL is most effective when accompanied by *project based teaching*.

In PBL, the teacher guides students through the process of collaborative problem-solving and the creation of high-quality products and performances. Teachers are an important provider of subject-area knowledge and remain responsible for monitoring and assessing student learning, clarifying content-related concepts and misconceptions, assigning students to work groups, and managing what goes on in the classroom. Although traditional tools such as lectures, homework, and quizzes still have a place in this setting, they are used in the meaningful context of solving a problem. The role of the teacher using PBL is one of making learning "inevitable" by carefully managing the learning process and promoting a spirit of inquiry.

Make it a collaborative effort

Timing and extent of a teacher's instructional interventions differ from those used in traditional approaches. Effective teachers in PBL wait for teachable moments when students are interested and ready to learn before intervening or providing the necessary content explanations; they present or clarify concepts once students realize they need to understand subject-area content in order to solve the problem. Project Based Learning is most effective when it is a collaborative effort between the teacher and students, with the teacher as the senior partner.

This collaboration begins by engaging students in the problem to be solved. As you launch the unit, it is important not to reveal too much about the problem that students are about to encounter, and not to pre-teach the content and take away the motivation to learn that comes after students are "hooked" by the Entry Event. Take the problem seriously. While acknowledging that it is a scenario, point out that the problem is closely modeled on what happens in the real world. Heighten student interest and motivation by emphasizing the important effects their decisions will have (summarized in the "so that" part of the Driving Question written by the class). Model genuine interest and enthusiasm for the challenge of exploring several possible solutions.

The "teacher-as-coach" metaphor applies as students go about the tasks of conducting research, understanding the problem's complexities, and preparing to present their solutions. Like a good coach watching athletes practice, the teacher needs to observe, diagnose, and guide

without doing students' work for them. Anticipate some needs before they arise, be prepared to meet them, and watch for new needs as they emerge—but wait until they emerge.

One of the biggest challenges for many teachers is to step back and wait for the "need to know" to arise in students. Instead of answering all questions right away, ask, "How could you find that out?" and offer suggestions and resources for further inquiry. If students get stuck at a certain point, act as a "cognitive coach" by modeling thinking strategies. Offer process-oriented comments such as, "How would I approach that issue/task? Well, I might break it down into steps, or I might want to talk with my group about _____, or make sure I understood _____. Or maybe I'd go back to my Need-to-Know List…"

Build classroom culture

Establishing the classroom culture is also important for successful PBL. Students must know that it is all right to take intellectual risks and offer creative solutions for critique by their classmates and teacher without fear of ridicule. A healthy spirit of give-and-take needs to be in evidence in a PBL classroom, as does the habit of reflection. Students and the teacher need to constantly ask, "What are we learning?", "How are we learning?", and, "What does it mean?"

Another vital part of classroom culture is collaboration. Students work in small groups in PBL, and key to their success is the ability to work together comfortably and productively. If students are not used to group work, these skills must be taught. If students are not working well together, the teacher needs to know how to intervene and smooth things out. And when students share ideas, ask questions, and present their work, whether it is to their own classmates or a public audience, a serious and respectful tone should be the norm.

Invest in planning

A teacher using PBL should be skilled in planning and organization. Before beginning a unit, make sure to read all instructions and prepare materials carefully. But, do not overplan and feel bound by a predetermined timetable. It is hard to predict exactly how each class will approach a project and what needs will arise. A certain amount of flexibility is required, as is the willingness to let go of some expectations and control. Students may propose solutions that you had not considered, or they may want to explore issues in greater depth and breadth.

A teacher also needs skill in the use of performance-based assessment. This means knowing how to assess skills such as collaboration, communication, and time and task management. You can enhance student development of these skills by providing exemplars, well-written

rubrics, and chances to practice with helpful feedback.

Teaching in a PBL environment differs from many traditional classrooms in two other ways. First, it can be noisy. That means a teacher (and his or her school neighbors and administrators) must be willing to accept occasional apparent disorder as being the inquiry process at work. Second, a teacher must be willing to personally engage with students in ways other than standing in front of the room, delivering content knowledge as the "sage on the stage." A degree of intellectual and sometimes emotional connection with individual students is often needed to meet the challenges of PBL.

Teaching Economics With Project Based Learning

Chapter Two

Economics is the study of the allocation of scarce resources. Because resources are scarce, individuals, firms, and society must make choices about how to allocate resources and where to make tradeoffs. If a company decides to hire more workers, for example, it must reduce capital costs. If government spends more on defense, it must reduce spending on education or other areas (or else increase debt).

When students learn about economics through projects, they apply economic theories and principles to solve authentic problems. The PBL process also challenges them to think critically, to understand complex systems, and to explain and defend their decisions.

To help students gain a better understanding of how our economy allocates scarce resources, units included in *Project Based Economics* focus on teaching different aspects of scarcity and the related concepts of opportunity costs and tradeoffs. By integrating each of these PBL units into a high school economics course, students will have a better understanding of how the allocation of scarce resources forces individuals, firms, and society to make choices among competing goods and why those choices determine how resources are used. Taken together, the units demonstrate how our economy responds to each of the four basic economic questions:

- What is produced and in what quantities?
- How are goods produced?
- For whom are goods produced?
- Who makes economic decisions and by what process?

Preparing students for PBL

Before launching the the *PBE* unit, we recommend introducing students to the concept of Project Based Learning. This can be accomplished with a 45-minute activity, **Make More Money?** (see Chapter Three). In this activity, students encounter an economics-related situation. As they set about solving the problem, they learn the process for how PBL works. In one class period, they gain experience analyzing an Entry Document, writing a Driving Question, conducting a Knowledge Inventory—and learning how to think and act in different ways than they might be used to in more traditional forms of learning.

What is provided in this unit

- A **Unit Overview**, including the time required, a summary of the problem to be resolved in a scenario, the economic concepts to be learned, the placement in the curriculum of a typical high school economics course, and the NCEE Content Standards addressed
- A section on how to teach each unit, which contains:
  - **Sequence of the Unit**, a quickly referenced list of each step
  - **Step-by-Step Teaching Guide**, with detailed instructions about how to manage each step, plus sample **Driving Questions** and **Know/Need-to-Know Lists, Economics Content Notes**, prompts for **Project Log** entries, and **Potential Hurdles**
- A section of **Student Materials** with all student handout masters
- A section of **Teacher Materials** with a detailed review of the economic concepts and terminology within the unit, which may be used to guide the preparation of lessons for students, plus a glossary of concept definitions, answer keys for unit assignments, and rubrics for major unit products
- A multiple-choice test with an answer key

At various points within each unit, you will see two types of special **Notes to the Teacher** on effective implementation:

- **Economics Content Notes** point out key concepts students should be learning, and provide guidance on how to ensure that they do.
- **Potential Hurdles** indicate certain points during the unit when students might become confused or sidetracked, and explain how to help them.

Teaching Strategies for *Project Based Economics*

Scaffold learning activities

Students are supported in a variety of ways in the *PBE* units. In addition to "soft scaffolds" such as conversations with a teacher, "hard scaffolds" are provided in each unit such as charts, tables, or worksheets, to help students learn concepts and organize their ideas. Students may practice using economic concepts through oral or written exercises that build knowledge and skills necessary for the culminating task in the unit.

Efficient project-based teaching generally involves selecting content resources for students to use before they embark on solving the problems presented and creating products. These can include economic textbooks, specially prepared handouts, newspaper articles, videos, and online resources. Students should be encouraged to grapple on their own or in small groups with economic concepts, and find their own answers to content-related questions as much as possible. Consequently, it is generally best not to assign specific resources but rather to tell students what they can easily access to find the information they need to complete project tasks. It is then up to students and their groups to decide what content resources they are going to pursue.

Provide clarifying lessons at "teachable moments"

PBL is most effective with continual dialogue between the teacher (as a coach) and students. Effective project-based teachers must actively direct students toward the curriculum goals by asking probing questions in class discussions, circulating and listening to discussions in group work, and taking advantage of teachable moments when students are ready to learn. When these moments arise, the teacher has a key role to play in explaining content-related concepts and clarifying misconceptions. The teacher may offer a quick explanation to individuals or small groups, or recognize when all or most of the class needs to be taught something as a whole via direct instruction.

When lectures are given, they should be short (hence the term used in these materials, "*mini-lecture*") and organized. Limit lectures to the information students need at that point in the problem-solving process. A mini-lecture should be introduced by talking about it as part of the teacher's role as "coach" for the students' problem-solving process. It is a good idea to refer to the "Need-to-Know" list and say something like, "Many of you said yesterday that you had questions about _____, so I have some information that will answer those questions." And, as in all cases when lectures are used, you should use the techniques of good lecturing; engage students by speaking in an interesting style, asking questions, giving examples, using visual aids, and pausing to have students think, talk, or do some activity.

Use formative assessments

A key part of your job in project based teaching is to monitor whether students are learning the concepts the project is designed to teach. A variety of formative assessments will help with monitoring, including individual questioning, pop quizzes, checks for understanding with peers, and project logs. Here are strategies for using formative assessment tools:

- Listen to student discussions in small groups or as a whole class, and ask questions to provide a window into students' thinking and reveal confusion or misunderstandings.
- Administer a short pop quiz requiring students to demonstrate their understanding of an economic concept.
- Arrange for peers to check each other's understanding by pairing up to explain an economic concept to another student. Follow this by asking students for a show of hands to report how well they thought they explained, and how well they (honestly) thought their partner explained the concept. If this check reveals a knowledge gap or misunderstanding, conduct a short whole-class discussion or mini-lecture to consolidate understanding of the idea or concept.

Project Logs provide a structured way of assessing student understanding and are included in *PBE* units at significant points during the project. You may have students record many things in a Project Log or journal, including notes on the process of learning, comments on how well they or their groups are working, or reflections on content-related topics. Project Logs provide for individual accountability for learning the material, and allow you to assess the understanding of each student when students work in groups.

Project Log entries *must be checked soon after they are written* if they are to be used effectively as a diagnostic tool. You need to find out what students do and do not know in order to plan the next day's instruction. Apart from skimming them all, one way to do this quickly is to select a small number of representative samples from a range of students in the class. Or, students could be asked to raise their hands according to how well their entries—or their peer's, if they have swapped and read each other's logs—matched the criteria provided.

Once Project Log entries have been reviewed to assess the degree to which individual students understand the conceptual material being addressed, you can plan further instructional actions such as:

- talking with the class about the concepts in question by giving another mini-lecture
- talking with certain students or groups to address their misconceptions and misunderstandings

- giving additional textbook reading assignments, and/or directing students to online resources and explanations
- arranging peer teaching between students who are confused about the concept and those who have a solid understanding of it

Manage small-group work

Although the problems posed in project scenarios can be resolved entirely by individuals or entirely through whole-class effort, Project Based Learning is most effective when students are required to work in small groups. Consequently, all *PBE* unit scenarios place students in the role of a team with three to six members. This gives students the opportunity to discuss their ideas and questions with peers and develops the skills of stating a position, listening to others' positions, respectfully disagreeing with others, and collaborating and compromising. There is no always-applicable guidance for forming groups, and you will have to think about your students and decide who works well together. Generally, we encourage teachers to include students with different interests and abilities in the group so that a range of talents and skills can be applied to the project. And, it is generally *not* a good idea for students to choose their own groups based on friendship alone.

Coaching and monitoring groups is important. Most groups will need some assistance maintaining a task focus. Groups may also need help maintaining a positive attitude or dealing with group members who are not carrying their weight. Although PBL is predicated on students taking charge of their own learning, teachers need to monitor this process continually, and pull groups into impromptu conferences when their process bogs down.

Communicate standards of excellence

Rubrics that specify the characteristics of quality work and exemplars of finished products are included in each *PBE* unit. Students should be given the rubric midway through the project, to guide them as they prepare the required major products and performances. Students should not be given the rubric at the same time they receive the Entry Document at the beginning of the project as part of a "complete packet of materials" for the whole unit. They need some time to define for themselves what they have to learn to resolve the problems posed by the scenario, and receiving the rubric or other materials too soon short-circuits that process.

Manage presentation and critique of answers to the Driving Question

All *PBE* units include the preparation of some sort of tangible product and/or performance to communicate an answer to the Driving Question—essentially, the solution a group has developed to the problem posed in the project scenario. Students will need guidance in the preparation of these

products, as well as the opportunity to practice and receive feedback on their work as much as possible from their peers and teacher. After students' solutions have been presented, the class should compare and discuss them, as explained in the debrief phase of each unit.

Oral presentations to the class or a panel are a valuable component of many *PBE* units. As teachers know well, you're often not really sure if you understand something until you explain it to others. However, managing oral presentations well presents several challenges. Student groups need time to prepare and practice. The expectations for a good oral presentation should be made very clear, including presentation techniques and proper attire, posture, attitude, and group member participation. The rubrics accompanying each unit provide guidance to students on the use of content knowledge as well as oral presentation skills.

To help ensure proper participation by all group members, experienced teachers use several strategies. One is to explain that everyone will be held responsible for understanding all parts of an oral presentation and the visual aids that accompany it—and the rubric and grading criteria will reflect this goal. In addition, groups could be informed that even if they have decided in advance who will say what during the formal part of a presentation, *anyone* may be asked a question about *any part* of the presentation. Or, a teacher could tell students they will be picked at random just before the presentation to deliver various parts of it, thereby putting all group members on notice that they all need to be prepared to fully participate.

On the day of presentations, if the number of groups is not too large, there may be time for each group to make a presentation. However, a potential problem with this approach is that groups tend to repeat themselves, and by the time the fourth or fifth group has made its presentation, there is very little new left to say or very few new questions to ask the group. Also, students in groups presenting nearer the end may have an advantage by hearing previous presentations. This can be avoided if it is possible to send the rest of the class to the library or another room, so each group can present only to the teacher or panel—or have presenting groups go to another location. If all students need to remain together, give student audience members a task. Have them listen to other presentations and make notes of good points made and good answers to questions, as well as how they might have done it differently. Some classes may be ready to assess their peers' performance, using a rubric or other set of criteria while they observe and listen.

Practice 21st-century skills

To meet the challenges of the changing economy in the United States and across the world, and become participating citizens in a democracy, students need to learn more than basic skills and acquire subject-area knowledge. Accordingly, all *PBE* units provide opportunities for students to learn and practice 21st-century skills such as collaboration (e.g., working well with others, sharing resources, arriving at consensus), critical thinking (e.g., gathering relevant information, generating and evaluating solutions to problems), and communication (e.g., discussing ideas, writing, making an oral presentation, using technology). You can discuss, teach, and even assess these skills before, during, and at the end of every project.

Establish group and individually based grading procedures

As students usually work together to create the products and/or performance that culminate a project, you may need to assign a single grade for that product, given to all students working in the group. Of course, however, some students—like some adults—will become freeloaders and allow others to do their work for them. Self-reports, combined with group self-evaluation and group leader reports, can provide some information on how much each student may have worked, but not how much each has learned. Students will take more responsibility for their learning, and learn more, if they know their economics content understanding will be assessed individually, so let them know the group product is not the only component of their grade. Instead of relying on one speaker to make a presentation, they should be asked to divide up the task—and be ready for questions about *any* part of it, not just the part they did. But since time is usually short, questioning students during oral presentations can only be a partial assessment strategy. Consequently, multiple-choice tests that can be used to assess individual student understanding appear at the conclusion each *PBE* unit. Additionally or alternatively, you could require students to turn in individual written assignments or take a short-answer/short-essay test. You will have to work out what is most appropriate for your own grading system, but the fundamental idea holds: Make sure to assess students individually on their content knowledge, in addition to any group assessment you conduct.

Allow for several possible "right answers"

Part of what engages students in Project Based Learning is knowing that they can make choices and are not simply "doing what the teacher wants." All *PBE* unit scenarios are built around problems for which there can be multiple reasonable solutions. There are also solutions which are clearly wrong; not *every* solution will work. Guidance on evaluating reasonable and unreasonable solutions for each unit is offered in the **Step-by-Step Teaching Guide**.

Stay within the project scenario

Since the scenarios are hypothetical, students often want to add details, modify what is known, or otherwise *change* the scenario so that it is easier to resolve the problem presented. Such creativity will sabotage the core purpose of the project—it has been carefully developed as a vehicle to teach specific economics content. All *PBE* units have been developed in close consultation with U.S. high school teachers, tested in their classrooms, and revised based on their feedback to ensure that the project, although enjoyed by most students, does not become merely a "fun activity." The project has been created to achieve a serious instructional purpose, and deviating from the project scenario's storyline tends to focus students' attention on irrelevant or less important learning objectives.

Consider needs of English language learners

Students who are learning to speak, read, and write English can benefit greatly from Project Based Learning, but special scaffolding may be necessary. They may need more time to complete tasks, more vocabulary-building, and more peer-to-peer support. Some of the authentic-sounding documents presented in *PBE* scenarios may contain jargon, slang, or cultural references that will need to be explained. When forming small groups, care should be taken to assign students learning English to teams with supportive and skilled members. Finally, oral presentations may present special challenges—ELL students may be allowed to participate to a lesser extent than other group members, and/or be given questions to be answered later in writing, rather than "on the spot."

Make More Money?

Chapter Three

An Activity to Introduce Students to the Project Based Learning Methodology

Overview

In this activity, students are presented with a problem-solving task focused on a fictitious high school senior who wants to drop some classes in order to work more hours. In the role of a counseling team at the school, students investigate the facts of the situation, consider the personal and economic choices involved, and recommend a reasonable solution.

Although this activity touches on some basic economic concepts, it is primarily designed for another purpose—to demonstrate the instructional methodology of Project Based Learning (PBL). It may be used with two groups of participants: high school students in the classroom, or their teachers in professional development workshops. The Buck Institute for Education (BIE) has field-tested this activity successfully with both groups. With students, we recommend using it prior to teaching the units from the *Project Based Economics* series. The instructions below are written with this use in mind. (If the activity is being used with an audience of teachers, they should experience it much as students will, which is the best way to learn how to implement it.)

Project Based Learning may be an unfamiliar process for many students and teachers. In this activity, which requires less than a typical class period to complete, students will become familiar with many of the key elements of the methodology as designed by BIE for its economics units. Like the *PBE* units, the **Make More Money?** activity begins with a problem-solving scenario (not all projects in PBL begin this way, but it is an effective option). PBL is an inquiry-based process that springs from what students identify they need to know in order to solve the problem presented in the scenario. Accordingly, it is important not to "frontload" any information before starting the activity. Do not conduct a discussion, assign reading, or give a lecture in advance about the value of going to college vs. going to work, nor tell students all about PBL. It is sufficient to simply say, "Now we're going to do an activity that will introduce you to one of the ways we're going to learn about economics in this course." The first thing students should see is the Entry Document, the note that launches the scenario. After the scenario has run its course, the debriefing time is when the principles and features of PBL should be discussed, along with any content-related issues or further work on the topic that the teacher would like to do.

Project Based Learning has proven effective in teaching content knowledge as well or better than a traditional lecture/textbook approach, improves

retention of knowledge, and contributes to the acquisition of 21st-century skills such as collaboration, presentation, and critical thinking. Moreover, it increases student engagement and interest in the subject of economics, which is important in their lives as workers and citizens.

Content standards addressed

Voluntary National Standards in Economics:

Standard 1: Productive resources are limited. Therefore, people cannot have all the goods and services they want; as a result, they must choose some things and give up others.

Content keywords: scarcity, tradeoffs, opportunity cost

Materials needed

- One copy for each student or pair of students of the Entry Document, the note from a student, "AJ," with the additional context for it
- To have on hand in case students request it: copies or a displayed version of the handout, "Earnings by Education Level"
- Chart paper, whiteboard/chalkboard, or computer projection

Procedure (40–50 minutes)

1. Read the **Entry Document** aloud as a whole class (page 22, note from "AJ" with added context)
2. Write an **initial "Driving Question"** as a whole class (recorded on a projector, chart paper or board)

   Sample:

   How can we, as the counseling team, find out what's going on with AJ, so we can help him/her make a good decision?

3. Write a list of **"What Do We Know?"** as a whole class (recorded on a projector, chart paper or board)

   Sample:

   - We're a high school teacher who got a note from a student
   - It is September
   - AJ is an 18-year-old high school senior
   - AJ wants to drop classes

- AJ isn't sure about going to college right away
- AJ has seemed withdrawn and distracted lately
- AJ's grades have slipped
- We are on AJ's counseling team
- AJ won't graduate on time if s/he drops classes
- AJ wants to work more and make more money
- AJ doesn't want his/her parents involved

4. Write a **list of "What Do We Need to Know?"** as a whole class (recorded on a projector, chart paper or board)

Sample:

- Is AJ male or female?
- What classes does AJ want to drop?
- Why has AJ been distracted and withdrawn?
- What college was AJ planning to go to?
- Why doesn't AJ want his/her parents involved?
- Do AJ's parents agree with this decision?
- What job does AJ have?
- How much money does AJ make?
- What does AJ need more money for? Is it urgent right now?
- Has AJ thought through the consequences of not going to college?
- How much more money could AJ make in the long run by going to college?

5. Discuss what **resources** could provide answers to our "need to know" questions.

For example, some answers could be found through research—such as a comparison of earnings in jobs requiring college degrees vs. jobs that only require a high school diploma—and some might need to come from actually talking to people. Students should recognize, or be coached to see, that the best way to get more information at this point is to talk to AJ—so tell them AJ will be here in a minute for a meeting.

6. Students take 2–3 minutes, working in pairs or small groups, to plan **questions to ask AJ**.

7. *If they ask for it*, students receive the handout **found on page 24, which shows earnings by educational attainment.** This information may give students ideas for what to discuss with AJ, and should be very briefly discussed as a class. If students do not request this information, the handout may be held for the debrief as an optional discussion piece if you want to use it.

8. Students ask questions during a **"live" meeting** with someone playing the role of AJ.

   - AJ is reluctant to talk, but eventually reveals details about the decision to drop classes.
   - For suggested responses to questions, see "Guidelines for Conducting the Interview and Playing the Role of AJ" below.
   - After AJ reveals the "secret"—that he/she needs more money to help support the family since the father was laid off—the interview ends.

9. Revisit the **Know/Need-to-Know Lists** and revise the **Driving Question** as a whole class.

   Point out that students now have answers to some of their "need to know" questions—and that the list of "what we know" has lengthened. To save time, you do not actually have to write new items on the lists. However, do ask students if they think the Driving Question still fits or if they want to change it, and do so. A new Driving Question might be:

   How can we, as the counseling team, talk more with AJ and his/her parents, so we can help him/her graduate on time and go to college?

10. **Wrap-up:** Explain that although they may not have all the answers to their "need to know" questions, it is now time to propose solutions, or at least say what they would do next. Allow 2–3 minutes for students working in pairs or small groups to brainstorm possible solutions, and then share them aloud and evaluate them.

    Sample of possible solutions:

    - Try to rearrange AJ's class schedule so he/she can complete courses required for graduation and still work the required hours.
    - Talk with AJ's parents to try to find a way to keep AJ on track for graduation and attending college.
    - Go ahead and do what AJ wants.
    - Recommend independent study or the Graduate Equivalency Diploma (GED).

11. **Debrief** with the whole class by leading a brief discussion about both the economics content and the process of learning in PBL.

Economics Content Note

Discuss the economic concepts of *scarcity, tradeoffs,* and *opportunity cost.*

Economics Content Notes: Discuss the economic concepts of *scarcity, tradeoffs*, and *opportunity cost:*

- Since the time available for work is a limited, or scarce resource, AJ must consider the trade-offs between work and further education.
- Point out that the cost of AJ's decision can be thought of in terms of what he/she gives up—the opportunity cost—by working more hours to make more money now, versus going to college and earning more later. If you wish, introduce the data comparing earnings of college graduates vs. high school–only graduates.

Potential Hurdle

Discuss what this activity demonstrates about Project Based Learning.

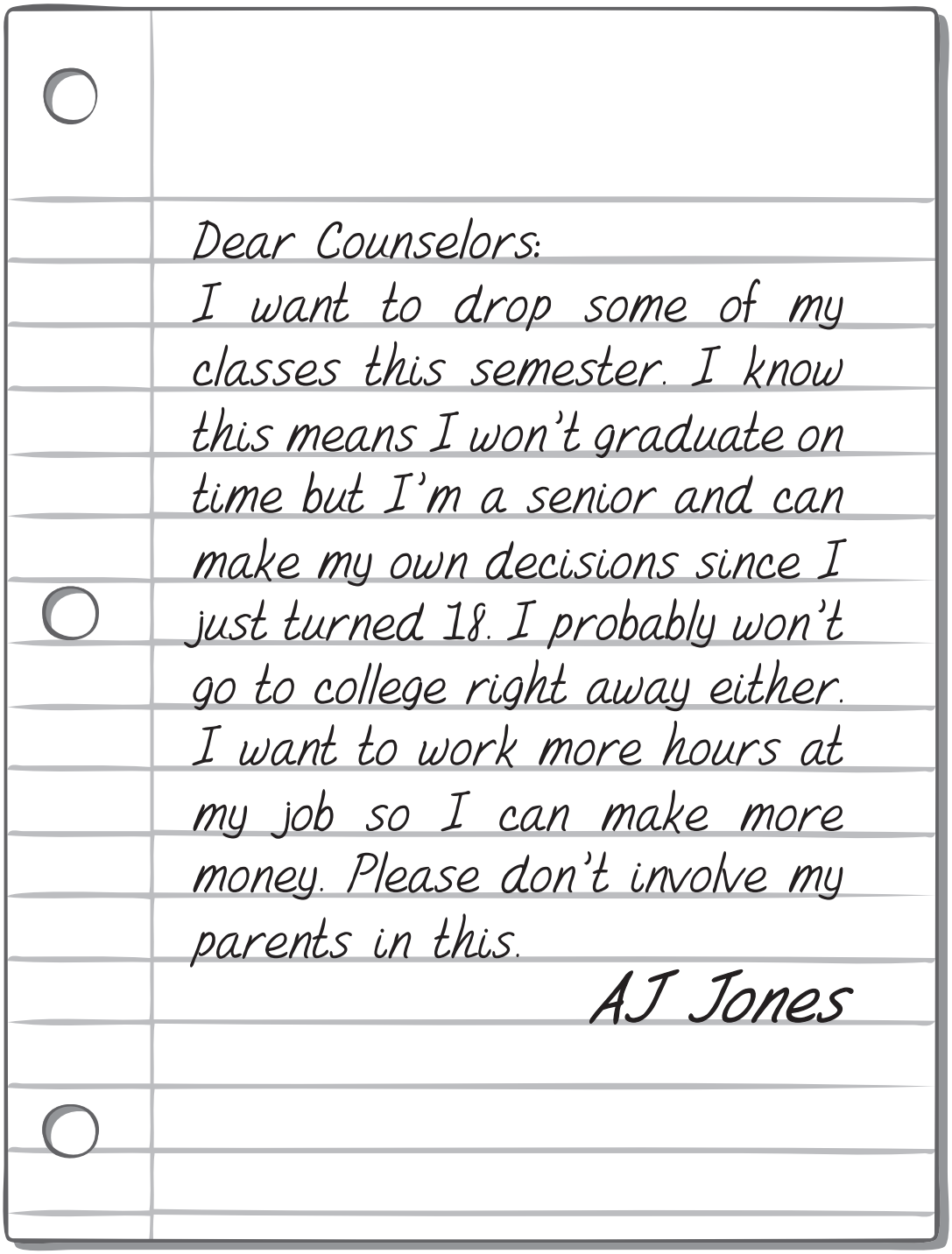
Potential Hurdle: Discuss what this activity demonstrates about Project Based Learning:

- There is no *single* ***right*** answer to the problem in the scenario—it is "open-ended"—but there are ***wrong*** answers. For example, denying AJ's request without further discussion or contact with his/her family would probably be a mistake.
- ***It is important to be persistent.*** During the "live" interview, encourage students to find different ways to ask AJ the same question. During the debriefing, point out that persistence is an important "habit of mind" for PBL.
- ***Frustration is OK—it is an important part of PBL.*** Ask students if they were frustrated at any time during the process. This often leads to a discussion of how students become frustrated during research or other inquiry-based assignments when they cannot find the answers easily. You should allow for some frustration but also offer coaching if students are getting too far off track. Focus students back on the "need to know" list when they are having difficulty thinking of questions to ask AJ.
- ***The Driving Question and the Know/Need-to-Know Lists are important tools*** for keeping on task and focused on the problem to be solved as it evolves.
- ***Good PBL gets students to ask questions about content.*** Asking questions demonstrates that students are open to learning, which can lead to "teachable moments." Rather than give students the answers too quickly, record questions as they come up and have students investigate. In this activity, the information on average earnings by level of education was handed out, but it could have been easily researched by students if there was more time.

- ***New information leads to shifts in perspective—and new questions***. For example, learning that AJ needs more money to support his/her family, not for frivolous expenses, creates a major shift in the way students think about the problem, and new "need to knows" could be identified.
- ***Decisions are often made under conditions of uncertainty.*** Just like people in the real world, students do not always have complete information on which to base decisions. Some of the items on the "need to know" list in the **Make More Money?** activity may not be answered, but that doesn't mean reasonable solutions to the problem can't be proposed.

Letter From AJ

You are a high school teacher who is also on a counseling team, and one day in September you received this note from a student your team counsels:

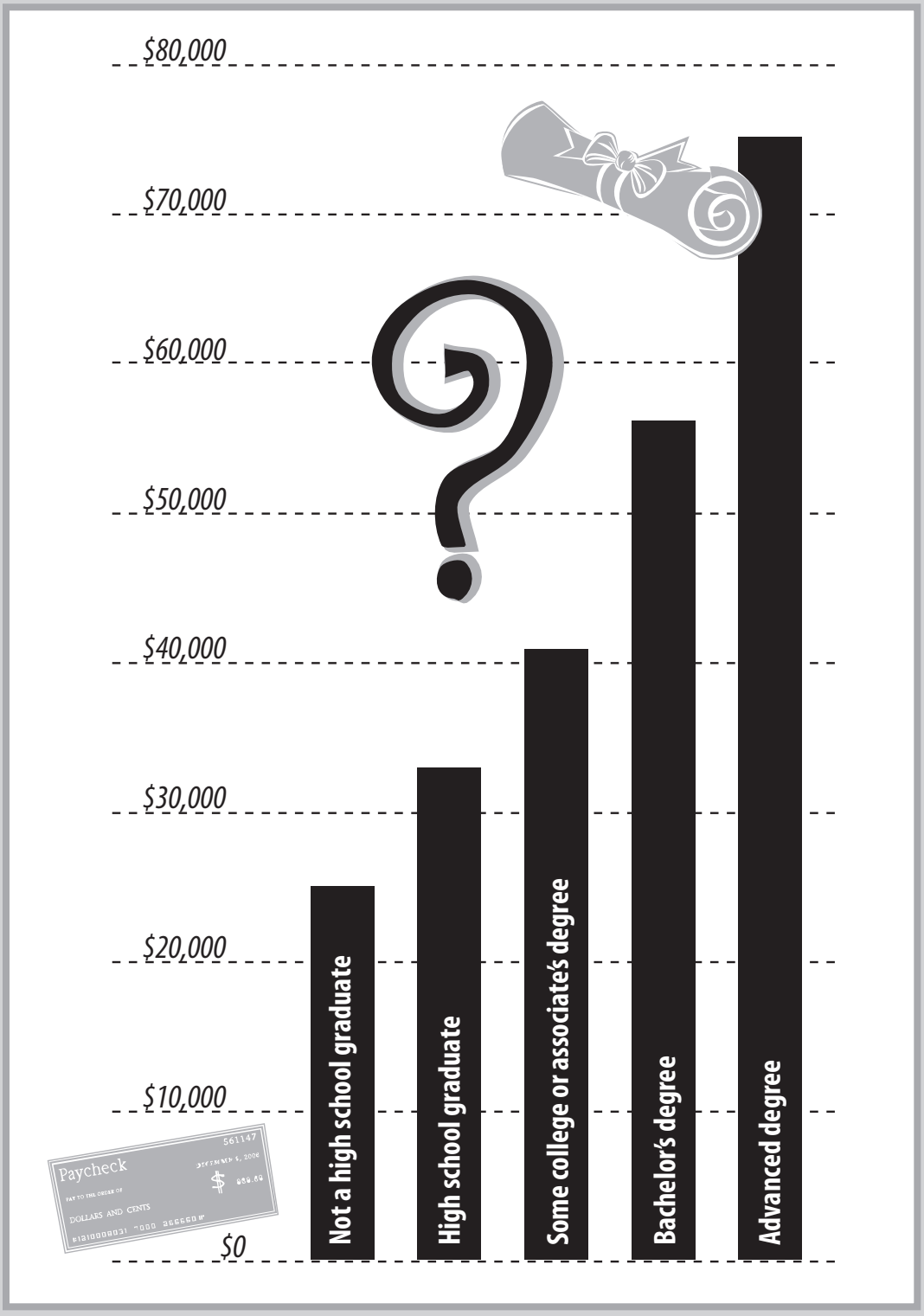


You have always thought AJ was doing just fine in school—but then you remember hearing that AJ's grades have been slipping lately and that AJ has seemed somewhat distracted and withdrawn. You've decided to take this to the counseling team for action.

Guidelines for Conducting the Interview and Playing the Role of "AJ"

- The role of AJ may be played by a male or female—either you, another adult, or a competent student who has been rehearsed.
- AJ should be very reluctant to talk at first. Avoid answering direct questions by saying things like, "It's a personal decision,"—"I just want to work more hours,"—"I'm 18 and can handle myself,"—"It's nothing to do with not liking school or having trouble or anything."
- Slowly reveal the following information, when asked about it:
  - Job is at a local supermarket; bagger and stocker now, but could become a checker soon
  - Hourly wage is $8
  - Now work 15 hours a week, want to increase it to 40
  - May have appeared withdrawn and distracted because of this decision, but nothing else is going on (relationships are good, no drug/alcohol abuse, no physical or mental problems, no difficulties with school, etc.)
  - Want to drop government, economics, and English classes and keep art, yearbook; not taking math or science this year but have taken three years of each
- Be evasive about what the money is needed for—"Oh, I just want to buy stuff," … "My cell phone bill is pretty big," … "I might get a car, better clothes, just spending money for going out with my friends, you know…," … "And I'll save some money too."
- Show discomfort when talking about your parents. Say you do not want to involve them because, "I'm 18 and can make my own decisions," … "I don't want them to stress about me," … "They've got my two brothers and sister to worry about."
- If asked, "Why not wait to work more until after you graduate?" AJ should respond, "I really need the money now." (This should be said in a way that begins to raise suspicions, and/or show discomfort with body language and facial expressions.)
- If the group is getting too frustrated and/or you wish to end the activity, give a clue about what question to ask to get AJ to reveal the "secret" by saying, "My family…I mean, I really need the money now."
- Upon further questioning, it should be revealed that AJ's father has suddenly been laid off from his job (you could choose something in a downsized sector of the economy—computer programming, auto-parts factory, etc.). AJ feels like s/he should work to help support the family, but they would be ashamed to admit it, and would not want AJ to do this.
- *After this last piece of information is revealed, the meeting ends and "AJ" leaves.*

Median Earnings for Full-time, Year-Round Workers Age 25 and Over by Educational Attainment (2007)



Source: www.census.gov/prod/2009pubs/p20-560.pdf

Matildaville

Chapter Four

Purpose and Overview

Time required

4–6 class periods

Project scenario

A city, society, or individual is capable of producing some level of economic activity with its current level of resources (land, labor, capital, and entrepreneurship). These resources can be used to enjoy the income from economic activity today or can be invested to increase both productivity and the capacity for income from economic activity in the future. To explore these economic concepts, students are presented with the following problem-solving scenario.

> *The city of Matildaville has been given some undeveloped land by a wealthy benefactor. The Director of Matildaville's Community Economic Development Agency has asked his economic policy analysts to recommend which entities should operate on the land. The analysts consult a list of possible entities compiled by a citizens group and consider the benefactor's wishes. A sudden financial crisis forces students to focus their criteria for selection more narrowly around short-term economic concerns. Each team of economic analysts is asked to write a report that describes and defends their investment strategy for Matildaville.*

Concepts to be learned

To successfully resolve the problem and complete the products required in this project, students need to understand and be able to apply the following economic concepts:

- Economic growth
- Income
- Interest rates (nominal and real)
- Investment (public and private)
- Multiplier effect
- Opportunity costs

Although an understanding of the following economic concepts is not essential to complete project tasks, you can use the unit to explain additional economic concepts including:

- Bonds
- Crowding out
- Present value
- Productivity
- Public debt
- Resources
- Scarcity
- Tradeoffs
- Uncertainty
- Rate of return
- Tax
- Time value of money

NCEE content standards addressed

Matildaville addresses the following Voluntary National Content Standards in Economics codified by the National Council on Economic Education, in partnership with the National Association of Economic Educators and the Foundation for Teaching Economics. For more information see www.ncee.net/ea/standard.

Standard #	Economic Concept
1	Scarcity
2	Opportunity cost
12	Interest rates
13	Income and productivity
15	Investment

Teaching *Matildaville*

Sequence of the unit

Like the other BIE *Project Based Economics* units, students complete *Matildaville* by following astandard set of activities in a proscribed order. But within these activities, there will be variation in the timing and in the way students complete them. The sequence of instructional activities is described below. This sequence is logical, and is based upon extensive pilot testing in high school economics classrooms. It is also informed by research into effective instruction. Although changes may be necessary to meet time constraints, address the needs of specific student populations, or include additional instructional materials and learning opportunities, we strongly encourage teachers to adhere to the sequence of activities as closely as possible—at least during the first several times *Matildaville* is taught. Each instructional activity is discussed in more detail in the following section, the *Step-by-Step Teaching Guide*.

Pre-project planning

0. **Prepare** for successful project implementation.

Launching the project

1. Students receive Entry Document, the **memo from Fred Gonzenbach**, and discuss it as a whole class.

Framing the inquiry

2. Students develop **initial "Know" list** with you (whole-class discussion).
3. Students develop **nitial Driving Question** with you (whole-class discussion).
4. Students develop **initial "Need-to-Know" List** with you (whole-class discussion).

Problem-solving and learning activities

5. Students form small groups, receive **second memo and list of entities** and discuss the pros and cons of each (in small groups).
6. Students **revise Know/Need-to-Know List** with you (whole-class discussion).
7. Provide **Clarifying Lesson #1** on multipliers.
8. Students individually write **first Project Log entry.**
9. **Review individual Project Log entries** to assess understanding of economic concepts.

10. Students receive "Criteria for Evaluating Entities" **table**, and begin making choices (in small groups).
11. **Review "**Criteria for Evaluating Entities" **table** by discussing it as a whole class.
12. Students receive **memo from Mayor John Okada** and review it with you (whole-class discussion).
13. Students **revise Know/Need-to-Know List and Driving Question** with you (whole-class discussion).
14. Provide **Clarifying Lesson #2** on investment, growth, and interest rates.
15. Students individually write **second Project Log entry**.
16. **Review individual Project Log entries** to assess understanding of economic concepts.
17. Students **finalize Know/Need-to-Know List** (whole-class discussion).
18. **Share supplied rubric with students** to guide their work.

Presentation, assessment, and debrief

19. Students **decide upon recommendations and write report** (in small groups).
20. Students **share and discuss recommendations** (whole-class discussion).
21. **Use supplied rubric to assess** reports.
22. Conduct **debrief to clarify and consolidate** students' understanding of key economic concepts (as necessary).
23. Manage **student reflection** on the 21st-century skills practiced, and the process of learning in PBL.
24. Use supplied **multiple-choice test** to assess individual students' knowledge of key economic concepts.
25. Make **notes on adjustments to the unit** to improve student learning for the next time the unit is taught.

Step-by-Step Teaching Guide

Each of the above instructional activities is discussed in more depth below, with tips for successful classroom implementation.

Pre-project planning

0. Prepare for successful project implementation.

There are a number of issues that must be considered before embarking on a project with students. These include:

- How much time will be devoted to the project?
- What economics content resources need to be prepared in advance (textbooks, articles, websites, etc .)?
- Do all students have the skills they need to tackle the project—including basic literacy skills as well as the ability to work in teams, make presentations, and conduct research? If not, is it necessary to pre-teach some of these skills, make sure students who need it have adequate support, or deal with these challenges in other ways?
- How will student groups be formed? (See "Manage Small Group Work" in Chapter Two, Teaching Strategies for Project Based Economics.)
- How will groups report on their progress and be held accountable? Do report forms or other tools need to be developed?
- Is it necessary to arrange access to the library/media center or computer lab?
- Do parents or administrators need to be informed about the process of Project Based Learning and be assured that time spent on the project is focused on standards-specific learning goals?

In addition to considering the above issues, be sure student handouts and clarifying lesson/mini-lecture materials are ready—or at least underway.

Launching the project

1. Students receive Entry Document, the memo from Fred Gonzenbach, and discuss it as a whole class.

*The memo from Fred Gonzenbach may be found in the **Student Materials**.*

Have one or more students read aloud the Entry Document while the whole class focuses on it.

The memo can be projected so it can be read by the whole class. Alternatively, copies of the memo can be duplicated and passed out to students, or viewed online as an email or document posted to a website.

Potential Hurdle

It is essential that the entire class be able to read and comprehend the text. If necessary, employ regular literacy-building strategies.

Potential Hurdle: As this memo sets up the scenario and the problem to be solved, it is essential that the entire class be able to read and comprehend the text. If necessary, employ the same literacy-building strategies you would normally use for this kind of reading material.

Synopsis of memo: The memo is sent by Fred Gonzenbach, Director of Matildaville's Community Economic Development Agency, to his team of economic analysts. This memo tells students that they are to select the entities to be developed on property bequeathed to the city by a wealthy benefactor, Mary O'Leary. The analysts are told to consider economic potential but also to abide by Mrs. O'Leary's wish to provide the city with cultural and leisure amenities.

Economics Content Note

Because the Entry Document does not focus exclusively on economic considerations, students are free to choose entities based on a very general set of guidelines at this point. This intentionally sets up a sudden need to emphasize economics when the financial crisis arises.

Economics Content Note: Because the Entry Document does not focus exclusively on economic considerations, students are free to choose entities based on a very general set of guidelines at this point in the project. This initial focus on noneconomic considerations is intentional—it sets up a sudden need to emphasize economics when the city faces a financial crisis.

Framing the inquiry

2. Students develop the initial "Know" list with you (whole-class discussion).

Students must now assess what they already know about the problem posed in the Entry Document. This should be done as a whole class by creating a "What Do We Know?" list on chart paper, or a computer projector. Ask students to carefully review the Entry Document and offer items for the list, making sure to *only record what is in the text, not what might be inferred.* Students should be coached to identify all of the information that the Entry Document provides. They should conclude that this information is insufficient to solve the problem, and they need to know (learn) additional things.

Example of initial Know List

What do we know?

- Mrs. O'Leary died and left us 96 acres
- The land was her grandfather's and his mansion was never rebuilt
- Each entity can be developed in ont to two years
- City population is about 250,000; the area is 1 million

- We want the city to be thriving and well-rounded
- Land cannot be sold but can be left undeveloped
- Fred Gonzenbach is our boss and sent us this memo
- We don't have to worry about the impact of development on parking, or traffic
- Regina Banks is the city's treasurer
- The city has lots of money
- We can choose any combination of entities
- Wealthy and middle-class people want different things
- No entities can be added
- Mrs. O'Leary was interested in the community's development of arts, leisure, education, music, and theater
- Land is near central business district
- Land use must reflect Mrs. O'Leary's interests
- Must consider potential for cash today, initial cash outlays required, benefits and costs in the near future, and potential for investment
- Environmental impact report done

At this point, do not ask about solutions, as this might negate or offset information gathering, which is the most important part of the problem-solving process right now.

3. Students develop the initial Driving Question with you (whole-class discussion).

After students have discussed the memo from Fred Gonzenbach, and you are satisfied that students understand it, lead students in drafting an initial Driving Question. This is generally done as a whole-class discussion. A Driving Question is a succinct declaration of the general problem students are to solve. In *PBE*, it takes the following form:

> How can we, as… **[the role(s) being assumed by the students]**, do… **[the specific task(s) students must complete]**, so that… **[the specific result or goal(s) to be accomplished]**.

The initial Driving Question may be quite different from the Driving Question that will emerge as students think about and work on the problem. This is to

be expected. The Driving Question generally evolves as students gain more insight and knowledge into the problem and its underlying issues. The initial question may look something like:

> How can we, as **economic analysts,** develop **a written report recommending entities for Mrs. O'Leary's land,** so that **her wishes are followed and Matildaville continues to be a good place to live for all its residents?**

At this point, it is fine to keep the Driving Question ill-defined. It is not necessary for the Driving Question to contain economic terms or, if it does, use the economic terms correctly. The Driving Question will become more refined as students learn more, and as new developments in the scenario unfold.

4. Students develop the initial Need-to-Know List with you (whole-class discussion).

The next step in the problem-solving process is to coach students to identify information they need to know in order to answer the Driving Question. Again, guiding students to pay close attention to all parts of the memo, create a "What Do We Need to Know?" list. If students are missing a key piece of information about the scenario, the content, or their task, ask questions to elicit items for the list. This is critical because everything students are taught in the unit must spring from this list. At this point in the problem-solving process, students will probably list things that they actually do *not* need to know. Allow students to do so. The class will return to the Know/Need-to-Know List again later, having learned more about what they need to know to solve the problem, and should recognize irrelevant concerns at that time. A core part of the process of Project Based Learning is to distinguish what information is and is not necessary to successfully answer the Driving Question. As much as possible, encourage students to identify irrelevant information on their own.

Although each class generally produces a unique Know/Need-to-Know List, an example of the type of items that might appear on the list follows.

Example of initial Need-to-Know List

What do we need to know?

- What is an entity?
- What is an economic analyst?
- How big is an acre?

- What happened to Mrs. O'Leary's grandfather's mansion?
- What is a "thriving and well-rounded community"?
- Who makes the final decision?
- How many acres does each entity use?
- What are the entities?
- Is there any money for development?
- Who will manage the entities?
- Will it cost the city money to develop the land?
- What is "investment"?
- What goes into the report (format, criteria, pages, and visuals)?
- Are there any special interest groups?
- What are the demographics of the community?
- What is best for the community?
- What is the "natural rate of unemployment"?
- Did Mrs. O'Leary give us any money?
- Which state is the city in?
- What does "cash outlays required" mean?

Problem-solving and learning activities

5. Students form small groups, receive second memo and list of entities and discuss the pros and cons of each (in small groups).

The second memo and list of entities may be found in the ***Student Materials****.*

The second memo and list of entities provide several vital pieces of information that students will ultimately use in selecting entities. First, the memo and list seed the economic terms and concepts that students will use in economic decision making. Second, the list provides a description of each entity. Third, the list provides a synopsis of benefits (pros) and costs (cons) that are associated with each entity. This information ultimately allows the students to weigh the tradeoffs between cash today and investments in the future. Finally, the list provides the exact acreage that each entity will consume.

Form students into small groups of three or four, each of which is a team of economic analysts. Distribute copies of the list of entities, either one to each student or one or two to each group. Have students read over and discuss the list in their groups, noting which uses for the O'Leary land seem most appealing and what further questions they have. After students have had some time to discuss the list in their groups, discuss the list as a whole class and have student groups share their questions. Some questions may be answered right away (e.g., "What is a high-rise building?") and others may be added to the Need-to-Know List.

Potential Hurdle

Should students ask for more info on the economic benefits or drawbacks of various entities, tell them that this is only a preliminary review of the list, and that a more detailed economic review could come later. Remind them that real-world decisions are often made without certainty, but should still be grounded in economic principles.

Potential Hurdle: Students may want to know more about the economic benefits or drawbacks of various entities. They might also say that real economic analysts would have more specific figures to work with, which is sometimes true. Tell them that this is only a preliminary review of the list, and a more detailed economic review could come later. Also, remind students that sometimes in the real world, decisions have to be made without certainty. Either information is missing, as it is in this scenario, or it may be inaccurate or contradictory. Students should realize that, in absence of reliable, accurate data, decisions must be made using limited information but grounded in economic principles.

6. Students revise Know/Need-to-Know List with you (whole-class discussion).

Return to the Know/Need-to-Know List and review it with students, checking off items that are now "known" and adding any new questions.

What else do we know?

- A citizens' task force made a list of entities, with pros and cons
- Members of Mrs. O'Leary's family were on the task force
- The entities require different acreage
- Some entities will cost the city a lot of money
- Some entities will help Matildaville grow
- Some entities will not locate next to others
- All the permits, traffic issues, environmental issues have been taken care of already
- The Mayor has a political interest in the stadium
- Some entities will bring in money, some will not

What else do we need to know?

- What do Matildaville's citizens like to do?
- What does the city need most?
- What are bonds?
- Why is it bad to increase our debt?
- Is gambling considered a leisure activity to Mrs. O'Leary?
- Can undeveloped land ever be developed?
- Why is the community college so big?
- What is the "multiplier effect"?
- Why should we build a medical research center?
- How much are citizens willing to pay for the museum?
- What does "costs must be borne" mean?
- How much are the matching funds?
- What would happen if we didn't provide housing for poor people?

7. Provide Clarifying Lesson #1 on multipliers.

Note that this lesson will help answer students' questions on the Need-to-Know List about the economic effects of various entities on the community and about the multiplier effect. This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See "Economics Review" for background information for this lesson.

Economics Content Note: It is important that students start to see the entities' economic potential and understand what happens in a city with an influx or outflow of money. This can be accomplished using the concept of a multiplier. Students should be able to see how increases/decreases in a city's income cause a chain reaction in spending that can either stimulate economic growth (with an increase in income) or send a city into a recession (with a decrease in income). By the end of the lesson, students should be able to define a multiplier, understand how to compute it, and understand its importance for localities.

Economics Content Note
Use the concept of a multiplier to show students how increases/decreases in a city's income cause a chain reaction in spending that can either stimulate economic growth or cause a recession.

8. Students individually write first Project Log entry, an answer to the following question:

How does the multiplier effect trigger a large change in economic activity in a city, with only a small change in spending?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

9. Review individual Project Log entries to assess understanding of economic concepts.

*For tips on reviewing Project Log entries, see "Use Formative Assessments" in Chapter Two discussion of **Teaching Strategies for Project Based Economics**.*

Economics Content Note

Review Project Log entries to determine if students understand the multiplier effect. They should be able to illustrate how a small spending increase can create a large growth increase through the multiplier effect.

Economics Content Note: The Project Log should be reviewed to determine if students understand how the multiplier operates. Students should be able to illustrate how a relatively small increase in spending can create a large increase in growth through the multiplier effect.

10. Students receive Criteria for Evaluating Entities table, and begin making choices (in small groups).

*The Criteria for Evaluating Entities table may be found in the **Student Materials**.*

Give students a copy of the table—or one per pair, if you wish—and review it with the whole class before students begin their discussion. Point out the note on top from Fred Gonzenbach, asking his economic analysts to complete the table to help him understand their decision. Show students how the table is organized and explain what each column heading means:

- ***Initial cash outlays required by the city*** = Will it cost the city money now to build or finance the construction of an entity?
- ***Short-term cash revenue to city*** = Can the city can collect money right away, before or as soon as an entity begins operation?
- ***Costs borne by the city in future*** = Will the city have to spend money on this entity in the years ahead?
- ***Future economic rewards*** = Will the city gain economic benefits in the future from its investment?
- ***Benefits to city in future*** = Will there be additional benefits to the city, such as greater prestige, employment and leisure opportunities, greater satisfaction about itself?
- ***Multiplier effect on income or employment*** = Will the entity provide

jobs or cause a "chain reaction" leading to more spending on goods and services?

- ***Conflicting with other entities*** = Will other entities refuse to locate nearby?
- ***Conflicting with Mrs. O'Leary's wishes*** = Is the entity going to enrich the community as Mrs. O'Leary (and her living relatives) wanted?

Allow students enough time to work in their groups to complete the table. To save time, you may "jigsaw" this activity so that different groups complete different rows of the table, focusing on only a few entities. Or, you may assign the criteria table as homework.

11. Review Criteria for Evaluating Entities table by discussing it as a whole class.

A teacher's Answer Key to the Criteria for Evaluating Entities table may be found in the ***Teacher Materials****.*

After students have had time to complete the table, have them share their ideas and discuss it as a whole class. This table should generate much debate and discussion among students as to what is a benefit, what is a cost, and what entities adhere to Ms. O'Leary's wishes (e.g., "Since ThetaMax is a factory, does it fit with her wishes?").

Students should be coached to see that the evaluation of benefits and costs is subjective. Note that, for some categories and some entities, the answer is debatable. So many unknowns exist that there are no right answers. Instead, students must be coached to see that they should be able to justify their assumptions and benefit/cost assessments (e.g., "Can you convince your boss, Fred Gonzenbach, that Mrs. O'Leary would think ThetaMax will make Matildaville a community rich in music, art, theater, education, and leisure activities?").

Economics Content Note: It is sometimes difficult for students to identify the economic benefits and costs of each entity. Students must be coached to see the elements necessary to make economic decisions so that they can eventually select entities that make for good investments. For example, the income that ThetaMax generates today counts more heavily than the income that it doesn't generate in the future because income today can be invested to produce more dollars in the future.

Economics Content Note
Students must be coached to see the elements necessary to make economic decisions so that they can eventually select entities that make for good investments.

12. Students receive the memo from Mayor John Okada and review it with you (whole-class discussion).

The memo from Mayor John Okada may be found in ***Student Materials****.*

Provide each student or pair with a copy of the memo, or display it so the class can follow along while it is read aloud.

This memo presents students with a "twist" in the scenario that changes the nature of the problem. The mayor informs his economic analysts that a financial disaster has hit Matildaville. Poor investment choices by the now-former City Treasurer have caused the city to go into huge debt. Now students must narrow their economic focus, instead of choosing entities that benefit all citizens and enrich the community as Mrs. O'Leary wished. Matildaville needs to decide how to use the vacant land to meet ongoing expenses, pay off debt, and invest in economic growth.

13. Students revise Know/Need-to-Know List and Driving Question with you (whole-class discussion).

The memo from the mayor will generate new items for the Know/Need-to-Know List, so revise it now. The Driving Question also will need to be revised, since the problem has changed.

What else do we know?

- The city is in a financial crisis
- City Treasurer Regina Banks has resigned
- We must invest for the future
- We need cash immediately
- We must pay back debt—possibly $160 million
- The O'Leary land can help the situation
- We need to write a report so the Mayor can make a speech
- It will take at least five years to recover
- Interest on city bonds will rise
- The city's ability to borrow funds is limited

What else do we need to know?

- What do interest rates have to do with this problem?
- How does this financial crisis impact our development plan for the land?
- What were the bad investments?
- What is a "highly leveraged investment"?
- What is "bankruptcy"?

- How fast will each entity generate cash?
- How much revenue does the city need to meet ongoing expenses?
- How much do we expect interest to increase?
- How long and in what form should the report be?

The revised (and probably the final) Driving Question should be something like:

> How can we, as **economic policy analysts,** create **an investment strategy for the O'Leary land,** so that **Matildaville can pay its bills today, recover its financial losses, and make investments that will help meet the city's economic needs?**

Potential Hurdle: Students may want more specific information about each entity. How much money will it bring in? How much will it cost to operate? How long will it generate income? How much are the matching funds? Coach students to see that this information will not be forthcoming, consistent with the way that decision-making often occurs in the real world. We constantly must make decisions under uncertainty. We seldom know what the future will bring. If a crisis arises, we may be forced to take action before all of the information is available.

Potential Hurdle
Although students may want more specific info about each entity, coach them to see that this info will not be forthcoming, consistent with how decision-making often occurs in the real world.

14. Provide Clarifying Lesson #2 on investment and growth.

Note that this lesson will further help answer students' questions on the Need-to-Know List about which entities have the most potential for investment and growth.

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See "Economics Review" for background information for this lesson.

Economics Content Note: It is important that students start to see the need for the city to weigh the need for cash today with the need to continue to invest in Matildaville's future to keep it economically healthy. Students must therefore be able to explain the tradeoffs between using resources for consumption today and using resources to invest in the future and how interest rates determine the dollars invested. For this understanding to be complete, students must be able to define investment, rate of return, and interest. They should also be able to demonstrate how interest rates affect present and future consumption, and explain the relationship between investment, productivity, and economic growth.

Economics Content Note
In order for students to be able to explain the tradeoffs between using resources for consumption today or for investing in the future, they must be able to define *investment, rate of return,* and *interest,* as well as demonstrate how interest rates affect consumption and explain the relationship between *investment, productivity,* and *economic growth.*

Coach students to see that interest rates play a dual role in investment decision making. Perhaps most important for this problem is their measure as the price of loanable funds (i.e., the price the city has to pay on bonds to borrow money). This interest rate determines the city's ability to finance capital investments. As Matildaville's credit rating falls with the financial crisis, the price that it will have to pay for financing investments will increase. (No one wants to loan money to someone who defaults on payments unless they are compensated nicely for the risk that they are taking!). As such, the interest rate that the city will have to pay on bonds to finance new construction (for example) will increase. This, in turn, will decrease the resources that the city can devote to investing. This relationship between interest rate and investments represents the city's supply curve for investments.

Interest rates also allocate resources between consumption today and investment in the future.

Tradeoffs exist between 1) using resources to invest in future productivity and economic growth and 2) using resources to provide cash, jobs, and income today. The higher the interest rate (as it measures the rate of return on the investment), the more resources the city of Matildaville will devote to future investments. This relationship between interest rate and investments represents the city's demand curve for investments.

15. Students individually write second Project Log entry, answering the following question:

How does generating revenue for Matildaville today inhibit its potential economic growth?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

16. Review individual Project Log entries to assess understanding of economic concepts.

For tips on reviewing Project Log entries, see "Use Formative Assessments" in Chapter Two discussion of ***Teaching Strategies for Project Based Economics****.*

Economics Content Note: The Project Log entries should be reviewed to determine if students understand how investing in the future may decrease consumption (or revenue for a city) today, but it will increase future economic growth. Project Log entries should also be checked to make sure that students understand the role that interest plays in investment decisions.

Economics Content Note
Review the Project Log entries to determine if students understand that investing in the future may decrease consumption/revenue today, but will increase future growth. Also check for understanding of the role of interest rates in investment decisions.

17. Students finalize Know/Need-to-Know List (whole-class discussion).

Return to the Know/Need-to-Know List at this point and check to see if all important questions have been or can be answered. Coach students to see which items on the list may in fact not be relevant to solving the problem. If any key questions remain on the need to know list, answer them or ask students how they can find answers—or remind them that they have to make a decision without knowing everything.

Review the Driving Question one final time, to be sure it is still accurate.

18. Share supplied rubric with students to guide their work.

*The rubric for the report may be found in "Assessment Tools" in the **Teacher Materials**.*

Give a copy of the rubric to each student, or display it so every student can read it. Discuss the rubric with students to be sure they understand that they will be assessed primarily on their knowledge of economics. Their writing skills, while important, are given less weight on the rubric. If you are altering the rubric's point scheme to conform to your own grading system, be sure to maintain the emphasis on knowledge of economics.

Potential Hurdle: Students are likely to ask how long and in what form the report should be. We have intentionally not specified this, leaving it up to you to decide based on your own particular students. Students could decide for themselves how to do their report. Coach them to see that a report from economic analysts to a city official would be somewhat formal in style and well organized with an introduction, detailed explanations of choices made, and a conclusion that could state next steps and/or questions remaining to be answered. Tables and charts could also be included. At minimum, such a report would be about 500 to 750 words in length.

Potential Hurdle
Base the length and format (formality, inclusion of data tables and charts, etc.) of the report on your own particular students.

Presentation, assessment, and debrief

19. Students decide upon recommendations and write report (in small groups).

Have students meet in their economic policy analyst teams and allow time for them to discuss their solution to the problem. The report could be written by the team, or in pairs, or you could ask each student to write one individually.

Potential Hurdle: Although students may try to find ways to avoid the problem of scarcity, coach them to see that they cannot expand the number of acres available beyond the 96-acre limit. Also remind them that they cannot

Potential Hurdle
Coach students to see that they cannot expand the land past the 96-acre limit, and remind them that they cannot select entities that refuse to operate near the recyled-materials center or corrections facility. Students should understand that these constraints cannot be altered, since they represent those under which individuals, firms, and governments must operate in the real world.

select entities that refuse to operate near the recycled-materials center or the county jail and corrections facility if either of those is selected. *Do not allow students to alter these constraints.* A true understanding of economics must include the knowledge that constraints exist, under which individuals, firms, and governments must operate. If students increase the number of available acres, they are not acknowledging the constraints that exist with scarcity (of land).

20. Students share and discuss recommendations (whole-class discussion).

After students have written their reports, conduct a whole-class discussion of their solutions to the problem. Have students share their recommendations and their reasoning.

Students' solutions should show the need to balance the need for money today with the need to continue to invest in the city's future. Question students if they try to justify a plan in which all entities yield income for the city today but do not contribute to economic growth. Likewise, point out the danger of selecting too many entities that serve only as investments without providing for the city's funding needs today.

Presentation option: If you wish to extend the project, you could also have student teams make an oral presentation to the mayor (with you playing the role) along with, if you wish, a committee or group of advisors representing various stakeholders in the community. This would allow you to ask questions to further assess students' understanding of economics.

21. Use supplied rubric to assess reports.

As you read the students' reports, use the rubric to help you note any areas of weakness that reveal incomplete or incorrect understanding of key economic concepts. Clarify these during the debrief to follow.

22. Conduct debrief to clarify and consolidate students' understanding of key economic concepts (as necessary).

It is critical that the debrief phase of the project not be ignored. This is the time when students, as a whole class, reflect on and receive feedback on both the economic content of the project and the process of solving the problem presented in the scenario. The debrief is in two stages; the first focuses on economics content, and the second focuses on the process of learning in PBL.

Begin the content-focused part of the debrief by discussing how the project helped students better understand economics. The discussion could be guided by questions such as:

- After listening to other students' solutions to the problem presented in the scenario, is there anything that you think you left out or would have done differently?
- What new ideas or economic concepts did you learn in this project?
- What economic concepts do you still not understand?

The economics content-focused debrief is a vital opportunity for clarifying any remaining conceptual misunderstandings evident in student work, or correcting inaccurate statements made during presentations.

Economics Content Note: Students should see that any investment strategy will contain tradeoffs and opportunity costs, so emphasize the following:

Economics Content Note
Students should see that any investment strategy will contain tradeoffs and opportunity costs.

- Entities chosen to operate on the O'Leary land may bring income today, but at the cost of allowing other entities to operate that will provide investments for future economic growth. A tradeoff exists between debt undertaken today and economic growth in the future. (i.e., consumption today and consumption later). This tradeoff helps define investment: bearing of costs today (i.e., giving up consumption today by incurring debt) for benefits in the future.
- When resources are scarce, a tradeoff exists between providing income and jobs today and increasing the productivity of resources (through investments) and increasing income of citizens of Matildaville in the future.
- Interest rates play a role in allocating resources between present consumption and investments for the future. The higher the interest rate, the more money it will cost the city to borrow to invest in the future.

23. Manage student reflection on the 21st-century skills practiced, and the process of learning in PBL.

Students should have a chance to discuss the process of learning in PBL, and to reflect on the 21st-century skills of critical thinking, collaboration, and presentation that they used in the project. This part of the debrief could be done with a series of questions, for example:

- Did you find it to be difficult when there are several possible "right answers" to the Driving Question? Why?
- How does it feel to go through some parts of the project without specific directions, to make some of your own decisions?
- How much do you think you learned in terms of skills like working as a team and making a presentation?

Finally, ask students for feedback on how the project was structured, with questions such as:

- Did you need more resources to help you solve the problem—more lecture time, more readings, more time on the computer?
- Did you need more help in learning how to work together in your group?
- Did you have enough time for each step of the unit?
- Are there any suggestions you would make for improving how the unit is taught?
- Are there any suggestions you would make for improving how the unit is taught?

24. Use supplied multiple-choice test to assess individual students' knowledge of key economic concepts.

*The multiple-choice test for this unit may be found in "Assessment Tools" in the **Teacher Materials**.*

25. Make notes on adjustments to the unit to improve student learning for the next time the unit is taught.

Teachers inevitably recognize how to make *Matildaville* more effective after they have taught it. We encourage you to note these thoughts quickly, so you can review your ideas for improvement the next time you teach the unit.

Teaching Tips

Before a *Project Based Economics* unit is published, it is taught numerous times by experienced high school economics teachers. We include their advice below.

- As noted in Step 20 above, in addition to or instead of writing a report you could conclude the unit by having students:
  - create PowerPoint slides and make an oral presentation to the mayor, played by the teacher. This provides an opportunity to question students to be sure they understand the economics behind their decision.
  - create a page for the city of Matildaville's government website, explaining their policy
  - enact a press conference, with one member of the team playing the role of mayor announcing the policy and the others playing the role of reporters asking questions
- At first, it may appear that this project could be enhanced by providing students with estimates of economic costs and benefits of each entity

(and thereby allow computations of rates of return). However, students could get bogged down with the numbers and lose sight of the economic relationships that underlie the numbers.

Extensions to the Unit

Consider the following economics content-related extensions:

- It is but a short step to equate the local economic growth and level of economic activity in Matildaville to the nation's or a state's economic growth and level of economic activity (i.e., gross domestic product).

Consider the following ways to integrate other subject areas and build on the project:

- *Geography and graphic design/architectural drawing*: Have students create a map showing the proposed development on the O'Leary property. However, be sure that the mapping is begun after the investment strategy has been developed, or students may focus on the geographic issues and not the economic investment strategy.
- *Government/civics*: Link this unit to a government project to help students see how cities work. Students could be asked to participate in local government or community organization meetings.

  Speakers from the local city government could be invited to speak on local economic issues.
- *Interdisciplinary, authentic projects*: After learning the basic economics by completing Matildaville, students could conduct an interdisciplinary project investigating land use in their own community. For example, they could propose ideas for the use of a vacant or converted building or an unused piece of property.

Economics Review

Multiplier Effect

The "multiplier effect," or multiplier, causes a curious feature in local and national economies. A $15 million change in investment spending, for example, can lead to an approximately $60 million change in the output-aggregate income level because spending increases in the current period create economic opportunities for even greater spending increases in subsequent periods.

The multiplier is the ratio of a change in the local economy, or Gross Domestic Product (GDP) at the national level, to the initial change in investment spending that, in our example, causes a change in real income for Matildaville. The multiplier is based on the "fact" that the local economy is characterized by repetitive, continuous flows of expenditures and income through which dollars spent by an individual are received as income by another. This means that any change in income or investment spending will cause both consumption and saving to vary in the same direction. It follows that an initial change in the rate of spending in Matildaville will cause a spending chain reaction which, although of diminishing importance at each successive step, will cumulate to increase income in the City. Thus, because of the multiplier *a relatively small change in the investment plans of business (or the City) can trigger a much larger change in income to Matildaville* (or GDP at the national level). The formula is:

$$\textbf{Multiplier} = \frac{\textbf{change in real income for the City}}{\textbf{initial change in spending or investment}}$$

Note that income for the City, in this case, includes both public and private income. It is equivalent to GDP (= C + I + G) at the national level.

For example, in Matildaville the workers employed at the ThetaMax Weapons Factory, the Sluggers, etc., will receive wages for their efforts. Part of this money (approximately 0.75) will be spent within the City of Matildaville. This spending will generate growth in employment in another sector of the economy, which will generate increased employment and wages and regenerate the cycle. If the marginal propensity to consume (MPC) in Matildaville is 0.75, the initial expenditure of income by a business will generate four times that amount (1/1-mpc) in Matildaville's aggregate income. Remember, MPC is the amount that consumers will spend of an additional dollar that they receive.

Note that the reverse is also true. When Banks took money out of Matildaville's economy, the loss became greater because the decrease in income gives rise to a much larger decrease in economic activity through the multiplier.

Investment, Growth, and Interest Rates

Most of economics begins with the assumption that full employment and full production exists, given the quantity and quality of resources and technology available. Therefore, the level of resources must increase or become more productive, or technological progress must occur before economic growth can occur. We assume that Matildaville was at full employment and full production prior to its financial crisis in discussing the economic problems it faces.

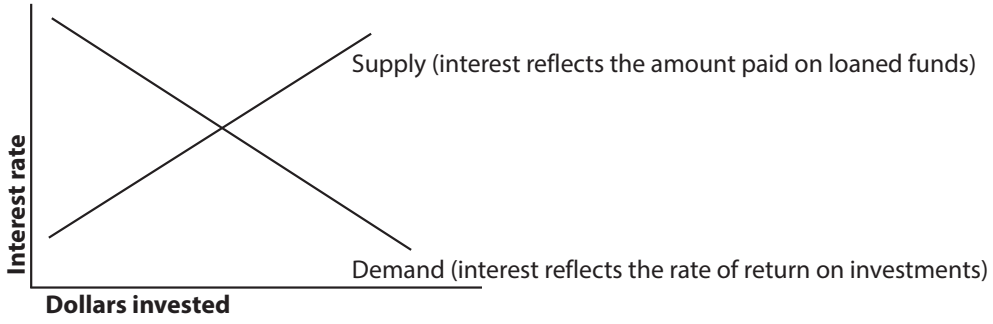
Investment

Investment in resources, human or capital, will occur as long as the rate of return on the investment—the benefit—exceeds the cost of the investment. Interest rates, as the price of investment, represent revenue for the individual who is loaning the funds and a cost for the individual (or city) who is borrowing the funds. This works in much the same way that the price of a good represents revenue to the firm producing it and a cost to the consumer purchasing it.

In terms of investment, tradeoffs exist between 1) using resources to invest in the future, thereby increasing productivity and economic growth, and 2) using resources to provide cash, jobs, and income today. Interest rates are used to allocate resources between consumption today and investment in the future. As interest rates increase, more resources will be devoted to investments, all else equal, because individuals now have a greater incentive to invest money (i.e., the rate of return on investments has increased). This relationship between interest rates and investments represents the city's demand curve for investments.

Interest, as it measures the price of loanable funds, determines the ability to finance investments. As the price of obtaining a loan (interest) increases, fewer investments will be made, all else equal, because borrowers now have to pay more for the money they borrow. This relationship between interest rates and investments represents the city's supply curve for investments.

We can therefore diagram the equilibrium rate of investment within the standard supply and demand framework. The demand for investments decreases as its rate of return (i.e., interest rate) decreases and the supply of loanable funds increases as its return increases.



Economic Growth

For economic growth to occur, we must consider the possibility of investment. That is, "goods for the present" can be traded or invested in "goods for the future." Capital goods, research and education, and preventive medicine (for example) would increase the quantity and quality of property and human resources, and make resources more productive in the future. By choosing to forgo some consumption today and make these investments, Matildaville can achieve economic growth and increase output in the future. In contrast, a city whose current choice of output places less emphasis on "investment" goods and services and chooses to make larger additions to its current stock of revenue will forego future economic growth. The benefit from such a choice is more consumer goods in the present. The opportunity cost is a greater capacity to productive goods and services in the future.

Interest Rate

The interest rate is an extremely important price in allocating present and future goods and services because it simultaneously affects both the level and composition of investment goods production. An increase in the rate of return (interest earned on investment) will increase investment in resources for future production, and vice versa.

Here's an example. If the expected rate of return on additional physical capital is 14% and the required funds that can be secured for its purchase are at an interest rate of 10%, business will be able, in terms of profit, to borrow and expand (i.e., invest) its capital facilities. The benefits from the investment at a rate of return of 14% exceed the cost of undertaking it at an interest rate of 10%. If the expected rate of return on additional capital is only 8% or if the interest rate is 15%, it will be unprofitable for accumulation of more capital goods (i.e., investment) to occur.

The interest rate allocates money to businesses that are most productive because increased productivity means that the rate of return is higher.

Productivity

Another important consideration in economic growth is increased the productivity of resources. Output from existing resources can be increased with productivity gains. In fact, growth in productivity has been the most important force in growth of our real domestic output and national income in recent years. Increases in the quantity of labor account for only about one-third of the increase in real national income in this century with the remaining two-thirds attributable to raising labor productivity. The latter can be viewed as an investment, since much of the productivity gain has resulted from an *investment in human capital* (e.g., increased education and training), which increases the per unit output (i.e., productivity) from labor.

Private and Public Investments

Investment can be defined as expenditures used to improve resources in the hope they generate additional income. While both private firms and the public sector can use today's resources for investment, corporations have more flexibility in financing investments than does the public sector. Private firms can finance investments through either the sale of stocks or bonds, while municipalities such as Matildaville are restricted to the sale of bonds.

Private Investment by Corporations

Private firms use the profit motive to guide investment spending: they invest only when the money invested is expected to make a profitable return. Phrased somewhat differently, the benefits from investments must exceed their cost. Corporations finance their investment activities in three ways. First, a large portion of business activity is financed internally out of undistributed profits. Second, businesses, like individuals, can borrow from financial institutions. Third, common stocks and bonds can be issued.

Stocks and Bonds

A common stock is an ownership share. The household that purchases a stock certificate has the right to vote in the selection of officers in the firm and to share in any declared dividends. In contrast to the ownership value of stocks, a bond purchaser simply lends money to the firm. A bond is merely an IOU in acknowledgment of a loan. In exchange for the loan, the firm promises to pay the bondholder 1) a fixed amount at some specified future date and 2) other fixed amounts—interest payments—every year up to the bond's maturity date. These characteristics of bonds exist whether the issuer of the bonds is a public entity, like Matildaville, or a private entity, such as a business.

Stocks and bonds differ in important ways. First, the bondholder is not an owner of the entity, but is only a lender. Second, bonds are considered to be less risky than stocks because bondholders have a "legally prior claim" upon business earnings. Dividends cannot be paid to stockholders until all interest payments due to bondholders have been paid. As a result, stockholders do not know how much their dividends will be or how much they might obtain for their stock, should they decide to sell.

Bonds and Interest Rates

The purchase of bonds is not risk-free. The market value of the bond may vary over time with the financial health of the business (or city). For example, if a firm or public entity (such as Matildaville) encounters economic misfortunes that raise questions about its financial integrity, the market value of its bonds will fall. If a $1000 bond is sold prior to maturity, it may only fetch $600 or $700 because of the decline in the probability of repayment.

Changes in interest rates also affect the market prices of bonds. Increases or decreases in the interest rates cause bond prices to fall or increase. For example, if you purchase a $1000, 10-year bond today when the interest rate is 10%, you will receive a $100 fixed interest payment each year. If the interest rate increases to 15%, the bond must now be guaranteed at $150 fixed annual payments on the $1000 bond. This is because no one will be willing to pay $1000 for the bond that pays only $100 of interest income annually when new bonds can be purchased for $1000 and yield $150 of annual income.

Public Investments

While firms generate revenue from the sale of goods and services, governments must find other means to finance production of consumption or investment goods. Cities such as Matildaville often rely on bonds to finance expenditures on investments and tax revenues to finance ongoing expenditures. If government spending on consumption goods (e.g., subsidies for school lunches or cars for government officials) occurs through debt (such as bonds), then paying for consumption today has been shifted to future generations. If government spending on investment (e.g., highways, education, or health) occurs through debt, the economy's future productivity capacity is increased. In this case, the resources of future generations may not be decreased. Instead, the composition is changed so there is more public capital and less private capital.

This raises a potentially serious problem with the increase of public debt to finance investment (e.g., through the issuance of bonds). The investment in humans or physical capital by public entities, like Matildaville, may well **crowd out** private investment. That is, deficit financing may increase interest rates and reduce investment spending by private firms. If this should happen, future generations would inherit an economy with a smaller productivity capacity and, thus, be faced with a lower standard of living. This occurs because the impact of an increase in public spending falls on those living when it occurs. In a full employment economy, an increase in government spending will orient current consumption away from private (i.e., business produced) goods and services and toward public goods and services.

Case Studies in Public Financing

Orange County—A Case Study in City Bankruptcy

Many of the issues facing Matildaville are similar to the issues faced by Orange County in 1993 when it declared bankruptcy. Because the debt that Orange County accrued forced decisions about investment and growth that parallel those that you must make about Matildaville, we provide background information about the Orange County bankruptcy.

In 1978, California voters passed Proposition 13, which limited the ability of

local governments to raise taxes and placed strict limits on property taxes. This severely restricted the ability of local governments to generate revenues. In response, governments convinced the state legislature to reduce the restrictions on investments that local governments could undertake. As a result, local governments were permitted to undertake high-risk, high-interest investments. Once Prop 13 placed severe restrictions on traditional methods of financing local governments, the high-yield investments became an attractive alternative for generating revenues.

The county treasurer in Orange County, Bob Citron, was in charge of the county's investment pool. Citron had a track record of providing high-interest income to his local government investors by borrowing money and investing it in derivatives, inverse floaters, and long-term bonds that paid high yields. He continued his pattern of borrowing more money with borrowed money, and by 1994 Citron had borrowed $2 for every $1 on deposit. He took increasing risks in order to raise more interest income for local governments as the state cut tax allocations. Most specifically, as the Federal Reserve Board kept raising interest rates, Citron, who had a hunch that the Fed would lower interest rates at the end of the year, kept buying securities.

By spring 1994, the county had suffered huge losses and did not have the cash to pay back the massive short-term loans to the Wall Street firms from which it had borrowed money. By 1994, county officials realized that Citron had lost about $1.64 billion in government funds through risky investments. The county did not have enough cash on hand to withstand a run on the money owed to Wall Street investors and local government depositors. As a result, they sought and secured Citron's resignation.

County officials tried to sell risky securities. Banks that had loaned Citron money threatened to seize the securities from the county pool that was held as collateral. After the first bank took this action, the county government declared bankruptcy as a way of halting other funds from being seized by Wall Street lenders and local government depositors. As a consequence, funds that had been part of the investment pool were frozen in 29 of the 31 cities in Orange County, all of its school districts, and most of the transportation, water, and sanitation agencies.

During the period immediately after the bankruptcy, county supervisors tried to keep the county government functioning. At the same time, they attempted to limit a financial depletion of the county pool of money, which was vulnerable to further income loss if interest rates rose again. Officials from schools, cities, and special districts sought to assess the damage that the bankruptcy inflicted on their operations. Immediately, the county's credit rating fell to "junk" status.

Quickly, the county government took several immediate steps to stabilize the situation:

- Risky investments were sold, and the loss was stabilized at $1.64 billion.
- Local governments were allowed to withdraw some of their funds from the pool on an emergency basis.
- County programs received the funding that they needed to operate, and a first round of budget cuts was implemented.

In March 1995, the County Board of Supervisors placed on the ballot a proposal for a half-cent sales tax increase as part of the financial recovery plan. The supervisors took this action because an additional $1 billion in bonds was coming due in the summer and the county had no way to borrow money to repay the bonds. In overwhelming numbers, however, local voters defeated the sales tax increase. The state governor refused to bail out the county and threatened a state takeover. Bond investors agreed to roll over the county's debts for another year in exchange for more interest earnings (i.e., interest rates increased).

By the end of 1995, the county diverted tax funds from other county agencies to the general fund so that the county could borrow the money to pay bondholders and vendors. Local governments that had lost money agreed to wait for resolution of the county's lawsuits against Wall Street firms to be paid back in full. By mid-1996, the county government had sold the $880 million of county bonds at a loss so that it could pay off its debts. The Orange County bankruptcy officially ended on June 12, 1996.

Results of the bankruptcy are far reaching:

- The county government had to take on a large level of long-term debt to resolve its fiscal problems.
- The county's bonds are rated as speculative, meaning that the county pays a high cost for borrowing money (i.e., interest rates on bonds are relatively high).
- Local governments are still owed money from the county pool and remain about $850 million short.
- Services to the county's poor were cut drastically and never fully restored.
- The local governments are severely limited in their ability to respond to current needs or to plan for the future.

The Oakland Raiders—An Example of Misinformation and Miscalculations in the Public Sector

In 1995, the city of Oakland and the County of Alameda hastily approved a record $198 million deal to return the Raiders football team to Oakland and to renovate the aging Coliseum stadium. Citing an outdated survey on fan support, politicians argued that sufficient support from fans existed to pay the debt on the bonds issued for the deal by using "personal seat licenses" (PSLs) with which fans can assure their place at the games by paying to reserve a specific seat. On the contrary, the entire deal has been losing money since its inception.

Problems include:

- PSLs never gained their predicted popularity. As of 1998, many fans who initially purchased PSLs did not opt to renew their plans.
- As of 1998, the team has yet to have a winning season, making it difficult to sell PSLs and to fill the stadium.
- When the city and county sued the Raiders, the team counter-sued and alleged that Oakland lured them back unfairly.
- In fiscal year 1997–1998, shared payment for debt on the deal cost the city and county $16 million. The cost for 1998–1999 is expected to be a combined $21 million, a figure that could escalate when legal cases are settled.

Concept Definitions

The curriculum is designed to teach the following concepts:

Economic growth: The amount by which the stock of resources changes

Income: The flow of money that accrues to an individual, group, or firm over some period of time. It may originate from land (called rent), labor (called wages), capital (called interest), or productive resources (called profit). It may also stem from sources outside of the market (e.g., gifts) or it may be in-kind (e.g., company car).

Interest rates: The price of loanable funds, which is usually expressed as annual percentage and measures the yearly cost of borrowing. The price paid per dollar borrowed per period of time.

Investment: An expenditure, usually on capital goods, that involves an initial sacrifice followed by subsequent benefits. Investments can be made by governments (**public investment**) or by private individuals or businesses (**private investment**).

Multiplier: The ratio of the change in (the City's) aggregate income that results from a change in expenditures

Nominal interest rates: The interest rate taken at its face value (that is, the interest rate expressed in current dollars not adjusted for inflation)

Opportunity costs (**indirect costs**): The real sacrifice involved in achieving something. The value of the next best opportunity that is foregone in order to achieve a particular thing.

Productivity: A measure of average output or real output per unit of input

Public debt: The total amount owed by the government (to the owners of government securities). It is equal to the sum of the past budget deficits (less budget surpluses).

Real interest rates: The actual return to capital. Because comparing nominal interest rates includes a purely monetary component, the value of the rate must be purged of changes in prices to be compared over time. It is the rate obtained after eliminating the element of price change.

Resources: Land, labor, capital, or entrepreneurs used to produce other things to satisfy humans' wants

Scarcity: A condition where less of something exists than people would like if the good had no cost. Scarcity arises because resources are limited and therefore cannot accommodate all of our unlimited wants.

Tradeoff: An exchange relationship denoting how much of one good (or resource) is needed to get another good (or resource)

Uncertainty: More than one possible outcome to a particular course of action. Although the form of each possible outcome is known, the probability of getting any particular one of the outcomes is not known.

Teachers can also demonstrate the following concepts using this lesson:

Bond: An IOU, in acknowledgment of a loan, whereby the corporation or government promises to pay the holder a fixed amount at some specified future date and other fixed amounts (interest) every year up to the bond's maturity date

Crowding out: When the government borrows money, the associated rise in interest rates decreases planned investment spending by private firms and individuals. As a result, government expenditures are said to "crowd out" those by private firms.

Present value: The value of a sum (or sums) of money that will be obtained in the future. Money now is worth more than money in the future (time value of money), both because of uncertainty and because money accrued today could be invested to produce greater sums of money in the future. As a result, today's worth of money that will be obtained in the future must be discounted by a rate of interest equivalent to the rate at which it could be invested.

Rate of return: The price earned on an investment.

Tax: A compulsory transfer of money from individuals, institutions, or groups to the government, which may be based on either wealth or income or as a surcharge to prices

Time value of money: Because preference is for current as opposed to future consumption, an individual (firm or institution) must be compensated for loss of current consumption. For example, suppose we asked an individual, "If you were to give me $100 today in exchange for a promise to pay you a sum of money in one year's time, what would that sum of money have to be to compensate you for the loss of the current consumption (without inflation)?" An answer of a dollar value greater than $100 indicates that the individual has a preference for present consumption because he or she must be compensated for the loss of current consumption. An answer of $100 indicates that the individual has no preference between present and future consumption. An answer of less than $100 indicates that the individual has a preference for future consumption.

Assessment Tools

Rubrics

We have provided a rubric for each major product or performance required in this unit. All rubrics may be used as written, or adapted by the teacher to fit particular needs. Rubrics serve two major purposes. First, they provide guidance to students, describing the characteristics of good quality work—and because of this, rubrics should be shared with students while they are preparing how to demonstrate what they have learned. Second, rubrics provide teachers and others with a framework for assessment and feedback.

We have divided our rubrics into three levels of quality. If teachers wish to express these levels on a numeric point scale, we suggest that "Exceeds Standards" equals a 4 or 5, "Meets Standards" equals a 3, and "Does Not Meet Standards" equals a 1 or 2. We intentionally did not include a scoring system based on percentages or letter grades, since evaluation and reporting methods vary greatly among teachers. However, we have suggested what we believe to be the proper weight given to each category, with the emphasis on the application of content knowledge.

The rubrics for each unit do not include extensive detail about the qualities of a good oral presentation, or of good writing and other products such as electronic media. Rubrics for writing and other media products may be found in various print resources and websites, or developed by teachers, schools, and districts.

Answer Key to *Criteria for Evaluating Entities* Table

Entity	Acres	Initial cash outlays required by city?	Short-term cash revenue to city?	Costs borne by city in future?	Future economic rewards?	Benefits to city in future?	Multiplier effect on income or employment?	Conflicting with other entities?	Conflicting with Mrs. O'Leary's wishes?
Community College	70	No	No	Yes—increased debt	Yes	Yes—more productive workers	Yes	No	No
County Jail and Corrections Facility	18	No	No	No	Yes	Yes—jobs	Yes	Yes	Yes
Rose Casino	8	No	Yes (taxes)	Maybe	No	Maybe	Yes	No	Maybe
Museum of Modern Art	5	Maybe	No	No	No	Yes—arts to appreciate	Not much	No	No
Recycled-Materials Center	18	No	Yes, revenue	No	Yes	Yes—revenue	Yes	Yes	No
Municipal Golf Course	65	Yes	No	No	No	Yes—golfing	Not much	Yes	No
Medical Research Laboratory	18	Yes	No	Yes—increased debt	Yes	Yes—jobs and research monies	Yes	No	No
Youth Center and Skateboard Park	5	Yes	No	Yes	No	Yes—skate-boarding	No	Yes	No
Professional Baseball Stadium	18	Yes	No	Maybe	Yes	Yes—jobs	Yes	Yes	No
O'Leary Housing	5	No	No	Maybe (if value of neighbors drops)	No	Yes/No	Not much	Maybe	No
High-Rise Office Building	7	Yes ??	No	No	Yes	Yes—taxes	Yes	No	No
Preservation Park	18	Yes (little)	No	Yes (little)	No	Yes—relaxation	No	No	No
ThetaMax Weapons Factory	70	No	Yes	Yes	Yes (5 years only)	No	Yes	No	Yes
Leftover land		No	No	Opportunity costs	n/a	Maybe	No	No	No

Matildaville: Rubric for Report on Investment Strategy for Land Development

Component and the Recommended Value	Exceeds Standards (score 4–5)	Meets Standards (score 3)	Does Not Meet Standards (score 1–2)
Definition of the Problem (10%) ***Key Aspects:*** *(from first memo)* • Fulfill the wishes of Mrs. O'Leary • Meet the needs of the citizens of Matildaville • Create a well-rounded community *(after memo from mayor)* • Consider the long run and short run costs and benefits of investments • Meet the economic growth needs of Matildaville	Describes the problem clearly, accurately and completely in all aspects	Describes the problem clearly and accurately in most key aspects	Does not describe the problem clearly, accurately and/or completely in one or more key aspects
	Solution to the problem is completely consistent with the scenario as presented; the parameters of the problem have not been altered and/or facts "made up" to avoid grappling with key aspects of economics	Solution to the problem is generally consistent with the scenario as presented; the parameters of the problem have not been altered and/or facts "made up" to avoid grappling with key aspects of economics	Solution to the problem is not consistent with the scenario as presented; the parameters of the problem may have been altered and/or facts "made up" to avoid grappling with key aspects of economics
Explanation and Defense of Investment Strategy (75%) ***Key Points:*** • The multiplier effect of decisions made • The effect of interest rates on economic growth and development • Investment potential realized, including the long-run and short-run costs and benefits of decisions • The need to balance community needs today while ensuring future economic growth and maintaining cash flow	The investment strategy is explained clearly and defended with plausible, realistic and accurate applications of economic theory, including a detailed discussion of all key points	The investment strategy is explained clearly and defended with plausible, realistic and accurate applications of economic theory, including a discussion of most key points	The investment strategy is not explained clearly; it may be unrealistic or use inaccurate economic theory and/or vocabulary; most or all key points are omitted
Quality of Writing (15%)	The report is well organized, with a clear introduction, detailed supporting paragraphs, and an effective conclusion	The report is organized, with an introduction, supporting paragraphs, and a conclusion	The report is not well organized, and may be missing a clear introduction, detailed supporting paragraphs, or a conclusion
	Writing uses a professional tone, clear and persuasive language, and is free of mechanical and grammatical errors	Writing uses an appropriate tone, clear language, and is free of significant mechanical and grammatical errors	Writing uses an inappropriate tone, unclear language, and/or has significant mechanical and grammatical errors

Test for *Matildaville*

Answer Key

1. Which of the following is an example of scarcity in the city of Matildaville?
   - (A) There is not enough land to build all the proposed projects
   - B Wages are so low it is hard to hire workers
   - C Building costs are so high, it will cost a great deal to build the projects
   - D Profit margins for business are low

2. For the city of Matildaville, you evaluated the costs and benefits of different projects. The willingness to give up some benefits in order to receive others is called:
   - (A) tradeoffs
   - B scarcity
   - C crowding out
   - D profit maximization

3. Which of the following most accurately describes the economic tradeoffs you faced as a member of the Economic Analyst Team for the city of Matildaville?
   - A Financial cost vs. cultural considerations
   - B Environmental cost vs. economic value
   - C Public wishes vs. long term economic growth
   - (D) all of the above

4. The mayor of the city of Matildaville is worried about debt of the city because he:
   - A does not understand that everyone lives on credit
   - B believes it will affect the tax-exempt status of his bonds
   - (C) believes that the city's cost of borrowing will rise with increased debt
   - D believes that the city's cost of borrowing will decline with increased debt

5. To produce goods and services, businesses:
   - (A) combine resources
   - B combine costs
   - C combine outputs
   - D combine efficiencies

6. The limit of an economy's potential output is set by:
   - (A) the quantity and quality of labor, capital, and natural resources
   - B business demand for final goods and services
   - C government regulations and spending
   - D the amount of money in circulation

7. An *opportunity cost* of a recycled-materials center in the city of Matildaville is:
   - (A) the golf course that could have been built on the same property
   - B the revenue gained from users of the center
   - C the cost of paying workers to pick up materials
   - D the cost of cleaning up smelly air

8. An interest rate refers to the:
   - A amount of money loaned
   - B value of money
   - C level of community interest in public works projects
   - (D) cost of borrowing money

9. Economists recommend businesses hire workers who are residents in a city where they work because these workers:
   - A are more reliable than non-residents
   - (B) are more likely to spend money in the city than non-residents
   - C work harder than non-residents because they have pride in their city
   - D don't contribute to pollution

10. How would an *economist* weigh the importance of the cultural and financial value of new projects?
    - A Cultural values are more important because they determine the quality of our life
    - B Financial values are more important because they determine the health of the economy
    - (C) It depends upon the relative costs and benefits of the project
    - D Both financial and cultural values are equally important

11. Borrowing to build the city of Matildaville community college would likely:
    - (A) raise interest rates
    - B lower interest rates
    - C keep interest rates the same
    - D would not involve interest rates

12. Interest rates are a cost of doing business because:
    - A interest rates vary depending on the community support for their project
    - (B) interest rates determine the cost of borrowing money
    - C the greater the interest in the project, the greater the probability of success
    - D revenue is a function of interest rates

13. When Ms. O'Leary willed the city of Matildaville 96 acres of land, she:
    - (A) increased the resources available to the city
    - B decreased the resources available to the city
    - C left unaltered the resources and their use
    - D the effect on resources is unknown

14. If the city of Matildaville decides to construct a community college, this will:
    - (A) likely cause the number of jobs to increase
    - B likely cause the number of jobs to decrease
    - C not affect the number of jobs
    - D only affect jobs at the community college

15. When a government chooses to build a project, *opportunity costs* are based on:
    - A the economic benefit of the other possible projects
    - B the cultural values other possible projects provide
    - C the economic benefit of the most valuable of the other possible projects
    - (D) all of the above

16. A local 10 million dollar construction project would be expected to:
    - (A) increase local aggregate income by more than $10 million
    - B increase local aggregate income by less than $10 million
    - C increase local aggregate income by exactly $10 million
    - D have no effect on local aggregate income

17. Economists expect investment in capital to:
    - A lead to lower future growth
    - B not have an impact on growth
    - (C) lead to higher future growth
    - D cannot be determined

18. The *opportunity cost* of a new public high school is the:
    - A money cost of hiring teachers for the new school
    - B cost of constructing the new school at a later date
    - C change in the annual tax rate to pay for the new schools
    - (D) other goods and services that must be given up to build the new school

19. Building the city of Matildaville's community college has:
    - A immediate benefits because people would be hired to build and run the institution
    - B long term benefits because college graduates they will offer a well-trained labor force
    - C immediate costs for building the college
    - (D) all of the above

20. Using the table below, when investment is 20 and the change in aggregate income is 40, the multiplier is:
    - (A) 2
    - B 3
    - C 5
    - D 10

Multiplier	Investment	Change in aggregate income
6		300
	20	40
3	40	

21. Use the table above to determine the change in aggregate income when the multiplier is 3 and the investment is 40:
    A 70
    B 95
    (C) 120
    D 140

22. Building the baseball stadium in the city of Matildaville would likely have the following effect on the market for loanable funds:
    A Interest rates would fall
    (B) Interest rates would rise
    C Corporations would raise their level of investment spending
    D The price of the city's bonds would go up

23. Government economic advisors usually take into account the following criteria when making recommendations for new public projects:
    A The economic benefit of the project
    B The opportunity cost of the project
    C The impact on business investment
    (D) all of the above

24. Which of the following best describes the possibilities for developing the city of Matildaville?
    (A) Different projects require different amounts of land, labor, and capital
    B All projects require increased resources in the long term
    C All projects require reduced resources in the long term
    D All projects require the same amounts of land, labor, and capital

Entry Document: Memo From Fred Gonzenbach

Interoffice
MEMORANDUM

To: Economic Analyst Team

From: Fred Gonzenbach, Director, Matildaville Community Economic Development Agency

Subject: Appropriate Entities for Land Development

CC: Mayor's Office

As I explained to you briefly at our staff meeting last week, you have the exciting task of determining what we should do with the property bequeathed to the city by the late Mary O'Leary. Mrs. O'Leary left us 96 acres of undeveloped land near the central business district of Matildaville. This land once surrounded her grandfather's mansion and was never rebuilt. Currently, the land is vacant and not producing revenue. City Treasurer Regina Banks has assured us that the city's stable financial situation means we can use this land for whatever purposes we choose.

As the Economic Analyst Team for the Community Economic Development Agency, you will be expected to make a recommendation for the use of the land. I expect your usual analysis of the land's potential, including its ability to generate cash today, requirements of initial cash outlays, benefits and costs that may accrue in the near future, and potential for investment. Remember that the entities eventually occupying this land also must reflect Ms. O'Leary's wish for Matildaville to remain a thriving and well-rounded community. She was committed to maintaining a community rich in music, art, theater, education, and leisure activities.

Our citizens are happy with the current social and economic climate in Matildaville and wish to remain what we are—a medium-sized Midwest city of about 250,000 residents within a surrounding area of about one million people. Our unemployment rate approximates the "natural" rate. While many of our wealthier citizens would like Matildaville to become a more sophisticated city known for the arts and culture, our less fortunate citizens emphasize a wholesome family environment and a strong economy that provides steady employment.

You will soon be receiving a list of entities that could be developed or want to operate on this land. Once you have reviewed the list, please prepare a written report that includes your selections of the appropriate entities for the land. Please explain in your report why you chose each entity.

Second Memo and List of Potential Entities

Interoffice
MEMORANDUM

To: Economic Analyst Team

From: Fred Gonzenbach, Director, Matildaville Community Economic Development Agency

Subject: Appropriate Entities for Land Development

Attached is a list of potential entities that have applied for use of land left to us by Mary O'Leary. The list contains comments by the Citizens' Task Force, which included members of the O'Leary family. You also will see the acreage required and cost estimates. As you will see, some entities will contribute to Matildaville's economy today, and some will provide solid investments for the city's future. Some will continue to build our economy through the multiplier effect, and some will help us become a thriving, well-rounded community.

Please note the following:

- The Museum of Modern Art, the professional baseball team, the golf course, and the youth center all refuse to locate on the land if it contains either a recycled-materials center, or a county jail and corrections facility
- Many of these entities must be financed with city funding to begin operation. However, the usual ways in which this can occur—bonds or taxes—have drawbacks, as you know. Issuing bonds will increase our debt, and the voters and business community will not approve of tax increases.
- The acreage needed by each entity is exact and cannot be altered—nor can other entities be added to the list
- The city cannot sell the land, but we can leave a portion undeveloped
- Each entity has a well-developed, pre-approved plan for construction and landscaping and will be given all of the necessary permits
- Concerns about such things as traffic flow and parking have been taken into consideration when approving plans
- No additional environmental impact reports are needed for the entities
- It is estimated that each entity could be at full operating capacity within one to two years, although some have costs that must be borne by the city before operation can begin

Potential Entities for O'Leary Land

Statements Summarized and Analyzed by the O'Leary Land Citizens' Task Force

Matildaville Community College

The college will provide two-year associate degrees as well as licensing programs in nursing, auto mechanics, and computer technology. Once the community college is up and operating, tuition and subsidies from the state and federal governments will offset its costs.

Acres required: 70

Initial cash outlays by the city: high

Pros: The college will bring the community immediate benefits by providing job opportunities for teachers, administrators, and staff. Once students graduate, Matildaville will have a well-trained labor force. This resource will attract new businesses to the city, and help existing businesses expand their labor pool. Rates of return on community college degrees are estimated at 15 percent for the city, primarily because graduates of the college will be more productive with additional education.

Cons: The community college will require initial cash outlays for buildings, equipment, and staffing. In order to raise these funds, the city must increase public debt by issuing bonds.

County Jail and Corrections Facility

The governor has requested acreage to build a new county jail and corrections facility in Matildaville.

***Acres required*:** 18

Initial cash outlays by the city: none

Pros: The jail and corrections facility will generate construction jobs initially and provide hundreds of relatively high-paying jobs as guards, social workers, and service workers once the facility is in operation. All construction, operating, and maintenance expenses will be paid by the state government.

Cons: Many firms and organizations will not want to locate near a jail and corrections facility. Many people will have a "Not in My Back Yard" (NIMBY) attitude, citing concerns for safety and beliefs that such a building would detract from the beauty of downtown Matildaville.

Rose Casino

The Rose Company will build a hotel and a gambling casino to operate for five years.

Acres required: 8

Initial cash outlays by the city: none

Pros: The tax revenues generated for the city will greatly increase its capacity to expand public services, and the Rose Company will employ many of Matildaville's citizens in its hotel and casino. Because the city retains rights to any improvements on property, the hotel and casino buildings will become city property when the casino closes.

Cons: Unfortunately, the powerful Citizens Against Gambling (CAG) interest group will likely convince the state to limit gambling by establishing gambling-free zones in five years, which will include all medium-sized and large cities. As a result, tax revenues to the city from the casino may accrue only for five years. Because hotels in Matildaville are currently underutilized, there may be little use for the hotel and casino buildings once they are vacated. As a result, the city will bear substantial costs to convert the buildings to alternative uses once they are vacated. Also, Mrs. O'Leary was a member of CAG and shared their belief that casinos are harmful to a community, increasing crime, alcohol and drug abuse, and gambling addiction which often hits lower-income people the hardest.

Museum of Modern Art

Mrs. O'Leary's fondest wish was to build an internationally known museum of modern art to house her extensive collection of paintings and sculptures by several modern masters.

Acres required: 5

Initial cash outlays by the city: moderate to low

Pros: The museum would be a dream-come-true for art lovers, bringing international recognition to Matildaville, and providing culture to the city's residents. Monies from patrons of the arts would partially offset construction costs, and admission and membership fees will make it possible for the museum to break even once it is operating.

Cons: The city would have to pay for some of the construction costs and would not be paid for use of the land or receive any revenue. Apart from the general feeling of civic pride that their city has major art museum, the majority of Matildaville's residents might not actually visit the museum very often.

Recycled-Materials Center

The state would like to build a recycled-materials center in Matildaville, which would include special handling of materials such as computers and other electronic devices, appliances, and hazardous materials. The facility would be used by other cities and the entire region.

Acres required: 18

Initial cash outlays by the city: none

Pros: The city will not incur any costs to build and maintain the recycling center and will make $15 million a year from the state and other communities who use it. Some jobs will be provided, and revenues will accrue over the entire 20-year period that the facility is in operation.

Cons: Some other potential users of the O'Leary land will not locate near a recycling center. Many citizens will have NIMBY attitudes, fearing that the facility would be noisy, foul-smelling, environmentally harmful, and generally not an attractive place.

Municipal Golf Course

The plans call for a beautifully landscaped, regulation nine-hole course that will meet the strictest environmental standards.

Acres required: 65

Initial cash outlays by the city: moderate

Pros: A golf course in the center of town will provide leisure activity for residents and appeal to visiting business people and tourists. Once the golf course is built, user fees will offset maintenance costs so that operating expenses will not be borne by the city.

Cons: Public debt would be increased in order to finance the construction of the course. No revenue and few jobs would be provided.

Medical Research Laboratory

The medical laboratory was of primary interest to Mrs. O'Leary and her family. The laboratory would be devoted to researching and developing treatments and cures for major childhood diseases.

Acres required: 18

Initial cash outlays by the city: moderate

Pros: The research lab will bring prestige to the community, provide high-paying jobs to professionals, train individuals for technical positions in health, and increase medical knowledge for society as a whole. Matching federal grants will help finance the building of the laboratory, and research grants will bring additional revenue into the community. Economic benefits in the future are virtually guaranteed because of the growing emphasis on health care in our society.

Cons: The city will have to match the funds provided by the federal government. No direct revenue, beyond tax revenues, will be gained.

Youth Center and Skateboard Park

The youth center will provide middle school and high school age youth with a place to go, appealing activities, a "snack shack" with video games and Internet access, and a homework tutoring center. Adjacent to the center will be a skateboard park and space for live music and other performances, parties, and special events.

Acres required: 5

Initial cash outlays by the city: moderate

Pros: Families will be attracted to a city that maintains wholesome activities for young people.

Cons: The youth center must be financed with bonds and maintained by revenues generated from payment for activities that it offers. It is expected that these revenues would be enough to sustain a self-supporting youth center but would not generate additional money for the city.

Professional Baseball Stadium

One reason for the mayor's victory in the last election was his promise to bring a professional baseball team to Matildaville. The mayor cannot reveal the name of the team yet, but he assures us that a team has voiced an interest in coming to Matildaville once the city has a stadium that meets their needs.

Acres required: 18

Initial cash outlays by the city: high

Pros: A professional baseball team would bring recognition and pride to the city, jobs for citizens, and revenue to the city from luxury boxes, concessions, and advertising rights.

Cons: Public debt would be increased in order to finance the building of the stadium. The revenue generated from the luxury boxes is uncertain as it is dependent upon their purchase by high-profile businesses and high-income individuals.

O'Leary Housing Development

Low-cost housing will be developed to provide low-income members of the community, including the elderly, with a safe and attractive place to live. Matildaville currently does not have enough of this kind of housing to meet its needs.

Acres required: 5

Initial cash outlays by the city: none

Pros: Low-income housing is a responsible, good-will effort by the city to help its less fortunate citizens. Construction and maintenance costs will be borne by the federal government. Many of the less-skilled workers who will live there are a source of labor for firms providing service sector jobs.

Cons: Low-income housing projects around the country are plagued with public and individual safety concerns. Their negative public image invokes the NIMBY response in many of Matildaville's higher-income citizens. Should this attitude develop, other properties near the housing may become unattractive to businesses and citizens, and decline in value.

High-Rise Office Building

This building would house some of Matildaville's most financially viable firms and provide space for the growth and development of businesses new to the city. A corporate development firm would pay for the construction of the building.

Acres required: 7

Initial cash outlays by the city: moderate

Pros: By adding new office buildings for lease to its existing supply, the city would reduce the cost of office rentals. This would attract new businesses to the city and provide more job opportunities for the citizens of Matildaville. Substantial new tax revenues would be generated.

Cons: Because corporations are reluctant to invest in real estate in Matildaville, with the city's lack of history of business development, the city must subsidize development by offering investors low interest loans.

Preservation Park

The park will preserve the last remaining natural area near the city center, including old groves of trees, part of Squirrel Creek, and animal habitat. The park will provide visitors with a quiet place to visit and picnic, jogging and nature trails, and large play area for children.

Acres required: 18

Initial cash outlays by the city: low

Pros: Many citizens would enjoy visiting the park and families would find it attractive. The park is a high priority for environmentalists who support the mayor's reelection. Mrs. O'Leary—echoing her grandfather's wishes—was a strong supporter of the effort to maintain a natural habitat in the city's center.

Cons: Costs for building new facilities and maintaining the park must be borne by the city.

ThetaMax Weapons Factory

The ThetaMax Corporation is looking for a temporary site to build a military weaponry research, development, and production facility. It has been awarded several major contracts from the U.S. government and others. ThetaMax soon will build a new, larger factory 50 miles from Matildaville, to replace its old factory just outside city limits.

Acres required: 70

Initial cash outlays by the city: none

Pros: ThetaMax will pay the city $25 million over five years to use the property. The factory will provide more than a thousand new well-paid skilled and unskilled jobs, and also will allow most of the firm's current employees to stay in Matildaville.

Cons: Once the factory is vacated after five years, in order to re-use the land the city would need to spend substantial amounts of money to restore the land to an environmentally sound state, since factories of this type use toxic substances.

Leftover Land

Land can be left undeveloped.

Pros: No debt would be incurred because there would be no development costs. As a result, interest rates on bonds would be less likely to rise than they would if the city has to borrow money for development. Land could be saved for future use.

Cons: The opportunity cost of leaving land undeveloped (i.e., not investing in development) can be high. Money is foregone both today and in the future because the land is left idle.

Criteria for Evaluating Entities

This would help me understand the reasons for your decision about how to use the O'Leary land. Answer questions with a "Yes," "No," or "Maybe." —F. Gonzenbach

Entity	Acres	Initial cash outlays required by city?	Short-term cash revenue to city?	Costs borne by city in future?	Future economic rewards?	Benefits to city in future?	Multiplier effect on income or employment?	Conflicting with other entities?	Conflicting with Mrs. O'Leary's wishes?
Community College									
County Jail and Corrections Facility									
Rose Casino									
Museum of Modern Art									
Recycled-Materials Center									
Municipal Golf Course									
Medical Research Laboratory									
Youth Center and Skateboard Park									
Professional Baseball Stadium									
O'Leary Housing									
High-Rise Office Building									
Preservation Park									
ThetaMax Weapons Factory									
Leftover land									

Memo From Mayor John Okada

From the Desk of the Mayor

To: Economic Analyst Team
From: John Okada, Mayor
Subject: Pending Financial Crisis
CC: Fred Gonzenbach, Director, Matildaville Community Economic Development Agency

As you know, last night I announced the resignation of our City Treasurer, Regina Banks. Her resignation came after it was disclosed that many of the companies with which she had made highly leveraged investments had filed for bankruptcy. The loss of funds cost the city over $160 million, about 40% of our annual budget. The probability of recouping these funds is extremely small. Repayment of the debt will take at least five years and will require unpleasant sacrifices to get the city back on its feet. Debts of this magnitude will throw the city into a financial crisis, as you well know. Interest rates on city bonds will rise. This will affect our ability to borrow money to finance public sector projects and will send a negative signal to businesses about our economic stability.

During these hard times, we must meet three types of needs. First, unless we raise cash immediately, we will not be able to meet current ongoing expenses (e.g., city payrolls, public services). Second, we must pay off this debt in the near future without dramatically increasing the interest that we must pay on our bonds. As you know, an increase in interest rates increases the cost of investment, which would curtail our ability to invest in Matildaville's future and limit economic growth. Third, we must make investments to build a solid economic future for the city. I realize that investing in the future reduces current spending but, unless we improve economic prospects in Matildaville, businesses will leave.

We must develop a sound investment strategy that meets the city's needs immediately. The only potential for this comes from Mary O'Leary's bequest. By carefully planning and developing her land, we can raise the cash necessary to operate the city and build investments that will generate growth in the future. This means that the opportunity cost of not developing her land are high, as you know. We must not waste these opportunities.

I must therefore have a written summary of your investment strategy for developing Mrs. O'Leary's property on my desk ASAP. The plan must include a solid defense of its potential for meeting the economic needs of the city that are outlined above. If your strategy meets my approval, I will use your report as the basis for a press release and a speech to business leaders.

Name: _____ Date: _____

Test for *Matildaville*

Please circle the letter of your answer.

1. Which of the following is an example of scarcity in the city of Matildaville?

   A There is not enough land to build all the proposed projects
   B Wages are so low it is hard to hire workers
   C Building costs are so high, it will cost a great deal to build the projects
   D Profit margins for business are low

2. For the city of Matildaville, you evaluated the costs and benefits of different projects. The willingness to give up some benefits in order to receive others is called:

   A tradeoffs
   B scarcity
   C crowding out
   D profit maximization

3. Which of the following most accurately describes the economic tradeoffs you faced as a member of the Economic Analyst Team for the city of Matildaville?

   A Financial cost vs. cultural considerations
   B Environmental cost vs. economic value
   C Public wishes vs. long term economic growth
   D all of the above

4. The mayor of the city of Matildaville is worried about debt of the city because he:

   A does not understand that everyone lives on credit
   B believes it will affect the tax-exempt status of his bonds
   C believes that the city's cost of borrowing will rise with increased debt
   D believes that the city's cost of borrowing will decline with increased debt

5. To produce goods and services businesses:

   A combine resources
   B combine costs
   C combine outputs
   D combine efficiencies

6. The limit of an economy's potential output is set by:

   A the quantity and quality of labor, capital, and natural resources
   B business demand for final goods and services
   C government regulations and spending
   D the amount of money in circulation

7. An *opportunity cost* of a recycled-materials center in the city of Matildaville is:

   A the golf course that could have been built on the same property
   B the revenue gained from users of the center
   C the cost of paying workers to pick up materials
   D the cost of cleaning up smelly air

8. An interest rate refers to the:

   A amount of money loaned
   B value of money
   C level of community interest in public works projects
   D cost of borrowing money

9. Economists recommend businesses hire workers who are residents in a city where they work because these workers:

   A are more reliable than non-residents
   B are more likely to spend money in the city than non-residents
   C work harder than non-residents because they have pride in their city
   D don't contribute to pollution

10. How would an *economist* weigh the importance of the cultural and financial value of new projects?

    A Cultural values are more important because they determine the quality of our life
    B Financial values are more important because they determine the health of the economy
    C It depends upon the relative costs and benefits of the project
    D Both financial and cultural values are equally important

11. Borrowing to build the city of Matildaville community college would likely:

    A raise interest rates
    B lower interest rates
    C keep interest rates the same
    D would not involve interest rates

12. Interest rates are a cost of doing business because:

    A interest rates vary depending on the community support for their project
    B interest rates determine the cost of borrowing money
    C the greater the interest in the project, the greater the probability of success
    D revenue is a function of interest rates

13. When Ms. O'Leary willed the city of Matildaville 96 acres of land, she:

    A increased the resources available to the city
    B decreased the resources available to the city
    C left unaltered the resources and their use
    D the effect on resources is unknown

14. If the city of Matildaville decides to construct a community college, this will:

A likely cause the number of jobs to increase
B likely cause the number of jobs to decrease
C not affect the number of jobs
D only affect jobs at the community college

15. When a government chooses to build a project, *opportunity costs* are based on:

A the economic benefit of the other possible projects
B the cultural values other possible projects provide
C the economic benefit of the most valuable of the other possible projects
D all of the above

16. A local 10 million dollar construction project would be expected to:

A increase local aggregate income by more than $10 million
B increase local aggregate income by less than $10 million
C increase local aggregate income by exactly $10 million
D have no effect on local aggregate income

17. Economists expect investment in capital to:

A lead to lower future growth
B not have an impact on growth
C lead to higher future growth
D cannot be determined

18. The *opportunity cost* of a new public high school is the:

A money cost of hiring teachers for the new school
B cost of constructing the new school at a later date
C change in the annual tax rate to pay for the new schools
D other goods and services that must be given up to build the new school

19. Building the city of Matildaville's community college has:

A immediate benefits because people would be hired to build and run the institution
B long term benefits because college graduates they will offer a well-trained labor force
C immediate costs for building the college
D all of the above

20. Using the table below, when investment is 20 and the change in aggregate income is 40, the multiplier is:

A 2
B 3
C 5
D 10

Multiplier	Investment	Change in aggregate income
6		300
	20	40
3	40	

21. Use the table above to determine the change in aggregate income when the multiplier is 3 and the investment is 40:

    A 70
    B 95
    C 120
    D 140

22. Building the baseball stadium in the city of Matildaville would likely have the following effect on the market for loanable funds:

    A Interest rates would fall
    B Interest rates would rise
    C Corporations would raise their level of investment spending
    D The price of the city's bonds would go up

23. Government economic advisors usually take into account the following criteria when making recommendations for new public projects:

    A The economic benefit of the project
    B The opportunity cost of the project
    C The impact on business investment
    D all of the above

24. Which of the following best describes the possibilities for developing the city of Matildaville?

    A Different projects require different amounts of land, labor, and capital
    B All projects require increased resources in the long term
    C All projects require reduced resources in the long term
    D All projects require the same amounts of land, labor, and capital

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