THE PBL PROJECT

Problem-Based Learning. Done Right. Finally.

What's the Problem?
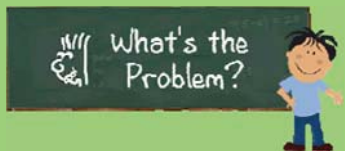
Integrated Problem Scenarios
Upper Elementary
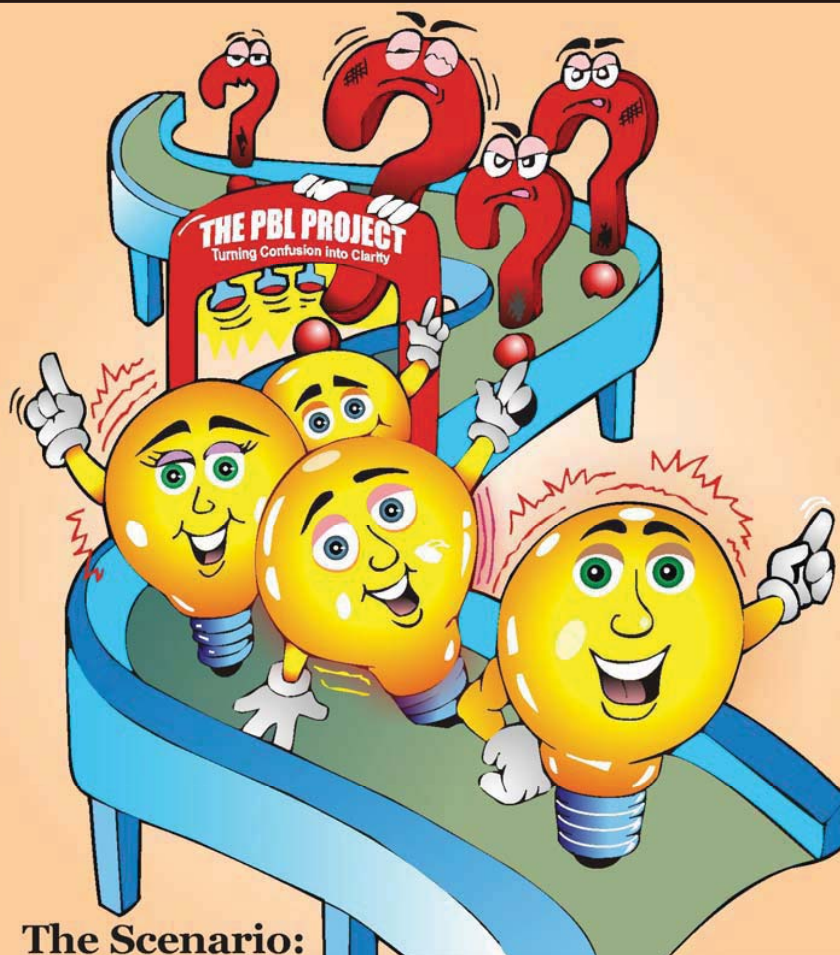
The Scenario:

"Print vs. Online Magazines"

You are the owner of a magazine publishing company. Should you publish your magazines online, or continue to print and deliver them to your customers' doors?

* 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:

Step 1	Step 2	Step 3
Absorb the information	Evaluate the information	Generate the response
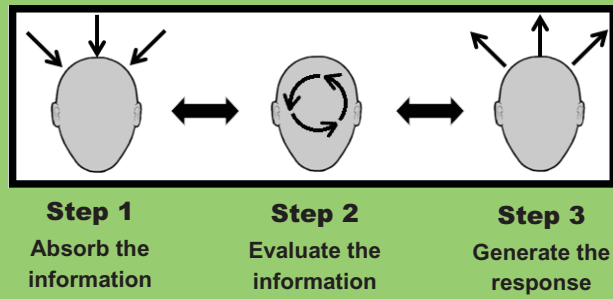
This book will walk teachers and students through the following Problem Scenario:

The Main Problem Scenario:

> You are the owner of a magazine publishing company.
> Should you publish your magazines online, or continue to
> print and deliver them to your customers' doors?

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

The Math Angle

Does the customer prefer reading print magazines or browsing through them online?

The Science Angle

Is reading an online magazine better for the environment than reading a print version?

The Social Studies Angle

How is media changing, and what does it mean for the future?

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

Table of Contents

Why Problem-Based Learning?

The only clear, rational answer to, *"Why Problem-Based Based Learning?"* is to say that *"Students need it."* Since memorizing facts, definitions, or mathematical formulas does not equip a student to thrive in today's world. This shift is highlighted by a few recent developments.
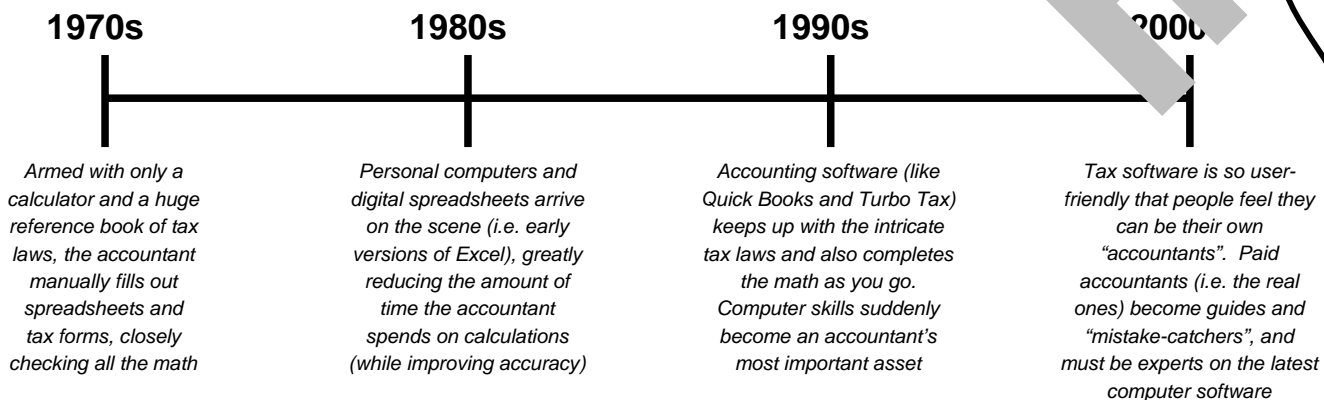
First, new leader standards (including the Common Core) that are being developed around the country are often built around a simple mantra:

"College and Career Ready"

It seems obvious, but there's more. "College and Career Ready" is a moving target. Consider a student who is in upper elementary school right now (ages 8 to 10). There is no telling what career he or she will have twenty years from now, at around 30 years of age. There is a long list of jobs that didn't exist even 10 years ago (*app designer, social media strategist, online teacher… just to name a few*). There are certainly many career paths that don't exist right now but will be common in a couple of decades (*perhaps a virtual reality tour guide, body part replacement specialist, or weather modifier*). Likewise, there are jobs that are familiar at the moment that may be on their way out (*about retail cashiers*).

To try and predict the specific knowledge base and skill set that students will need for their future careers may be like an old-timer placing his music CDs into a time capsule just so he can have a good laugh twenty years later. To really drive home the point, consider a "predictable" job that has existed for hundreds of years, and will certainly exist for hundreds more. I'm referring to the trustworthy **accountant** (and for this exercise, we'll just look at the "tax preparation" part of the accountant's job, because taxes aren't going anywhere!). Let's see how this job has changed:

The Evolution of an Accountant *(during tax season)*

1970s	1980s	1990s	2000s
Armed with only a calculator and a huge reference book of tax laws, the accountant manually fills out spreadsheets and tax forms, closely checking all the math	*Personal computers and digital spreadsheets arrive on the scene (i.e. early versions of Excel), greatly reducing the amount of time the accountant spends on calculations (while improving accuracy)*	*Accounting software (like Quick Books and Turbo Tax) keeps up with the intricate tax laws and also completes the math as you go. Computer skills suddenly become an accountant's most important asset*	*Tax software is so user-friendly that people feel they can be their own "accountants". Paid accountants (i.e. the real ones) become guides and "mistake-catchers", and must be experts on the latest computer software*

So, the skill set has changed and the accountant has gone from a quiet, detail-obsessed math guru to a software expert who is willing to empower the customers to do a job that once only he or she could do. And every job is going through similar transitions. One of the main reasons for this development is technology, which brings us to the question raised on the next page.

And what about technology?

Here's something to think about: ***What do you teach a student who has access to all the information in the world?***

It's a good question. You'd be hard-pressed to find a fact, statistic, quotation, formula, or tiny detail that the average 5th grader can't find in less than a minute with a Smart Phone (or, coming soon, wearable technology). If they are armed with the right technology, students will react like so:

- *"Who wrote Charlotte's Web?"* - **"No problem."**
- *"What is the formula for the volume of a rectangular prism?"* - **"Piece of cake."**
- *"What is the diet of the red-billed phoebe?"* - **"Coming right up."**

Consider this visual:
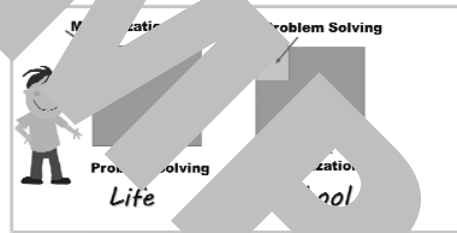
Technology is a game changer. The above illustration shows a truth that has been true for quite some time, and the age of "instant information" only makes life "memorization" square smaller.

Yes, there is baseline knowledge every student should know. For example: *Should elementary school students be able to name the first president of the United States?* Of course. *Should middle school students be able to graph a simple formula?* Absolutely.

The issue is that the amount of information that is labeled "absolutely must memorize" keeps shrinking and, frankly, gets less critical to a student's success. For example, *should students instantly know the capital of Alabama?* It's hard to say. After all, it's only a click away.

So, we've established that what students need to know is changing. That leaves one question...

Well, what do they need to know?

We hate to be repetitive (not really), but **it all comes back to the skills of Problem-Based Learning.** These skills will be vital to students regardless of the inevitable changes that the future brings.

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

Step 1
Absorb the information

Step 2
Evaluate the information

Step 3
Generate the response
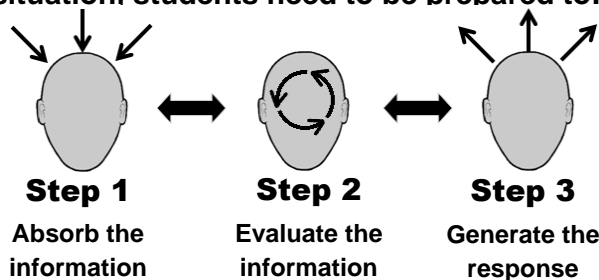
The age of "instant information" may create a shift in classroom instruction, but it should be embraced by teachers and students. What is important to remember is that absorbing the information (Step 1) is just a small part of the process. In fact, technology can also be used to approach the other steps in unique ways (especially the way the student can respond in 'Step 3')

The Main Problem:

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

> You are the owner of a magazine publishing company that is under pressure to thrive as the industry quickly changes. You must decide between publishing your magazines online, or continuing to print and deliver them each week to your customers' desks. What are the issues involved, and what is best for the company?

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 into a single approach.

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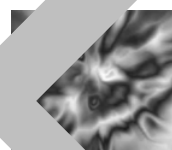
School   **Life**

It's certainly a challenge—impossible, actually— to have "real life" attached to 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-____ Below are several angles from which to approach the problem.

The Math Angle:

Does the ____ ____ prefer reading print magazines or browsing through them online?

Students will analyze ____ey d____ ____ermine how people prefer to read magazines—in print (____ par____ ____ or on the computer screen.

The Science Angle:

Is reading an online magazine ____ ____ the environment than reading a print version?

Students will review various perspectives and determi____ ____ ere is any environmental gain or loss associated with the switch from paper ____ ____ines to the inte____et. They will also decide how much this should influence the ac____ ____ of publish____ ____ mpanies.

The Social Studies Angle:

How is media changing, and what does it mean for the future?

Students will review the rise and importance of mass media, and understand how media has changed over the years (and in what ways it will continue to change). They must decide how these trends should influence the actions of publishing companies.

★ **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:

Student Handout

- **Survey Analysis**
- **Numbers and Operations**

In addition—and perhaps more importantly—students will need to take on a mathematical frame of mind (in academic circles, this is referred to as the "Standards for Mathematical Practice"), which is a key benefit of 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.

The MATH ANGLE

Make photocopies of the next page to introduce the "Math Angle" of this Problem-Scenario to your students
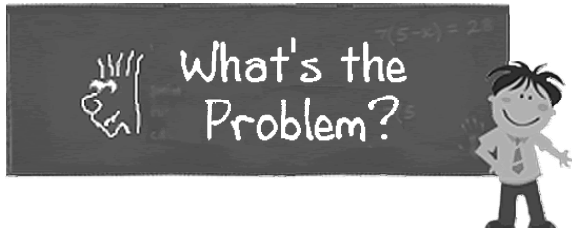
What's the Problem?

Are you ready to tackle the problem?

The Scenario:

You are the owner of a magazine publishing company that is under pressure to thrive as the industry quickly changes. You must decide between publishing your magazines online, or continuing to print and deliver them each week to your customers' homes. What are the issues involved, and what is best for the company?

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:

Does the customer prefer reading print magazines or browsing through them online?

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 analyze survey data to determine how people prefer to read magazines—in print (i.e. paper) format or on the computer screen.

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

Stimulus Review

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

The ___ of Problem-Based Learning

Step 1	Step 2	Step 3
Absorb the information	**Evaluate the information**	**Generate the response**

The MATH ANGLE

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**
- **Videos**
- **Infographics**
- **Blogs**

- **Statistics**
- **Lists**
- **Websites**
- **Editorials**

- **Audio Recordings**
- **Cartoons**
- **Primary Sources**
- **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://~~~pblproject.com/students

Login: ~~~az~~le
Passwo~~~ c~~

What's the
Problem?

Login: [ ]
Password: [ ]
[Login]

The Stimu~~~ yo~~ ~~see for this section of the exercise include:

Stimulus I~~m #~

— "How do y~~a r~~d~~ ~~urvey results)

Stimulus Item #2

— "A Look at the Options" (arti~~ ~~w/ statistics)

Stimulus Item #3

— "Print vs. Digital" (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!
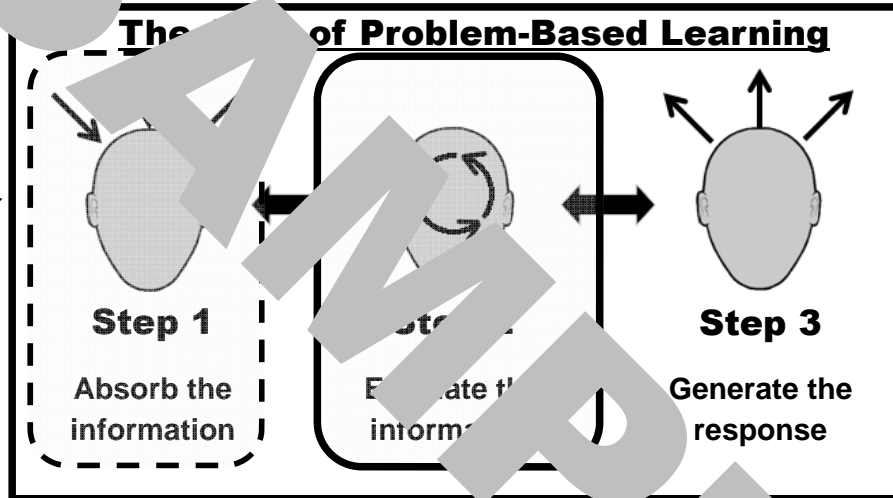
Teacher Instruction Sheet

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"

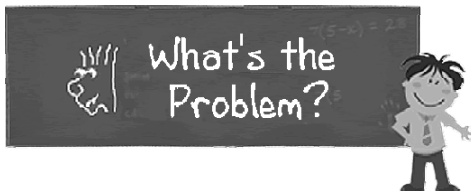**The** ___ **of Problem-Based Learning**

Step 1

Absorb the information

Step 2

E____ate th___ inform___

Step 3

Generate the response

The MATH ANGLE

Now that your students have reviewed the Stimulus Iter___ ___ a fitting time to have a **class discussion** about the Problem-Based Scenario (sp___fically, the "s___ct angle" that you're working with).

At this stage, there will be a limited amount of new information b___ ___ t___ table (Step 1), although you might want to introduce ideas not covered in t___ ___imul__, and perhaps students will share original thoughts and experiences. For the m___ ___rt, 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
Print vs. Online Magazine (math angle)

How can surveys be used to determine which is a better way to reach a customer—print or online magazines?

- Consider appropriate questions for a survey *("How do you get your news?" or "Would you be willing to pay for a magazine subscription" or "Do you carry a Smart Phone?", etc.)*

- Consider who would be best to take the survey… *Should it be random, or just people who read magazines, or people who would be willing to pay for a subscription of some kind?*

- Consider how the survey results will be analyzed and can ultimately be used to guide the decisions of a publishing company

How can a publishing company use the information from a customer survey to make business decisions?

- Consider why it is important to know the "sample" for the data (i.e. the people taking the survey), and how that knowledge will factor into decision making

- Consider how a publishing company might decide to change their business model— or keep it the same—based on the results of the survey

- Consider how a publishing company might decide to make adjustments so that the next time the survey is given the users give different answers (such as making changes that were requested based on the original survey)

What are the most likely factors that determine the outcome of a survey?

- Consider how the sample of people who take the survey will be a major factor in the results of the survey

- Consider how the wording of questions can change the results of the survey (such as *"Do you read news articles on the internet?"* versus *"Do you think the internet is best for getting your news?"*)

- Consider how the survey might yield different results depending on when it is given, such as several years ago (before most people had Smart Phones) versus today
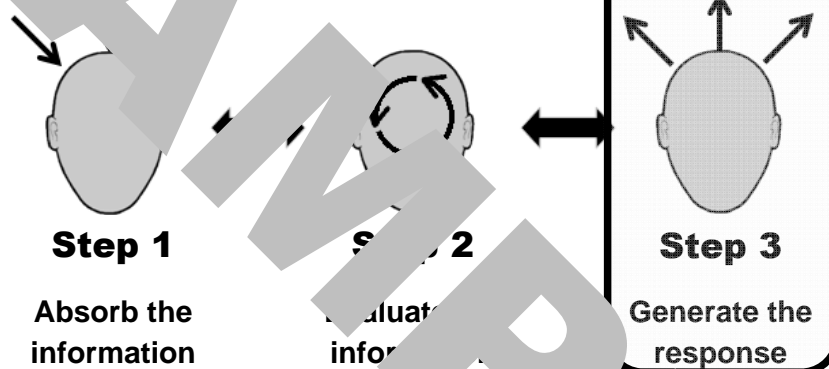
Teacher Instruction Sheet

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

Student Responses
(Extended Response)

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

Student Handout →

The ___ of Problem-Based Learning

Step 1	Step 2	Step 3
Absorb the information	**Evaluate information**	**Generate the response**

The MATH ANGLE

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 centering around the Problem-Based Scenario that the students answer through their writing.

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. →

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

SAMPLE

1) How can a customer survey be used to help a magazine publisher decide whether to distribute a magazine in print or online? How might a survey be misleading?

2) Based on survey results (provided in Stimulus #1), which do students prefer—print magazines or online magazines? Why is this most likely the case, and is it likely to change?

★ *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 Response
Section ④ - Grading & Analysis

Grading Rubric
(Extended Responses)

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

Student Handout

The MATH ANGLE

One thing that your students need to understand about these Problem-Based Scenarios is that the answer is never any easy "no." Instead, students must think their way through the muddy waters of different situations and challenges, while you guide them along the journey.

Of course, the end result needs to be more than a pat on the 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 intent is that when students are graded in a clear and fair way, it enables them to continually 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 proved through your response to have a high level of background knowledge of the subject.	You showed a reasonable background knowledge through most of your response.	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: **Production & Distribution of Writing** – you must organize and sustain your writing based on a defined purpose

in other words: *Was it clear what point 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.	The purpose of your response was vague, and there was limited organization and focus.	There was no defined purpose or organization in your response.	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 (use "stimulus items")

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

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 almost no 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	Your response was mostly professional with limited errors related to language conventions.	Your response was rather sloppy with multiple errors related to language	Your response was completely sloppy and showed no effort to follow language	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:

- **Ecosystems and the Environment**
- **Impact of Human Activity on the Earth**

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.

Make photocopies of the next page to introduce the "Science Angle" of this Problem-Scenario to your students
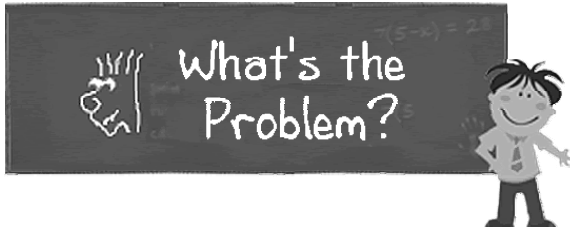
The SCIENCE ANGLE

Student Handout

Are you ready to tackle the problem?

The Scenario:

> You are the owner of a magazine publishing company that is under pressure to thrive as the industry quickly changes. You must decide between publishing your magazines online, or continuing to print and deliver them each week to your customers' doors. What are the issues involved, and what is best for the company?

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:

Is reading an online magazine better for the environment than reading print version?

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 determine if there is any environmental gain or loss associated with the switch from magazines to the internet. You will also decide how much this should influence the actions of publishing companies.

★ *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!*
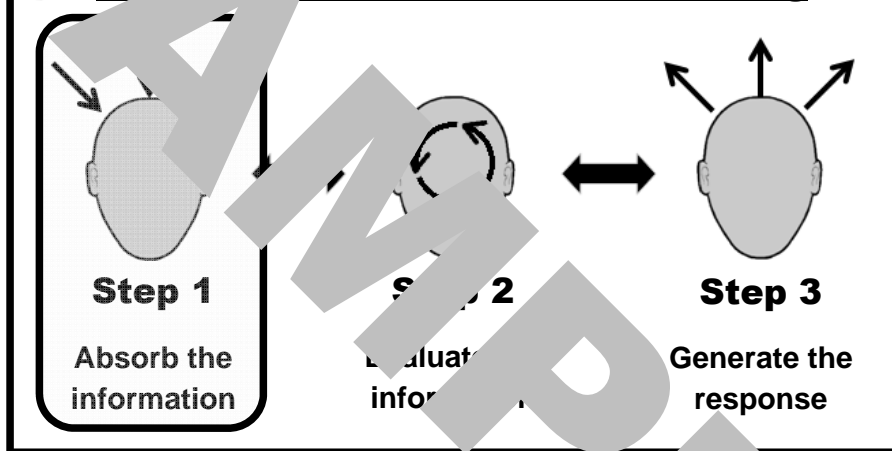
Teacher Instruction Sheet

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

The SCIENCE ANGLE

Stimulus Review

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

The [...] of Problem-Based Learning

Step 1

Absorb the information

Step 2

Evaluate the information

Step 3

Generate the response

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**
- **Videos**
- **Infographics**
- **Blogs**

- **Statistics**
- **Lists**
- **Websites**
- **Editorials**

- **Audio Recordings**
- **Cartoons**
- **Primary Sources**
- **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: magazine
Password:

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

Stimulus Item #1

— Print Media, Internet & the Environment (video)

Stimulus Item #2

— "Companies & Social Responsibility" (editorial)

Stimulus Item #3

— "Magazines Bad for the Environment?" (blog)

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!
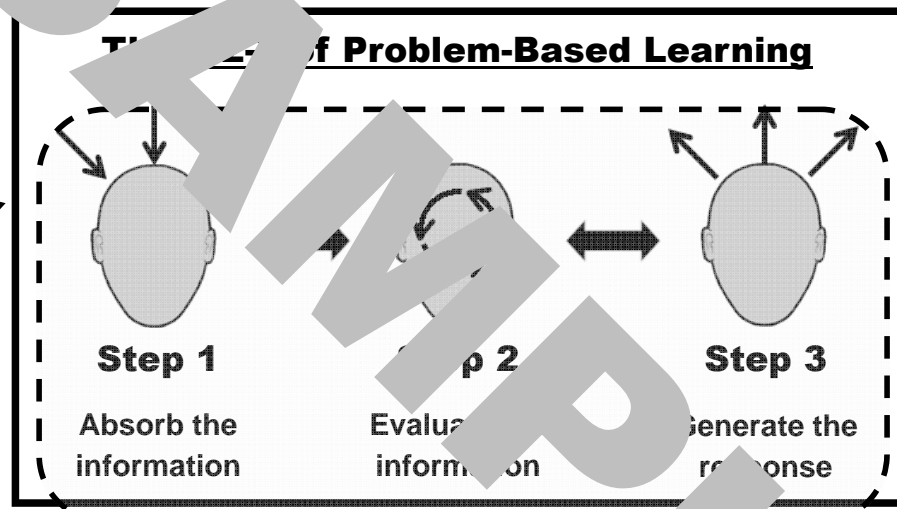
Teacher Instruction Sheet

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

"Thought-Gathering" Sheet

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

Student Handout →

The SCIENCE ANGLE

The ___ f Problem-Based Learning

Step 1

Absorb the information

Step 2

Evalua___ informa___ on

Step 3

Generate the re___onse

So, by this point, you've had students review Stimulus I___ ___elated to the Problem Scenario. That led to a stimulating (we hope) classroom ___ussion on th___ ___ic.

Often times, there is a feeling of "information overload" at this stag___ ___tac have enough information to generate their constructed responses and/or fu___ ___heir product options (we'll talk about these on the upcoming pages), but their thoug___ ___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?
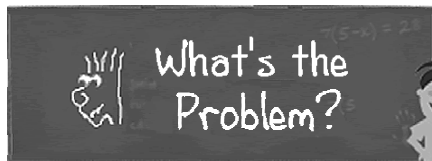
Online vs. Print Magazines

"Thought-Gathering" Sheet

Looking at both sides:

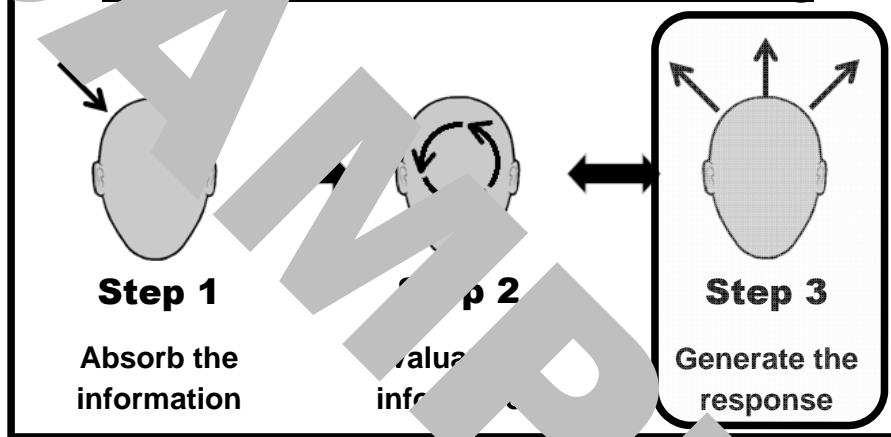| Print Magazines are Better for the Environment	Online Magazines are Better for the Environment

Teacher Instruction Sheet

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

Student Responses
("Product Option")

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

Student Handout →

The ___ of Problem-Based Learning

Step 1

Absorb the information

Step 2

Evaluate information

Step 3

Generate the response

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 ___):

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.

The SCIENCE ANGLE

What's the Problem?
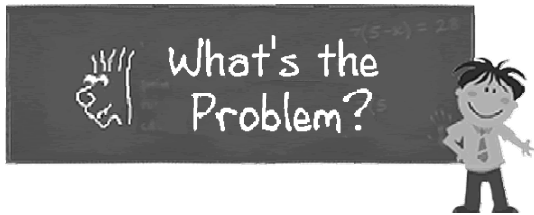
The task at hand...

Working to solve 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 **prepare for an interview** about the company your group represents (you have been assigned to either a traditional magazine company or an internet publishing company).

The topic of the environment will certainly arise, so be prepared to answer the question, *"How is using your product [a print magazine or an online magazine] better for the environment than the alternative?"* You must be ready to give good reasons (the interview will take place in front of the class, who is acting as the "interview audience").

Be ready to answer tough follow-up questions to see how well you are prepared.

Teacher Instruction Sheet

Problem-Based Scenario
Section ① - Stimulus Review
Section ② - Classroom Discussion
Section ③ - Stu... Resp...
Section ④ - Grading & Analysis

Grading Rubric
(Product Option)

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

Student Handout →

The SCIENCE ANGLE

We mention this time an... ...le aga... ...gh this book, and it's worth saying another time:

It's al... ...bou... ...es.

The purpose of these exercises is to ... ...stud... ...o thi... ...hrough problems and situations, and it's the teacher's role t... ...de the... ...the journey.

Without a doubt, your students will remind... ...that... ...abo...t the process" when they try to convince you to be gentle during the grading proce... ...ter all, they've been brought up to bubble in the correct circle with a #2 pencil, s... ...ng asked to "produce" something from a variety of information can be tri... ...ut they'll do just fine.

As students work through the process, they will learn subje... ...cifi... ...an... cover a few important standards. Yet they'll also be developing those 21... ...skills and lifelong traits that we mention throughout this book (a few are listed... ...w).

♦ **Critical Thinking**   ♦ **Collaboration**   ♦ **Entrepreneurialism**   ♦ **Patience / Pe... ...erance**

♦ **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. →

What's the Problem?
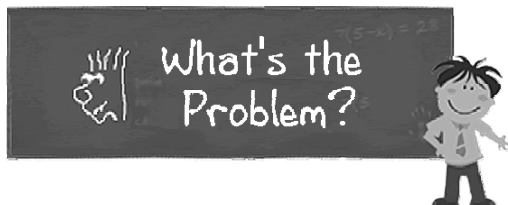
How do I get an A?

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

Thoroughness
Evidence
Strategy
Teamwork

Thoroughnes

_____ The group com__ted __ of __ __uired tasks (15 points)

_____ Everyone followed __tio__ __roug__ut the process (15 points)

Evidence

_____ The group's final product was logical and c__ __e defended (15 points)

_____ A variety of evidence was provided to __ __rt the produ__ (10 points)

Strategy

_____ The group kept its focus on the requirements of the __duct (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

The SOCIAL STUDIES ANGLE

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

Student Handout →

• **Technology & Society** (focus on mass media)
• **Economics** (supply and demand)

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

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

The Scenario:

You are the owner of a major newspaper company that is under pressure to thrive as the industry quickly changes. You must decide between publishing your newspaper online, or continuing to deliver paper copies to your customers' doors. What are the issues involved, and what is best for the company?

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:

How is media changing, and what does it mean for the future?

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 the rise and importance of mass media, and understand how it has changed over the years (and in what ways it will continue to change). You must decide how these trends should influence the actions of publishing companies.

★ *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.*
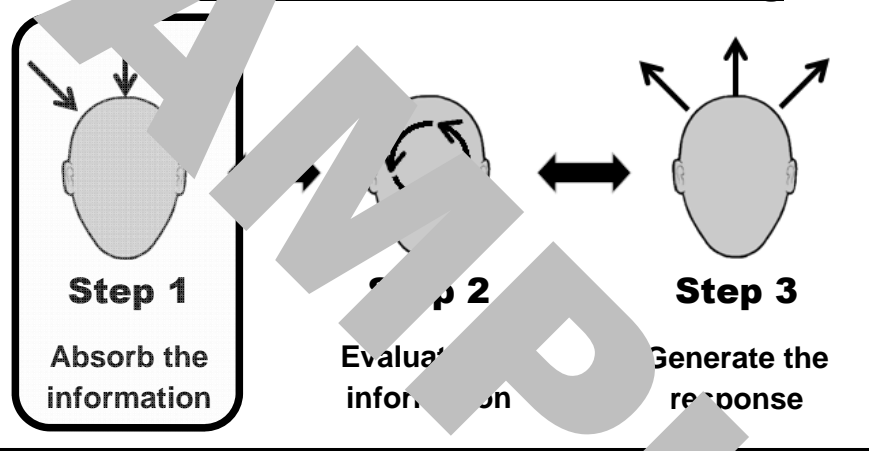
Problem-Based Scenario

Section ① - Stimulus Review

Section ② - Classroom Discussion

Section ③ - Student Response

Section ④ - Grading & Analysis

Stimulus Review

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

The ___ of Problem-Based Learning

Step 1

Absorb the information

Step 2

Evaluat___ inform___ on

Step 3

Generate the response

The SOCIAL STUDIES ANGLE

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

In our Problem Scenario, all of the Stimulus Items have been provi___ for y___ We have intentionally gathered a variety of different types and sources. This___ important in today's modern world where information comes from all direction___ 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**
- **Videos**
- **Infographics**
- **Blogs**

- **Statistics**
- **Lists**
- **Websites**
- **Editorials**

- **Audio Recordings**
- **Cartoons**
- **Primary Sources**
- **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: magazine
Password: 3

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

Stimulus Item #1

— "Print Media vs. Internet" (pros / cons)

Stimulus Item #2

— "How is Media Changing?" (article)

Stimulus Item #3

— "Future of Media" (online discussion forum)

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"

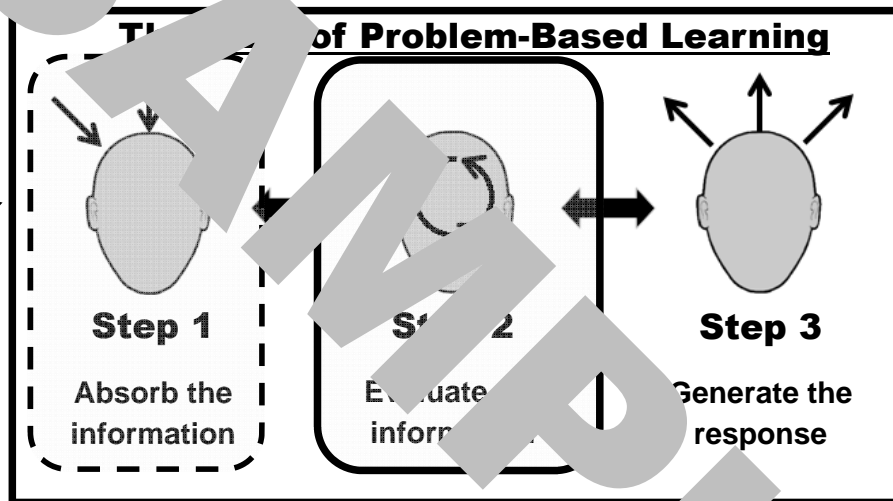## The ___ of Problem-Based Learning

Step 1

Absorb the information

Step 2

Evaluate information

Step 3

Generate the response

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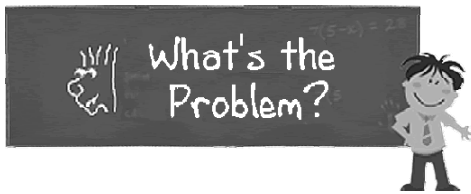
Now that your students have reviewed the Stimulus Items, is a fitting time to have a **class discussion** about the Problem-Based Scenario (specifically, the "___ angle" that you're working with).

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.

What's the Problem?

<u>Leading Questions for Classroom Discussion</u>
Print vs. Online Magazines (social studies angle)

How do magazines and the Internet contribute to the spread of information?

- Consider how events that happen thousands of miles away are now known about instantly, and how mass media has changed the world
- Consider different sources that people use to get their news and information (newspapers, magazines, TV, radio, internet, etc.), and which are the most instantaneous
- Consider how things would be different if news took weeks to spread across the country, like it did a couple of centuries ago

How is the format of mass media changing? How will people get access to news and information in the future?

- Consider the common way to get news today (newspapers, magazines, TV, radio, internet, etc.), and which of these options is on the rise and which is on the fall
- Consider how mobile devices, such as Smart Phones, have changed the way people access information
- Consider future innovations (such as wearable technology, like smart watches and glasses) that are not popular yet, but have the potential to make a huge impact on how people access information

If a publishing company wants to be competitive, what formats should it use to distribute its information?

- Consider how a company needs to fit the preference of its customers, and how this may vary depending on who those customers are (i.e. young people versus older people)
- Consider how all companies need to "change with the times" to be competitive, and what these changes may be in regards to how people access information
- Consider how cost and profit potential play a major part in how a company delivers its product, and how the company will only change if costs go down and profit goes up
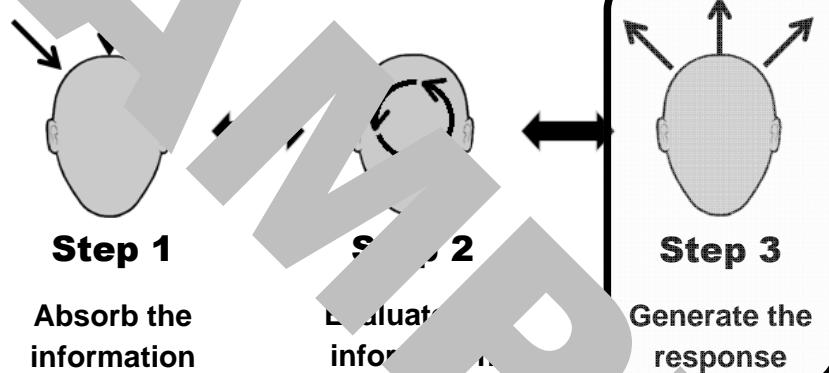
Teacher Instruction Sheet

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

Student Responses
(Extended Response)

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

Student Handout →

The Way of Problem-Based Learning

Step 1

Absorb the information

Step 2

Evaluate information

Step 3

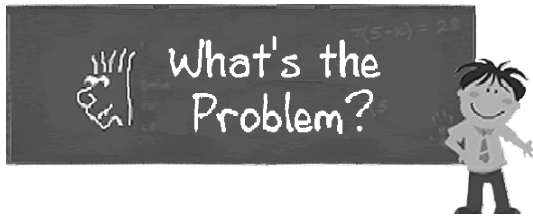**Generate the response**

The SOCIAL STUDIES ANGLE

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 writing.

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. →

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 are people gaining access to "mass media" (or information that reaches lots of people) differently now than in the past? Does this change the influence of mass media on our society?

2) Should a publishing company consider changes in mass media when it's making a business decision about magazine format (print vs. online)? What should be the major trends that will determine the company's decision?

★ *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 Response
Section ④ - Grading & Analysis

Grading Rubric
(Extended Responses)

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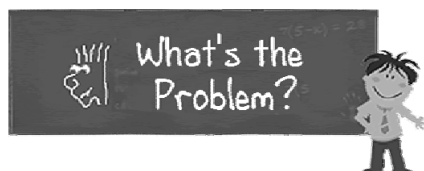
Student Handout →

The SOCIAL STUDIES ANGLE

One thing that your students to understand about these Problem-Based Scenarios is that the answer is never just a "no. Instead, students must think their way through the muddy waters of different situations and challenges, while you guide them along the journey.

Of course, the end result needs to be more than a pat on the 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 continually 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) **Social Studies 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: **Social Studies 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 proved through your response to have a high level of background knowledge of the subject.	You show... re... und...ledge ...gh m... your re...	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: **Production & Distribution of Writing** – you must organize and sustain your writing based on a defined purpose

**in other words: *Was it clear what point 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.	The purpose of your response was vague, and there was limited organization and focus.	There was no defined purpose or organization in your response.	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 more?*

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 little to no 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?*

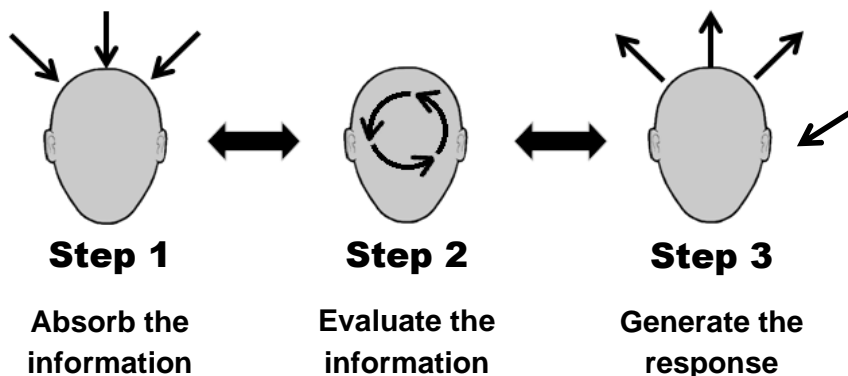| 4	3	2	1	NS
Your response was professional and you demonstrated a command of language conventions.	Your response was mostly professional with limited errors related to language conventions.	Your response was rather sloppy with multiple errors related to language conventions.	Your response was completely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

Student Responses
Language Arts

In previous ~~sections~~ of this book, students have only concentrated on one piece of the puzzle. ~~Now~~ we ~~will~~ 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,~~ a prompt has been provided (shown to the right). Your students' ~~writing—and~~ ~~perhaps~~ oral presentations—will need to meet several expectations from a La~~nguage~~ Arts ~~perspective.~~ Students must:

- **Show the ability to compre~~hend~~ ~~in~~form~~ati~~ve texts and resources**

- **Explain their position and ove~~rall~~ ~~reas~~on~~in~~g**

- **Support their positions with evide~~nce~~ ~~from~~ ~~their~~ ~~r~~esearch**

- { **Articulate clear opinions** *(stressed at t~~he~~ ~~elem~~en~~tar~~y level)*
    Form compelling arguments *(stressed ~~at~~ the ~~m~~iddle ~~sch~~ool 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~~ ~~wi~~ll never be able "write their way out of it" at this stage of the game. To put i~~t an~~other way:

The 1-2-3 of Problem-Based Learning

Step 1
Absorb the information

Step 2
Evaluate the information

Step 3
Generate the response

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.

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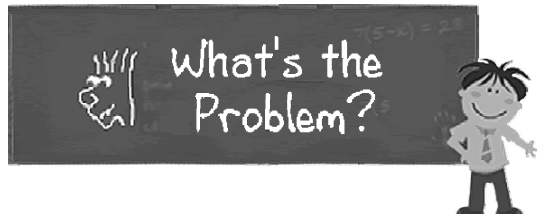
The prompt below is centered around the Problem Scenario you've been reviewing. Please provide your response on a separate sheet of paper.

Decide whether your publishing company will be providing its magazines to your customers online via the Internet, or printed and delivered weekly.

Write an **informative piece** that explains the benefits of your decision. Make sure to include statistics, facts, and any other key evidence gathered from your research.

You must be prepared to inform your class of your decision and explain your reasoning.

How long will it take?

Student Handout →

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

"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:

1 or 2 periods/ blocks	**about a week**	**2 weeks or more**

A specific "subject angle", focusing only on the stimulus review and classroom discussion

All steps of a single "subject angle", with students answering the "Extended Response" questions

An entire PBL Integrated Scenario, with students using the Product Options, collaborating in groups, and making presentations

If you're crunched for time, you may concentrate on one section of this book (the "subject angle"), and probably won't be able to dive into the Product Option. Still, this will be a great introduction into Problem-Based Learning for your students.

It will certainly take a lot longer to go through this whole book, including the Product Options and presentations for each subject angle (i.e. everything in this book)

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

ACHIEVEMENT

Awarded to

for completion of the following:

Problem-Based Scenario — "_____, Online Magazines"

By completing this entire scenario, you have _____ more _____ed that you have the ability to approach a real-world prob_____ _____ about _____ a variety of different sources, evaluate all of the informatio_____ _____d p_____ a clear and logical response to the challenge.

Given this d_____ _____ *in the year* _____

Signed _____

Great Job!