

THE PBL PROJECT

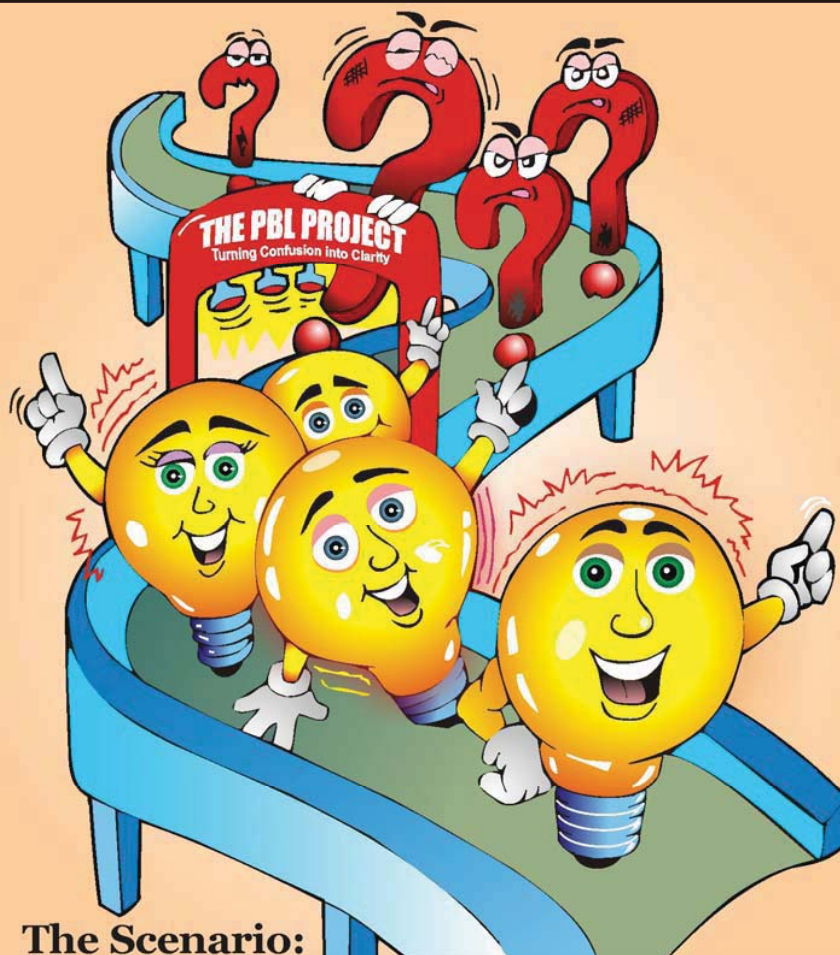
Problem-Based Learning. Done Right. Finally.



What's the Problem?



Integrated Problem Scenarios
Upper Elementary



The Scenario:

"The School Day"

You are a member of a school board that wants to improve classroom instruction by lengthening the school day. Is this something you will support?

- * Features engaging and real-world scenarios
- * Integrates all core subjects
- * Includes all teacher and student resources
- * Provides a full overview of Problem-Based Learning

Problem-Based Learning. Done Right. Finally.

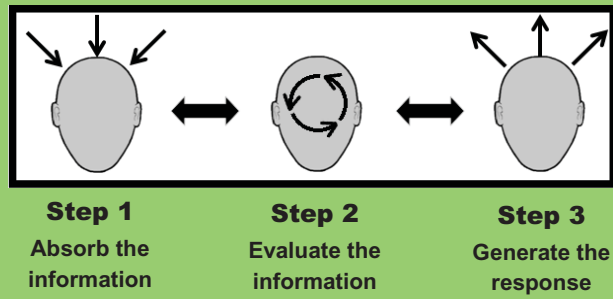
It's an important part of an educator's job to make sure students leave the classroom fully prepared for their lives ahead and equipped with 21st century skills (i.e. skills that focus on communication, organization, technology, and problem-solving). We use these skills every day. Unfortunately, they are often overlooked as students work to absorb names and dates, facts and figures.

That's why **Problem-Based Learning** is so important. It allows students to tackle a scenario that goes beyond a "yes" or "no" answer. In doing so, students will review a variety of resources related to the topic (articles, videos, statistics, infographics, etc.), engage in classroom discussion, and organize their thoughts as they evaluate the information. After all this, they will have a chance to respond to the challenge and defend their approach.

It won't be easy, but it will be very engaging. Best of all, this process will help develop a wide variety of skills that students will use the rest of their lives!

The 1-2-3 of Problem-Based Learning

When faced with any problem, challenge, or situation, students need to be prepared to:



This book will walk teachers and students through the following Problem Scenario:

The Main Problem Scenario:

You are a member of a school board that wants to improve classroom instruction by lengthening the school day. Is this something you will support?

You will approach this Main Problem from several points-of-view

The Math Angle

What is the length of the current school day compared to how much time is actually required?

The Science Angle

How long can students stay focused, and when is their optimal learning time (morning or afternoon)?

Social Studies Angle

Does changing the length of the school day have a major impact on commitments students have away from school?

In the end, you will take all you've learned and give your final response to the Main Problem.



Language Arts serves as the hub for the entire exercise. It is in ELA that all of the other "subject angles" are evaluated and measured against one another, and a final decision about how to approach the Main Problem is made based on all of the available information.



A Note to the Teacher:

If there was something about the cover or title of this book that interested you enough to pick it up and turn to this page, then you probably already know what we are going to say. The truth is that, in today's world, students must leave the classroom equipped with 21st century skills and ready to meet the challenges of real life. One of the best ways to meet these demands is through interdisciplinary **Problem-Based Learning** scenarios. This type of classroom instruction promotes communication, collaboration, curiosity, organization, and problem-solving skills . . . all major components of any reputable set of standards.

The Problem-Based scenarios in this book integrate Language Arts, Math, Social Studies, Science, and other content areas. They offer educators a chance to shift the work of learning from the teacher to the students, where it belongs. If we wish to prepare a generation of students to solve real-world problems, we simply must give them real-world problems to solve... Problem-Based Learning is the way to accomplish this task.

So, let's get ready to begin! Enjoy,

Your Friendly Editors

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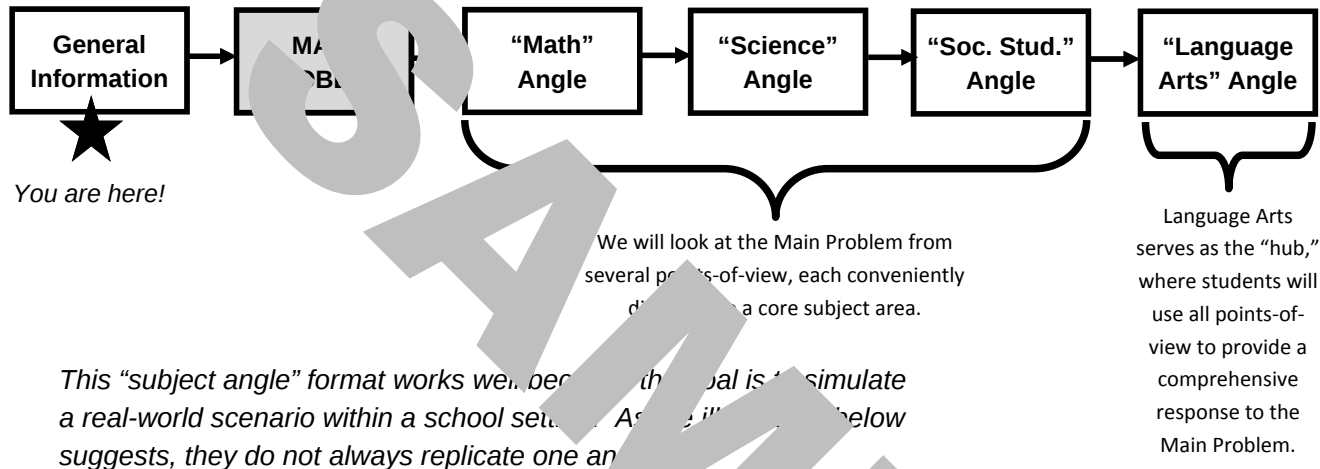
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How does this book work?

This book is divided into several sections, listed below in the order in which they will appear:



School =



Think of it like this...

This is your MAIN PROBLEM SCENARIO.

You need to buy a new car. Which car is the best fit for you and your situation?

Which is the most cost-effective car?

Which is the most practical car?

Which is the coolest car?

These are the different perspectives from which it's necessary to approach the Main Problem. In our scenario, these perspectives will all fit nicely into a core subject area and are referred to as the "subject angles."

So, which car are you going to buy?

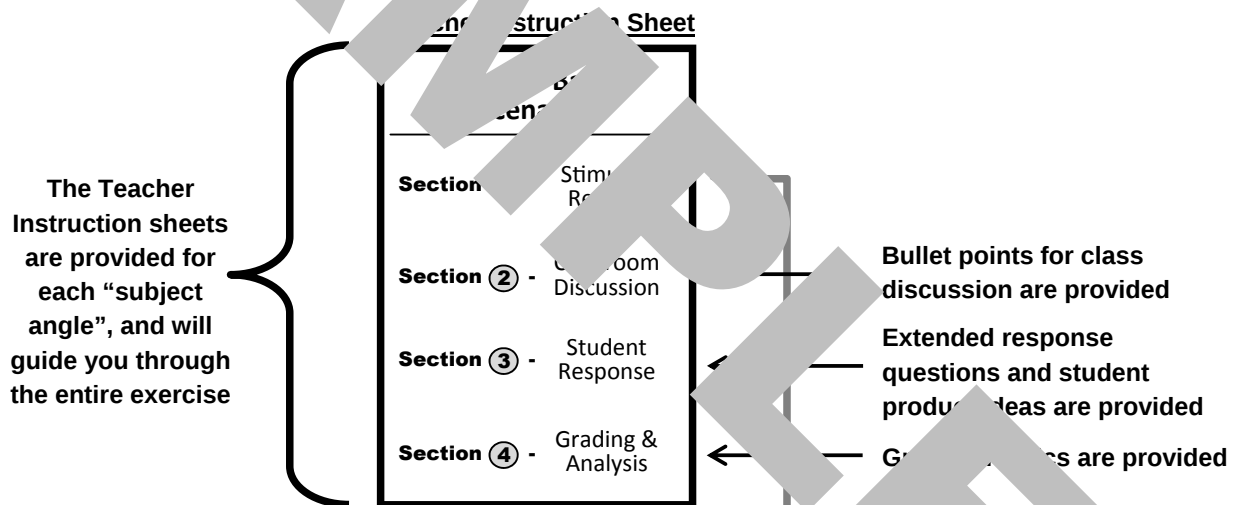
In the end, the different perspectives must be evaluated to provide a single response to the Main Problem. In our exercise, this comprehensive answer is provided in the Language Arts section.

What is provided?

The short answer is “everything you need!”

As you work through the Problem-Based Scenario in this book, both you and your students will be provided with the necessary resources each step of the way.

Teacher Resources



Student Resources

- Stimulus Items (articles, videos, infographics, statistics, etc.) are all provided for each exercise
- “Thought-Gathering” sheets are provided to help students organize their ideas
- Handouts are provided to introduce and layout the instructions for all steps of each exercise

Remember, a unique set of all of these resources will be provided for each “subject angle”

The Main Problem:

Here is the Problem-Based Learning scenario that is the focus of this guide:

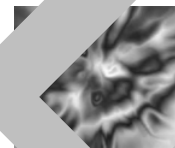
You are a member of a school board in a district that is considering extending the length of the school day. One hope is that it will help teachers and students by giving more time for classroom instruction. What are the issues involved, and is this something that you would support?

Of course, every significant challenge in life needs to be looked at from several points-of-view. For the Problem-Based Scenario in this book, the different “points-of-view” have been divided into a math angle, a science angle, and a social studies angle. Then, in Language Arts, all points-of-view are evaluated in a holistic approach.

Obviously, life isn’t so cleanly divided into subject areas. Remember the visual that you saw on page 12:



School



Life

It’s certainly a challenge—impossible, actually—to have “real life” squeezed into a box that fits the academic schedule. Still, having students review a problem from several angles (even if they are neatly divided along subject lines) helps them understand that problems are multi-dimensional, made up of pieces so complex that they must be evaluated on their own. Only after all of the pieces have been individually examined can the problem be properly approached as a whole.

So, each “subject angle” is one piece of the puzzle. That’s not to say they aren’t plenty challenging in their own right. In fact, they are wonderful exercises for math, or science, or social studies class, even if you never have a chance to get into the other subject points-of-view.

Now we’re ready to begin. The page to the right outlines the “subject angles” that we’ve created for the Problem-Based Scenario in this book.



The “Subject Angles”:

In order to properly respond to the Main Problem, it is important to consider multiple points-of-view. Below are several angles from which to approach the problem.

The Math Angle:

What is the length of the current school day compared to how much time is actually required?

Students will calculate the length of the existing school day/year and compare the results with rules that state how long students must be in school.

The Science Angle:

How long can students stay focused and when is their optimal learning time (morning or afternoon)?

Students must collect data based on learning style preferences from classmates, interpret the data and compare it to data from existing research.

The Social Studies Angle:

Does changing the length of the school day have a major impact on commitments students have away from school?

Students will review how the average child spends his or her time and then decide how the length of the school day influences this schedule.



Language Arts serves as the hub for the entire exercise. It is in ELA that all of the other “subject angles” are evaluated and measured against one another, and a final decision about how to approach the Main Problem Scenario is made based on all of the available information.

Math Standards

As students work through this section of our Problem-Based Scenario, they'll be focusing on several mathematical content areas. This includes:

- **Measurement (time)**
- **Numbers and Operations**

Student
Handout

In addition – and perhaps more importantly – students will need to take on a mathematical frame of mind (in teacher terms, this is referred to as the “Standards for Mathematical Practice”), which they will benefit from Problem-Based Learning. This means that students will need to:

- **Make sense of problems and persevere in solving them.**
- **Reason abstractly and quantitatively.**
- **Construct viable arguments and critique the reasoning of others.**

You may want to share the goals listed above with your students prior to beginning the exercise, but the best part is that they'll be developing these skills whether they realize it or not!

The most important thing to remember when introducing the Problem-Based Scenario is to grab student interest right away. It is a fun and challenging exercise, and you certainly want students to approach it that way.

To make this easy for you, we have created a handout to introduce the “math angle” to your students for this Problem-Based Scenario. This will help them see that they will be looking at the Main Problem Scenario from a specific point-of-view, in this case with a mathematical focus.

**Make photocopies of the next page to
introduce the “Math Angle” of this
Problem-Scenario to your students**



What's the Problem?



Are you ready to tackle the problem?

The Scenario:

You are a member of a school board in a district that is considering extending the length of the school day. The hope is that it will help teachers and students by creating more time for classroom instruction. What are the issues involved, and is this something that you will support?

In order to properly respond to a complicated problem like the one above, you must view it from different points of view. In this case, we will consider the following:

Something to think about:

What is the length of the current school day compared to how much time is actually required?

Prior to giving your response, you will review multiple resources, engage in classroom discussion, and take time to organize your thoughts.

In this exercise, you will calculate the length of the existing school day/year and compare the results with rules that dictate how long students must be in school.



*As you work on this exercise, remember that this is primarily a **mathematics question**. This means that numbers, statistics, and calculations will be needed to support your ideas!*

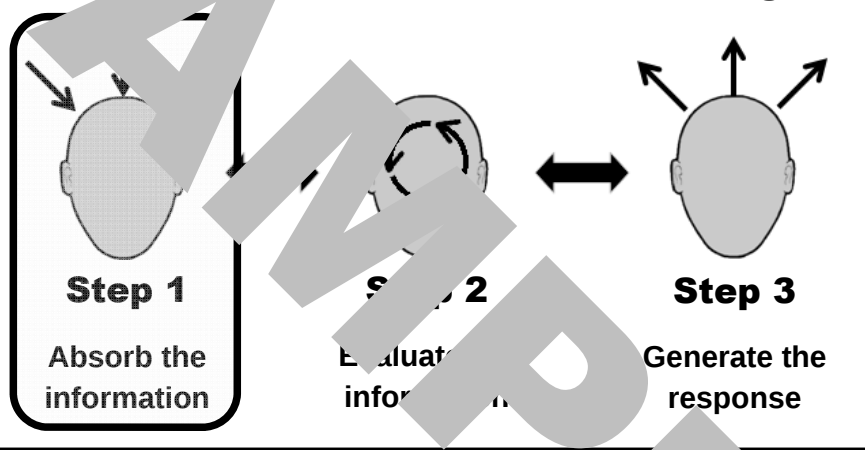
Teacher Instruction Sheet

Problem-Based
ScenarioSection ① - Stimulus
ReviewSection ② - Classroom
DiscussionSection ③ - Student
ResponseSection ④ - Grading &
Analysis

Stimulus Review

The Stimulus Review is **Section 1** on your
Teacher Instruction Sheet.

The Steps of Problem-Based Learning



It's a fancy term, but the "Stimulus Review" is simply the first step in Problem-Based Learning where students review a variety of information surrounding the specific problem or challenge.

In our Problem Scenario, all of the Stimulus Items have been provided for you. We have intentionally gathered a variety of different types and sources. This is important in today's modern world where information comes from all directions and also sets the stage for Step 2 (Evaluating the Information).

A few examples of the types of Stimulus Items you might see in a Problem-Based Scenario include:

- **Articles**
- **Statistics**
- **Audio Recordings**
- **Videos**
- **Lists**
- **Cartoons**
- **Infographics**
- **Websites**
- **Primary Sources**
- **Blogs**
- **Editorials**
- **Advertisements**

...and much more!

For your convenience, we've placed all of the Stimulus Items for this Problem-Based Scenario on a special website where **both you and your students** can have full access to them. To access these resources, you will go to:

http://www.pblproject.com/students	
Login: _____	
Password: _____	
	Login

The Stimulus Items you will see for this section of the exercise include:

Stimulus Item #1

— **How Much Time is Required (charts)**

Stimulus Item #2

— **“Time Spent on Core Subjects” (online forum)**

Stimulus Item #3

— **“Longer School Days Affect Everyone” (article)**

A Few Notes:

There are a few things we'd like to highlight as your students get ready to dive into the Stimulus Items. First, these are actual sources that have been gathered for the topic at hand, even if they have been edited or adapted at times due to length, format, or readability. That means that they don't necessarily reflect our personal opinions, and we certainly don't want to take credit for the hard work of others (all source information will be provided). It does, however, provide a nice mix for your students.

Next, the Stimulus Items should give your students the background information they need to generate their responses to the Problem-Based Scenario. There is no need for you to seek out other resources or for students to do their own research.

With that said, it is always great if there is an opportunity for students to get on a computer or head to the library to find their own background information. Being able to conduct your own research is a vital skill to have, and it is referenced throughout Language Arts standards.

Again, this extra step is not necessary to successfully go through the exercise (we know you're already crunched for time!), but we figured it was worth mentioning!

Teacher Instruction Sheet

Classroom Discussion

The Classroom Discussion is **Section 2** on your Teacher Instruction Sheet.

Teacher
"Quick Sheet"

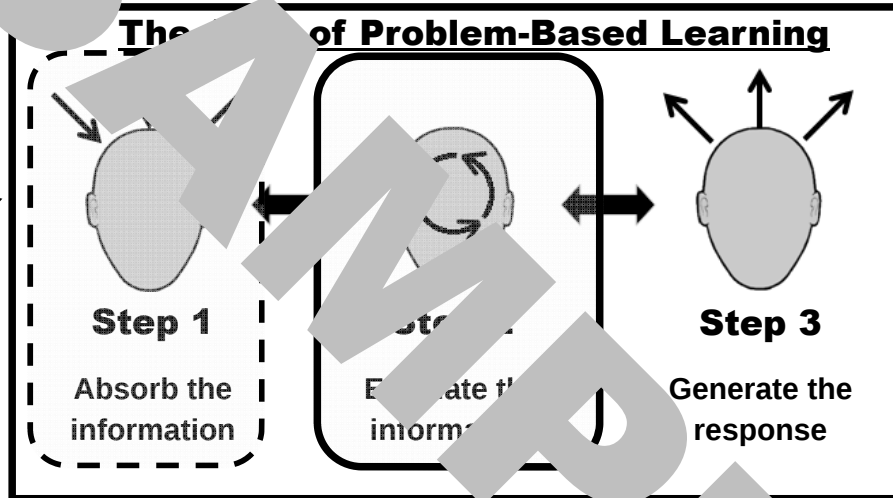
Problem-Based Scenario

Section ① - Stimulus Review

Section ② - Classroom Discussion

Section ③ - Student Response

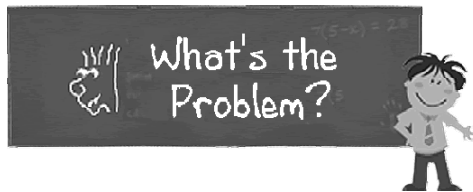
Section ④ - Grading & Analysis



Now that your students have reviewed the Stimulus Item, it is a fitting time to have a **class discussion** about the Problem-Based Scenario (specifically, the “smart angle” that you’re working with).

At this stage, there will be a limited amount of new information brought to the table (Step 1), although you might want to introduce ideas not covered in the stimulus, and perhaps students will share original thoughts and experiences. For the moment, though, the classroom discussion is where you want students to evaluate the information (Step 2) to which they’ve been exposed. It is now that they will begin to organize it all and decide how it will fit together in their response.

The key to a classroom discussion, of course, is keeping everything focused and moving it in the direction you want, and at the same time creating a free environment for students to share and build on ideas. This is certainly where teachers earn their pay! One way we’ve tried to help (a little bit, at least) is to provide you with the talking points that work well for this scenario. The bold questions are what you will ask your students, and each has bullet points that you can use to guide the discussion.



Leading Questions for Classroom Discussion

The School Day (math angle)

What factors need to be considered before deciding to extend the school day?

- Consider what state or federal requirements for the number of hours a student must be in school, and whether or not that is being met (and, if so, why students should attend school beyond the required time)
- Consider the goal of the school (to help students learn and succeed), and how much time is needed to accomplish that goal
- Consider that it might cost extra money to keep the schools open longer (such as air conditioning at the school, transportation costs, payment to school employees, etc.)

How does math play a part in the decision to extend the school day or not?

- Consider the scheduling challenges associated with changing the current structure of the school day and year
- Consider the math involved in outlining the short and long term costs and budgeting issues (heating the school, feeding the students, paying the employees, transporting students, etc.)

How can the effectiveness of an extended school day be measured?

- Consider factors that can be measured after extending a school day, such as student test scores, extra costs, etc.
- Consider how the extra time spent in school can be compared to the percentage of actual learning during that time, and why this is important
- Consider how some important factors (such as student morale and teacher enthusiasm) might be difficult to measure

Teacher Instruction Sheet

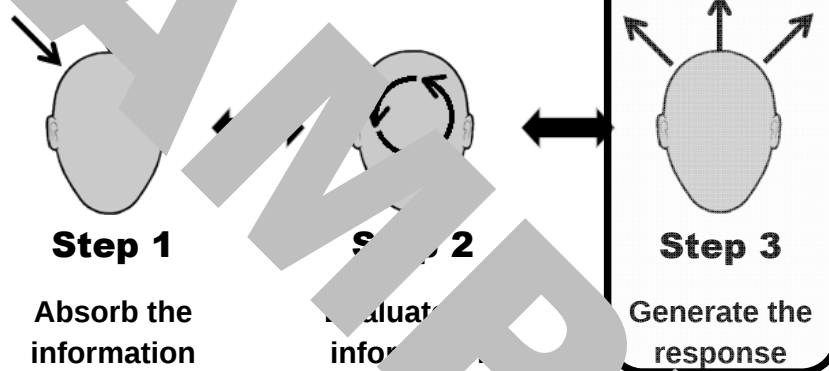
Problem-Based
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ResponsesSection ④ - Grading &
Analysis

Student Responses (Extended Response)

The Student Responses are **Section 3**
on your Teacher Instruction Sheet.

Student
Handout

The Process of Problem-Based Learning



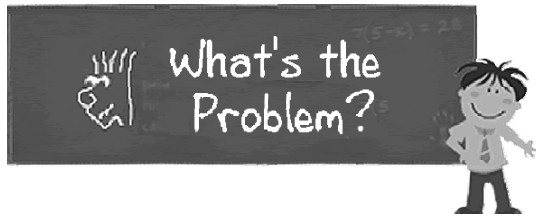
On your Teacher Instruction sheet, you'll see that each scenario provides two types of response options for your students – Extended Responses and the Product Option. Let's look at the "Extended Responses" first.

As you would expect, the Extended Responses are simply questions revolving around the Problem-Based Scenario that the students answer through their critical thinking.

Most likely, the Extended Responses are similar to what you might see during a Performance Task of a comprehensive assessment (where students are given a range of information to review, and then must give their conclusions based on the evidence). The "test prep" benefits alone make it worthwhile for students to complete the Extended Responses, but the broader benefit is their ability to take the information they've been exposed to and generate a logical response to a problem scenario.

The rubric and process for grading Extended Responses is on the following pages. Also, we will leave it up to you whether you want to allow students to use notes they have taken throughout (we think it's fine for them to do so), and also how strict you want to be with time limits (a half hour or so should be fine).

Here are the Extended Response questions for this scenario.



What do you think?

The questions below are centered around the Problem-Based Scenario you've been reviewing. Please answer the questions on separate sheets of paper.

- 1) How much time are students required to spend in school throughout the year? What are the factors that most likely led to these requirements?
- 2) How many hours do students currently spend at your school during the year, and how does this compare to the requirements? Should the current amount of time be changed? Why or why not?



Remember to support your answers with evidence that you've gathered from what you've read and discussed in class!

Teacher Instruction Sheet

Problem-Based Scenario	
Section ① -	Stimulus Review
Section ② -	Classroom Discussion
Section ③ -	Student Responses
Section ④ -	Grading & Analysis

Grading Rubric (Extended Responses)

The Grading Rubric is **Section 3** on your Teacher Instruction Sheet.

Student
Handout

One thing that your students need to understand about these Problem-Based Scenarios is that the answer is never “yes” or “no.” Instead, students must think their way through the muddy waters of different math problems and challenges, while you guide them along the journey.

Of course, the end result needs to be more than just a “back” — and that’s why proper grading is so important. While students may think that grades exist only to cause stress and fill the blank spaces on a report card, the broader point is that when students are graded in a clear and fair way, it enables them to gradually improve their approach and response.

The Extended Responses for this scenario can be graded using the rubric to the right. It is divided into four sections:

- 1) Math Content** (What do you want students to bring to the table based on previous lessons?)
- 2) Writing Focus** (Was it clear what point the students were trying to make?)
- 3) Use of Evidence** (Did the students back up their position with evidence, quotes, statistics, and facts?)
- 4) Language & Conventions** (Did students limit mistakes and respond in a thorough and professional manner?)

Here is a copy of the rubric for your students to review.



What's the Problem?



How do I get an A?

Listed below are the four different areas that will be evaluated as your responses are graded. Be sure to consider each area as you write.

Rubric Section #1: **Math Content** – you must show a high level of background knowledge and general understanding of the topic

****in other words:** What are you bringing to the table based on previous lessons?

4	3	2	1	NS
You provided a high level of background knowledge of the subject.	You showed a high level of background knowledge of the subject.	You showed a limited level of background knowledge, and only in certain parts of your response.	You showed barely any background knowledge of the subject throughout your response.	Your response was incoherent, off-topic, or unable to be read.

Rubric Section #2: **Purpose & Distribution of Writing** – you must organize and sustain your writing based on a defined purpose

****in other words:** Was it clear what you were trying to make, and did you focus on that point?

4	3	2	1	NS
Your response had a defined purpose, and it was organized with a clear focus on that purpose.	Your response had a defined purpose, although it lacked organization and a clear focus on that purpose.	Your response had a defined purpose, but it was vague, and there was limited organization and focus.	Your response had no defined purpose or organization.	Your response was incoherent, off-topic, or unable to be read.

Rubric Section #3: **Integration of Knowledge & Ideas (use of “evidence”)** – you must support your arguments and positions with outside information (“stimulus items”)

****in other words:** Did you back up your position with evidence, quotes, statistics, and research?

4	3	2	1	NS
You provided convincing support/evidence for your main idea and included appropriate sources, facts, & details.	You provided adequate support/evidence for your main idea and only limited sources, facts, & details.	You provided only modest support/evidence for your main idea and it was not strengthened by sources, facts, & details.	You provided an inadequate amount of support/evidence for your main idea.	Your response was incoherent, off-topic, or unable to be read.

Rubric Section #4: **Language & Conventions** – you must use proper grammar, spelling, vocabulary, and other conventions of the English language

****in other words:** Did you limit mistakes and respond in a thorough and professional manner?

4	3	2	1	NS
Your response was professional and you demonstrated a command of language conventions.	Your response was mostly professional with limited errors related to language conventions.	Your response was rather sloppy with multiple errors related to language conventions.	Your response was completely sloppy and showed no effort to follow language conventions.	Your response was incoherent, off-topic, or unable to be read.

Science Standards

As students work through this section of our Problem-Based Scenario, they'll be focusing on several science content areas. This includes:

- **Human Body (cognitive development)**

Student
Handout

In addition—and perhaps more importantly—students will need to take on a scientific frame of mind (in academic circles, these are referred to as the “Science and Engineering Practices”), which is a key element of Problem-Based Learning. This means that students will be:

- **Asking questions and defining problems.**
- **Constructing explanations and designing solutions.**
- **Engaging in argument from evidence.**
- **Obtaining, evaluating, and communicating information.**

You may want to share the goals listed above with your students prior to beginning the exercise, but the best part is that they'll be developing these skills whether they realize it or not!

The most important thing to remember when introducing the Problem-Based Scenario is to grab student interest right away. It is a fun and challenging exercise, and you certainly want students to approach it that way.

To make this easy for you, we have created a handout to introduce the “science angle” to your students for this Problem-Based Scenario. This will help them see that they will be looking at the Main Problem Scenario from a specific point-of-view, in this case with a scientific focus.

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introduce the “Science Angle” of this
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Are you ready to tackle the problem?

The Scenario:

You are a member of a school board in a district that is considering extending the length of the school day. The hope is that it will help teachers and students by creating more time for classroom instruction. What are the issues involved, and what is something that you will support?

In order to properly understand an complicated problem like the one above, you must view it from multiple points-of-view. In this case, we will consider the following:

Something to think about:

How long can students stay focused, and when is their optimal learning time (morning or afternoon)?

Prior to giving your response, you will review multiple resources, engage in classroom discussion, and take time to organize your thoughts.

In this exercise, you must collect data based on learning style preferences from classmates, interpret the data and compare it to data from existing research.



*As you work on this exercise, remember that this is primarily a **science question**. This means that scientific facts will be needed to support your ideas, and you'll also want to maintain a healthy skepticism throughout the exercise!*

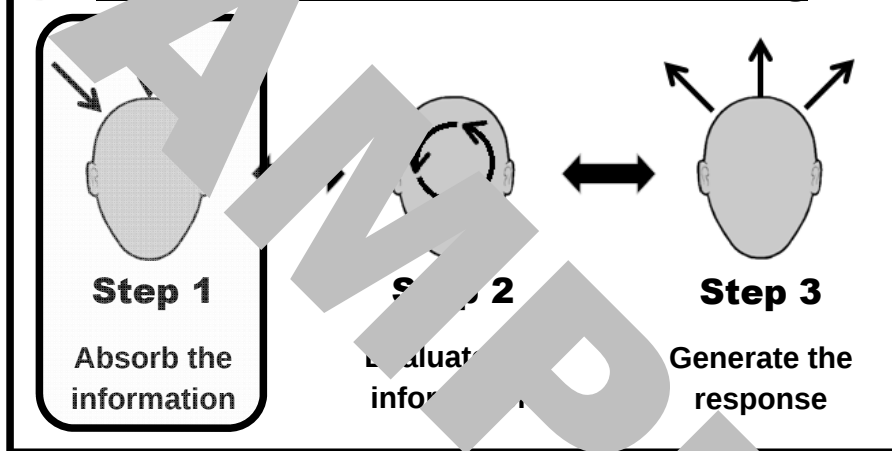
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Stimulus Review

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The Steps of Problem-Based Learning



It's a fancy term, but the "Stimulus Review" is simply the first step in Problem-Based Learning where students review a variety of information surrounding the specific problem or challenge.

In our Problem Scenario, all of the Stimulus Items have been provided for you. We have intentionally gathered a variety of different types and sources. This is important in today's modern world where information comes from all directions and also sets the stage for Step 2 (Evaluating the Information).

A few examples of the types of Stimulus Items you might see in a Problem-Based Scenario include:

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- **Statistics**
- **Audio Recordings**
- **Videos**
- **Lists**
- **Cartoons**
- **Infographics**
- **Websites**
- **Primary Sources**
- **Blogs**
- **Editorials**
- **Advertisements**

...and much more!

For your convenience, we've placed all of the Stimulus Items for this Problem-Based Scenario on a special website where **both you and your students** can have full access to them. To access these resources, you will go to:

<http://www.pbproject.com/students>

Login:
Password:

Login

What's the Problem?

The Stimulus Items you will see for this section of the exercise include:

Stimulus Item #1

— “The Optimal School Day Length” (research)

Stimulus Item #2

— “When Do Children Learn to Read?” (article)

Stimulus Item #3

— “Late Start Has Surprising Results” (video)

A Few Notes:

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With that said, it is always great if there is an opportunity for students to get on a computer or head to the library to find their own background information. Being able to conduct your own research is a vital skill to have, and it is referenced throughout Language Arts standards.

Again, this extra step is not necessary to successfully go through the exercise (we know you're already crunched for time!), but we figured it was worth mentioning!

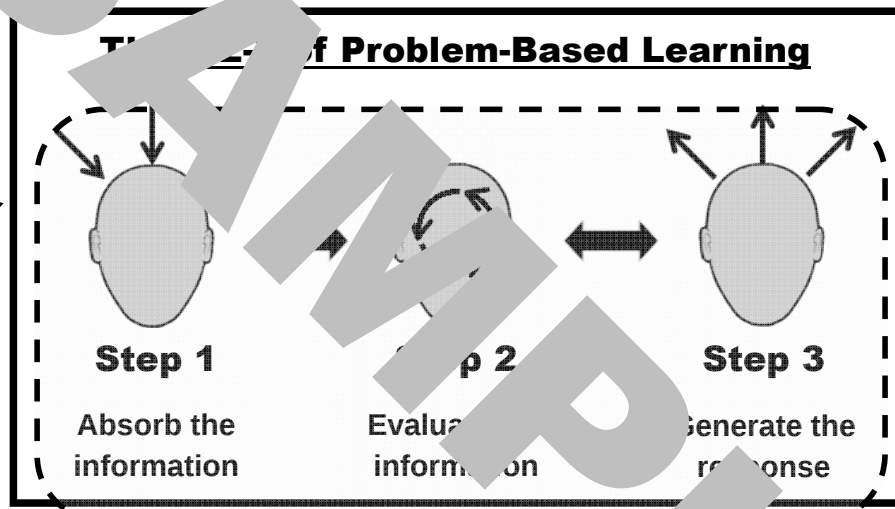
Teacher Instruction Sheet

Problem-Based Scenario	
Section ① -	Stimulus Review
Section ② -	Classroom Discussion
Section ③ -	Student Response
Section ④ -	Grading & Analysis

“Thought-Gathering” Sheet

The “Thought-Gathering” Sheet is an interim step prior to the student responses.

Student Handout



So, by this point, you’ve had students review Stimulus Items related to the Problem Scenario. That led to a stimulating (we hope) classroom discussion on the topic.

Often times, there is a feeling of “information overload” at this stage. Students may have enough information to generate their constructed responses and/or formulate their product options (we’ll talk about these on the upcoming pages), but their thoughts may be all over the place. They may still have to pick their position, refine their arguments, focus their proposal, perfect their design... and so on.

That’s where the “Thought-Gathering” Sheet comes in. This isn’t to be confused with any “note-taking sheets” your students may have written while they were looking through the Stimulus Items or listening to the discussion. Rather, this is a final stage where they sort everything (including their own notes) to prepare for their response. It is a chance to tie together Step 1, Step 2, and Step 3 (shown above).

We have provided a “Thought-Gathering” sheet that works with this exercise and is a good chance for students to organize their ideas prior to creating their responses.



What's the Problem?



The School Day



"Thought-Gathering" Sheet

When do students learn best?

Evidence supporting the morning:

Evidence supporting the afternoon:

How can the school day be adjusted to promote optimal learning:

Teacher Instruction Sheet

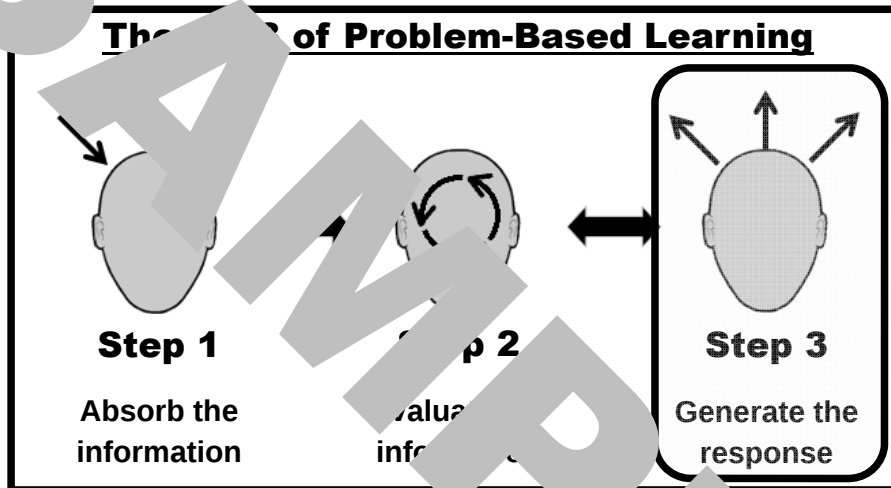
Problem-Based
ScenarioSection ① - Stimulus
ReviewSection ② - Classroom
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Analysis

Student Responses ("Product Option")

The Student Responses are **Section 3**
on your Teacher Instruction Sheet.

Student
Handout

The 3 Steps of Problem-Based Learning



It all leads up to this – “*The Product Option.*” It is here that students will have the “thinking muscle” truly stretched and those 21st Century Skills (collaboration, communication, technology, and so on) will be finely tuned.

Let’s start with a very simple definition:

The Product Option – where students are asked to “produce something.”

Yes, this is very broad, and could include any of the following (and so much more):

Bulletin Board	Advertisement	Chart	Role Play	Tips / Suggestions
Letter	Cartoon	Pop-up / Child Book	Commercial	Slogan / Motto
Comic Strip	Play	Collage	Riddles / Jokes	Marketing Plan
Movie Trailer	Poster / Artwork	Timeline	Graphic Organizer	Jingle
Demonstration	Political Cartoon	Prototype	Brochure	Campaign Platform
Diary Entry	Costume	Crossword Puzzle	Poem	Experiment
Editorial Essay	Newspaper Article	Database / Spreadsheet	Rap Song	Mosaic
Map	Diorama	Oral Report	Webpage	Argument
Lesson Plan	Display	Rebus Story	Instruction Manual	Proposal
Fiction Story	Mock Interview	Slide Show	Petition	Illustrated Story
Interview	Survey	Recipe / Instructions	Game	Radio show

After you divide your students into teams, photocopy the next page to outline the Product Option for this scenario.



What's the
Problem?



The task at hand...

Working together on something as a team can help you gain a better understanding of the problem-scenario. Please work together on the exercise below.

Your task is to **create a survey to analyze the learning preferences** of students.

The survey should include questions to gain information about the time of day students feel they learn the best, how long they feel they can concentrate on any given task, and what they believe is the optimal length of a class period and school day (and so on).

As a class, you will discuss how student surveys to these surveys can be used to make decisions about the schedule of a school day and the entire school year. You may create a "Master Survey" that combines the most telling questions, and have the class (and perhaps other classes) take it.

Consider how the results of the survey might be different from a scientific research project on the same topic. What other factors play into scheduling decisions?

Teacher Instruction Sheet

Problem-Based Scenario	
Section ① -	Stimulus Review
Section ② -	Classroom Discussion
Section ③ -	Student Response
Section ④ -	Grading & Analysis

Grading Rubric (Product Option)

The Grading Rubric is **Section 3** on your Teacher Instruction Sheet.

Student
Handout

We mention this time and time again throughout this book, and it's worth saying another time:

It's all about the process.

The purpose of these exercises is to have students do things through problems and situations, and it's the teacher's role to guide them through the journey.

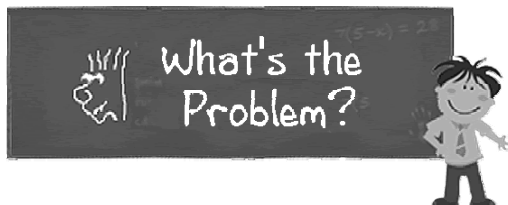
Without a doubt, your students will remind you that "it's all about the process" when they try to convince you to be gentle during the grading process. After all, they've been brought up to bubble in the correct circle with a #2 pencil, so when asked to "produce" something from a variety of information can be tricky. But they'll do just fine.

As students work through the process, they will learn subject-specific skills and cover a few important standards. Yet they'll also be developing those 21st-century skills and lifelong traits that we mention throughout this book (a few are listed below).

- | | | | |
|---------------------|-------------------------|-----------------------------|------------------------------|
| ♦ Critical Thinking | ♦ Collaboration | ♦ Entrepreneurialism | ♦ Patience / Persistence |
| ♦ Researching | ♦ Leadership | ♦ Self-Direction | ♦ Listening |
| ♦ Creativity | ♦ Technological Ability | ♦ Internet / Media Literacy | ♦ Healthy Skepticism |
| ♦ Planning | ♦ Social Awareness | ♦ Data Analysis | ♦ Imagination |
| ♦ Communication | ♦ Scientific Literacy | ♦ Personal Expression | ♦ Flexibility / Adaptability |

It's difficult to put a hard grade on any of those, and it isn't the final goal. If you live by the mantra, "It's all about the process," these skills will indeed be developed. With that said, you do want to provide worthwhile feedback to your students. We use a simple—but sound—rubric to help students "ace the **TEST**" (a clever acronym to help them remember the key steps). The rubric is provided to the right for your convenience.

Photocopy this scoring sheet for your students to review.



How do I get an A?

As you work in teams on this exercise, you will be evaluated to see if you ace the **TEST**:

Thoroughness
Evidence
Strategy
Teamwork



Thoroughness

- _____ The group completed all of the required tasks (15 points)
- _____ Everyone followed the instructions throughout the process (15 points)

Evidence

- _____ The group's final product was logical and could be defended (15 points)
- _____ A variety of evidence was provided to support the product (10 points)

Strategy

- _____ The group kept its focus on the requirements of the product (15 points)
- _____ The group used a sound approach in completing the exercise (10 points)

Teamwork

- _____ Everyone in the group participated and played a key role (10 points)
- _____ All members of the group worked well together (10 points)

Shown above are general areas that your teacher will be evaluating as he or she scores the products you create with your team. You may be provided more details about what it takes to receive the full value in any one of these areas.

Social Studies Standards

As students work through this section of our Problem-Based Scenario, they'll be focusing on several social studies content areas. This includes:

- **Roles and Responsibilities of a Citizen**
(how children become "well-rounded", and why it's important)

Student
Handout

In addition—and perhaps more important—students will need to understand basic principles of social studies, which is the benefit of Problem-Based Learning. This means that in addition to the basic disciplinary standards, students will become familiar with the broader themes of social studies. For example:

- **Culture and Cultural Diversity**
- **Time, Continuity, and Change**
- **People, Places, and Environments**
- **Individual Development and Identity ***
- **Individuals, Groups, and Institutions ***
- **Power, Authority, and Governance ***
- **Production, Distribution, and Consumption**
- **Science, Technology, and Society**
- **Global Connections**
- **Civic Ideals and Practices**

**an asterisk has been placed beside each theme that is a major part of this PBL exercise*

You may want to share the themes listed above with your students prior to beginning the exercise, but the best part is that they'll be developing a broad understanding whether they realize it or not!

The most important thing to remember when introducing the Problem-Based Scenario is to grab student interest right away. It is a fun and challenging exercise, and you certainly want students to approach it that way.

To make this easy for you, we have created a handout to introduce the "social studies angle" to your students for this Problem-Based Scenario. This will help them see that they will be looking at the Main Problem Scenario from a specific point-of-view, in this case with a focus on society and historical trends.

**Make photocopies of the next page to
introduce the "Social Studies Angle" of
this Problem-Scenario to your students**



What's the Problem?



Are you ready to tackle the problem?

The Scenario:

You are a member of a school board in a district that is considering extending the length of the school day. The hope is that it will help teachers and students by creating more time for classroom instruction. What are the issues involved, and is this something that you will support?

In order to properly respond to a complicated problem like the one above, you must view it from different points of view. For example, we will consider the following:

Something to think about:

Does changing the length of the school day have a major impact on commitments students have away from school?

Prior to giving your response, you will review multiple resources, engage in classroom discussion, and take time to organize your thoughts.

In this exercise, you will review how the average child spends his or her time and then decide how the length of the school day influences this schedule.



*As you work on this exercise, remember that this is primarily a **social studies question**. This means that you must consider historical and current trends in our society, along with other political and economic factors, when providing your response.*

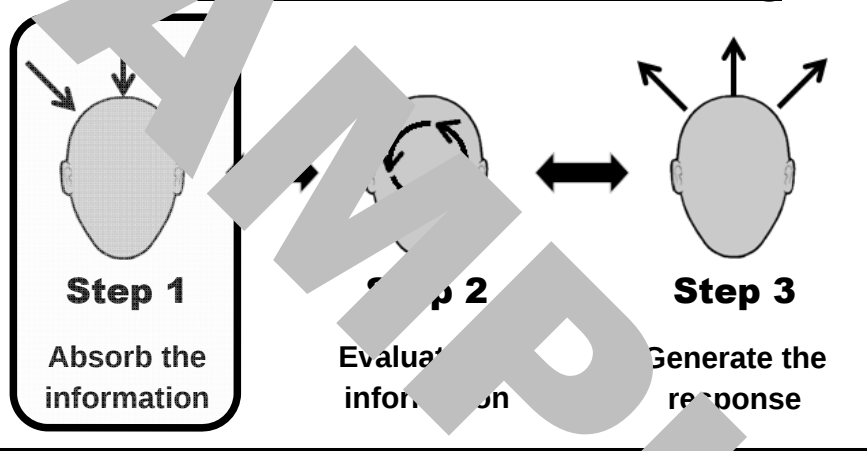
Teacher Instruction Sheet

Problem-Based
ScenarioSection ① - Stimulus
ReviewSection ② - Classroom
DiscussionSection ③ - Student
ResponseSection ④ - Grading &
Analysis

Stimulus Review

The Stimulus Review is **Section 1** on your
Teacher Instruction Sheet.

The Steps of Problem-Based Learning



It's a fancy term, but the "Stimulus Review" is simply the first step in Problem-Based Learning where students review a variety of information surrounding the specific problem or challenge.

In our Problem Scenario, all of the Stimulus Items have been provided for you. We have intentionally gathered a variety of different types and sources. This is important in today's modern world where information comes from all directions and also sets the stage for Step 2 (Evaluating the Information).

A few examples of the types of Stimulus Items you might see in a Problem-Based Scenario include:

- **Articles**
- **Statistics**
- **Audio Recordings**
- **Videos**
- **Lists**
- **Cartoons**
- **Infographics**
- **Websites**
- **Primary Sources**
- **Blogs**
- **Editorials**
- **Advertisements**

...and much more!

For your convenience, we've placed all of the Stimulus Items for this Problem-Based Scenario on a special website where **both you and your students** can have full access to them. To access these resources, you will go to:

<http://www.pbproject.com/students>

Login:

Password:

Login

What's the Problem?

The Stimulus Items you will see for this section of the exercise include:

Stimulus Item #1

— “Time Spent in a Day” (chart)

Stimulus Item #2

— “It’s Quality Time” (video)

Stimulus Item #3

— “How Kids Spend Their Time” (infographic)

A Few Notes:

There are a few things we’d like to highlight as your students get ready to dive into the Stimulus Items. First, these are actual sources that have been gathered for the topic at hand, even if they have been edited or adapted at times due to length, format, or readability. That means that they don’t necessarily reflect our personal opinions, and we certainly don’t want to take credit for the hard work of others (all source information will be provided). It does, however, provide a nice mix for your students.

Next, the Stimulus Items should give your students the background information they need to generate their responses to the Problem-Based Scenario. There is no need for you to seek out other resources or for students to do their own research.

With that said, it is always great if there is an opportunity for students to get on a computer or head to the library to find their own background information. Being able to conduct your own research is a vital skill to have, and it is referenced throughout Language Arts standards.

Again, this extra step is not necessary to successfully go through the exercise (we know you’re already crunched for time!), but we figured it was worth mentioning!

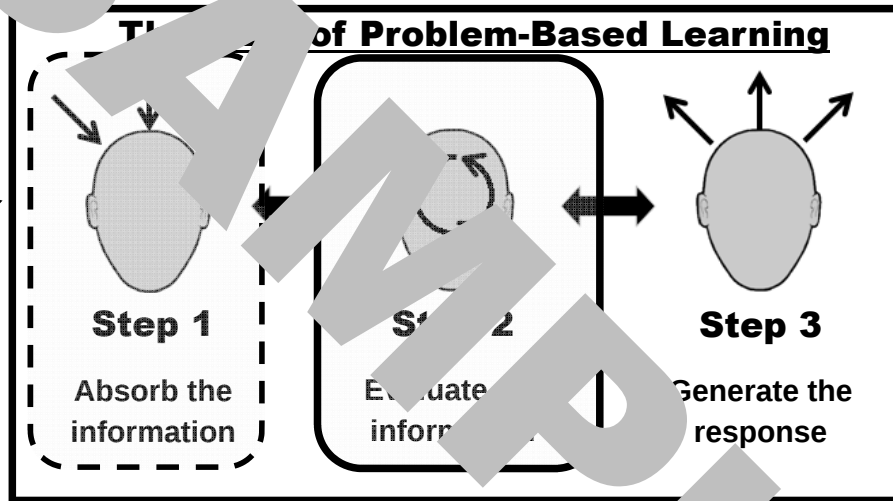
Teacher Instruction Sheet

Problem-Based Scenario	
Section ① -	Stimulus Review
Section ② -	Classroom Discussion
Section ③ -	Student Response
Section ④ -	Grading & Analysis

Classroom Discussion

The Classroom Discussion is **Section 2** on your Teacher Instruction Sheet.

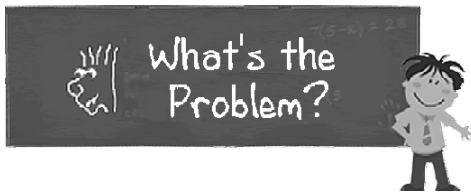
Teacher
"Quick Sheet"



Now that your students have reviewed the Stimulus Item, it is a fitting time to have a **class discussion** about the Problem-Based Scenario (specifically, the "angle" that you're working with).

At this stage, there will be a limited amount of new information brought to the table (Step 1), although you might want to introduce ideas not covered in the stimulus, and perhaps students will share original thoughts and experiences. For the most part, though, the classroom discussion is where you want students to evaluate the information (Step 2) to which they've been exposed. It is now that they will begin to organize it all and decide how it will fit together in their response.

The key to a classroom discussion, of course, is keeping everything focused and moving it in the direction you want, and at the same time creating a free environment for students to share and build on ideas. This is certainly where teachers earn their pay! One way we've tried to help (a little bit, at least) is to provide you with the talking points that work well for this scenario. The bold questions are what you will ask your students, and each has bullet points that you can use to guide the discussion.



Leading Questions for Classroom Discussion

The School Day (social studies angle)

What is so important for students to be “well-rounded”? What activities help with this?

- Consider definitions of “well-rounded”, such as being a balanced person who is comfortable and confident in a number of situations
- Consider why academic knowledge isn’t enough to succeed, and why children also need social skills, good health habits, and all-around confidence
- Consider how extra-curricular activities like sports, music, art, and other hobbies and interests help teach lessons and make students “well-rounded”
- Consider why spending time with family and doing things you enjoy (playing, traveling, “hanging out”) is also important

How can schools help students beyond teaching them about the core subjects?

- Consider how extra classes like PE, art, music, foreign language, etc. are important to help students become “well-rounded”
- Consider how students are around other students throughout the day and how this helps develop important social skills
- Consider how teachers can recognize student interests and develop and encourage those interests

How might the daily and yearly school schedule interfere with students becoming “well-rounded”?

- Consider the length of the school day (plus homework), and why this might interfere with students participating in other activities at home
- Consider that a teacher has limited time and must work with dozens of students at once even though each student is unique and might be better suited to different learning styles
- Consider that a student spends far more days at school rather than at home doing things that interest him or her and exploring areas beyond academics

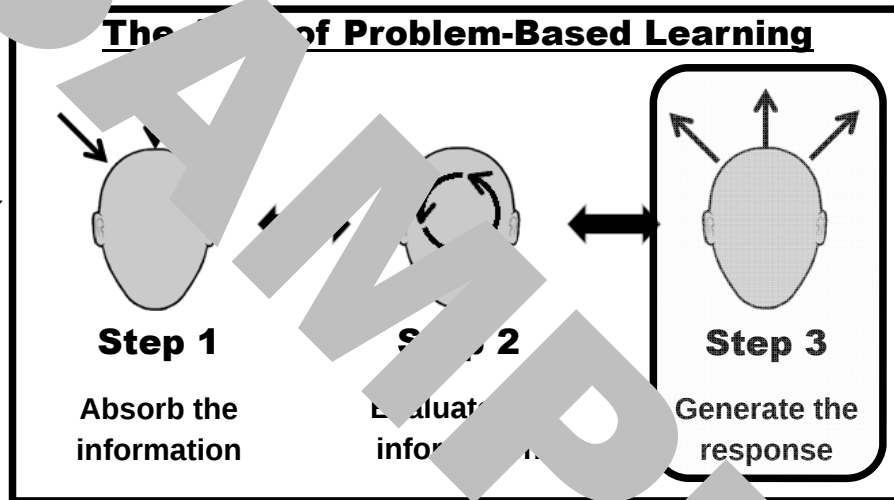
Teacher Instruction Sheet

Problem-Based Scenario	
Section ① -	Stimulus Review
Section ② -	Classroom Discussion
Section ③ -	Student Response
Section ④ -	Grading & Analysis

Student Responses (Extended Response)

The Student Responses are **Section 3** on your Teacher Instruction Sheet.

Student Handout



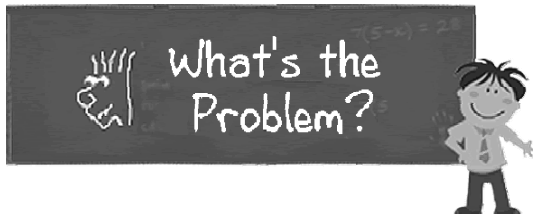
On your Teacher Instruction sheet, you'll see that each scenario provides two types of response options for your students—Extended Responses and the Product Option. Let's look at the "Extended Responses" first.

As you would expect, the Extended Responses are simply questions arising around the Problem-Based Scenario that the students answer through their writing.

Most likely, the Extended Responses are similar to what you might see on a Performance Task of a comprehensive assessment (where students are given a range of information to review, and then must give their conclusions based on the evidence). The "test prep" benefits alone make it worthwhile for students to complete the Extended Responses, but the broader benefit is their ability to take the information they've been exposed to and generate a logical response to a problem scenario.

The rubric and process for grading Extended Responses is on the following pages. Also, we will leave it up to you whether you want to allow students to use notes they have taken throughout (we think it's fine for them to do so), and also how strict you want to be with time limits (a half hour or so should be fine).

Here are the Extended Response questions for this scenario.



What do you think?

The questions below are centered around the Problem-Based Scenario you've been reviewing. Please answer the questions on separate sheets of paper.

- 1) What are different activities in which every child should participate in order to be "well-rounded"? Why are these important?
- 2) Should student activities outside of school (friends, sports, music lessons, etc.) influence the length and schedule of the school day? How do they fit in with the current school day?



Remember to support your answers with evidence that you've gathered from what you've read and discussed in class!

Student Responses

Language Arts

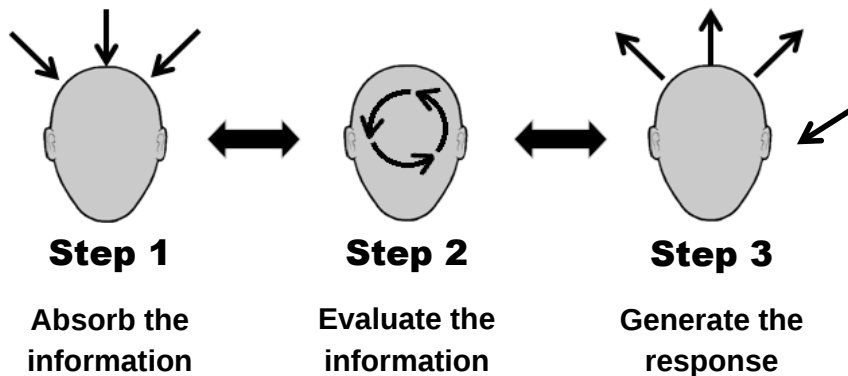
In previous editions of this book, students have only concentrated on one piece of the puzzle. Now we look at the Main Problem Scenario as a whole, incorporating everything that has been researched and discussed along the way.

To respond to the Main Problem Scenario, a prompt has been provided (shown to the right). Your students' work—perhaps oral presentations—will need to meet several expectations from a Language Arts perspective. Students must:

- Show the ability to comprehend informative texts and resources
- Explain their position and overall reasoning
- Support their positions with evidence from research
- Articulate clear opinions (*stressed at the elementary level*)
- Form compelling arguments (*stressed at the middle school level*)
- Demonstrate speaking and listening skills

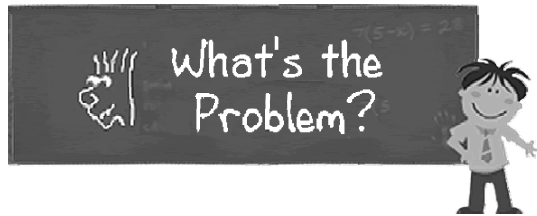
The skills above will only be demonstrated if students are able to absorb the Stimulus Items, organize their thoughts, and approach the Problem Scenario in a logical way. If they fail in these tasks before a single word is written on paper, they will never be able “write their way out of it” at this stage of the game. To put it another way:

The 1-2-3 of Problem-Based Learning



*This is not merely a writing exercise!
Student responses will never satisfy all of the requirements listed above if Steps 1 and Steps 2 are incomplete.*

Here is the Language Arts prompt for this Problem Scenario.



What do you think?

The prompt now is centered around the Problem Scenario you've been reviewing. Please provide your response on a separate sheet of paper.

You have been asked to **write an editorial** for your school newspaper stating your opinion on the length of the school day.

You must be clear in whether you *support* or *oppose* lengthening the school day. Be sure to back up your opinion with evidence and facts.

A large selection of pages
has been chosen for you to
review (full book = 88 pages).

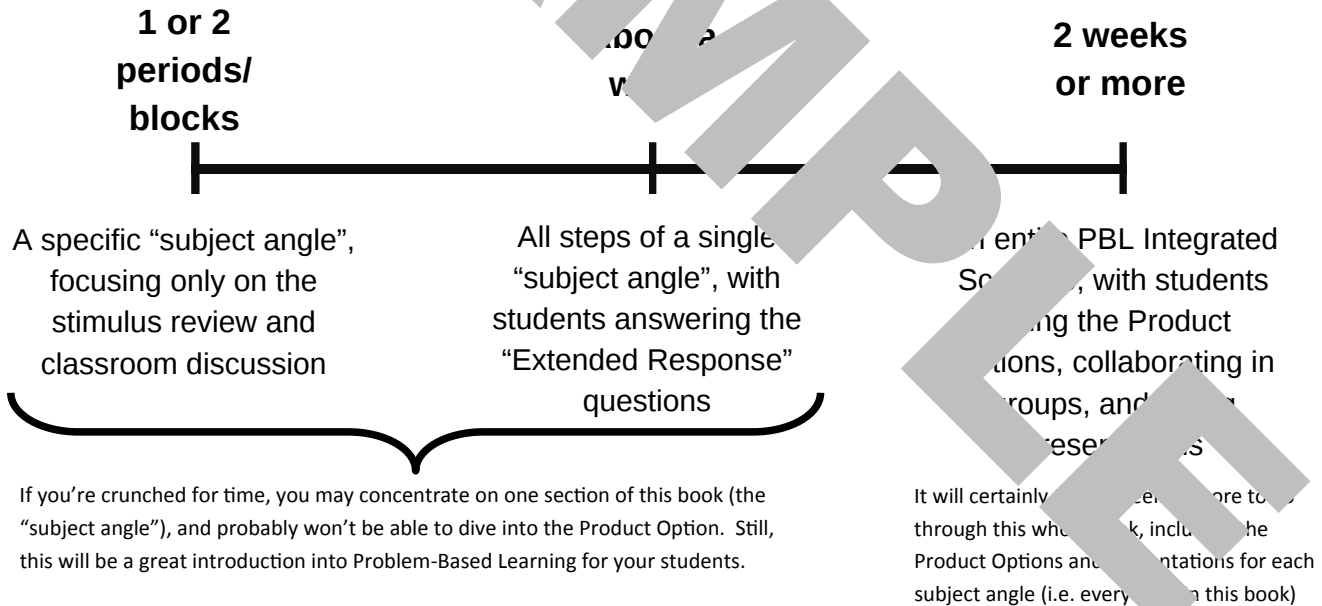
How long will it take?

Without a doubt, the most common question we are asked is:

Student
Handout

“How long is this going to take?”

Our answer is, *it's up to you* (which could be seen as dodging the question). The truth is that it's all about options and flexibility. Obviously, the time will greatly vary if you just do a “subject angle” problem (i.e. one section of this book) or do the entire integrated Problem Scenario (i.e. the whole book). Consider these guidelines:



In the end, if you can take a Problem Scenario all of the way from beginning to end, including each “subject angle”, as well as the products, group work, and presentations that go with each one, your students will have accomplished quite a bit. For that reason, we have included a **“Certificate of Accomplishment”** that you may want to provide to show students that their efforts are appreciated. Remember, you want them to enjoy the whole experience!

Photocopy this certificate to give to your students.

Certificate

of

A CHIEVEMENT

Awarded to _____

for completion of _____ for _____

Problem-Based Scenarios for "The School Day"

By completing this entire scenario, you have demonstrated that you have the ability to approach a real-world problem about _____ in a variety of different sources, evaluate all of the information and provide a clear and logical response to the challenge.

Given this date _____ in the year _____

Signed _____

**Great
Job!**