

15th Annual  
Hawker Brownlow  
**Thinking &  
Learning**  
Conference

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**BRIAN PETE**

**FRIDAY 18 MAY**

**Session 2**

**Problem-Based Learning:  
Begin with Questions That Matter**

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**MELBOURNE**

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# BRIAN PETE

Brian comes from a family of educators: college professors, school superintendents, teachers and teachers of teachers. Through his roles as producer of educational videos, publisher of educational resources, and trainer of teachers and leaders, Brian has a rich background in professional development. He brings both a depth of understanding about effective professional development experiences and a technical know-how for practical implementations.



Brian is currently the lead trainer in a major initiative in Singapore for the TILM Ignite Schools. He brings his humour, wit and charm to all of his professional development sessions.

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Website: [www.hbe.com.au](http://www.hbe.com.au)  
Email: [orders@hbe.com.au](mailto:orders@hbe.com.au)

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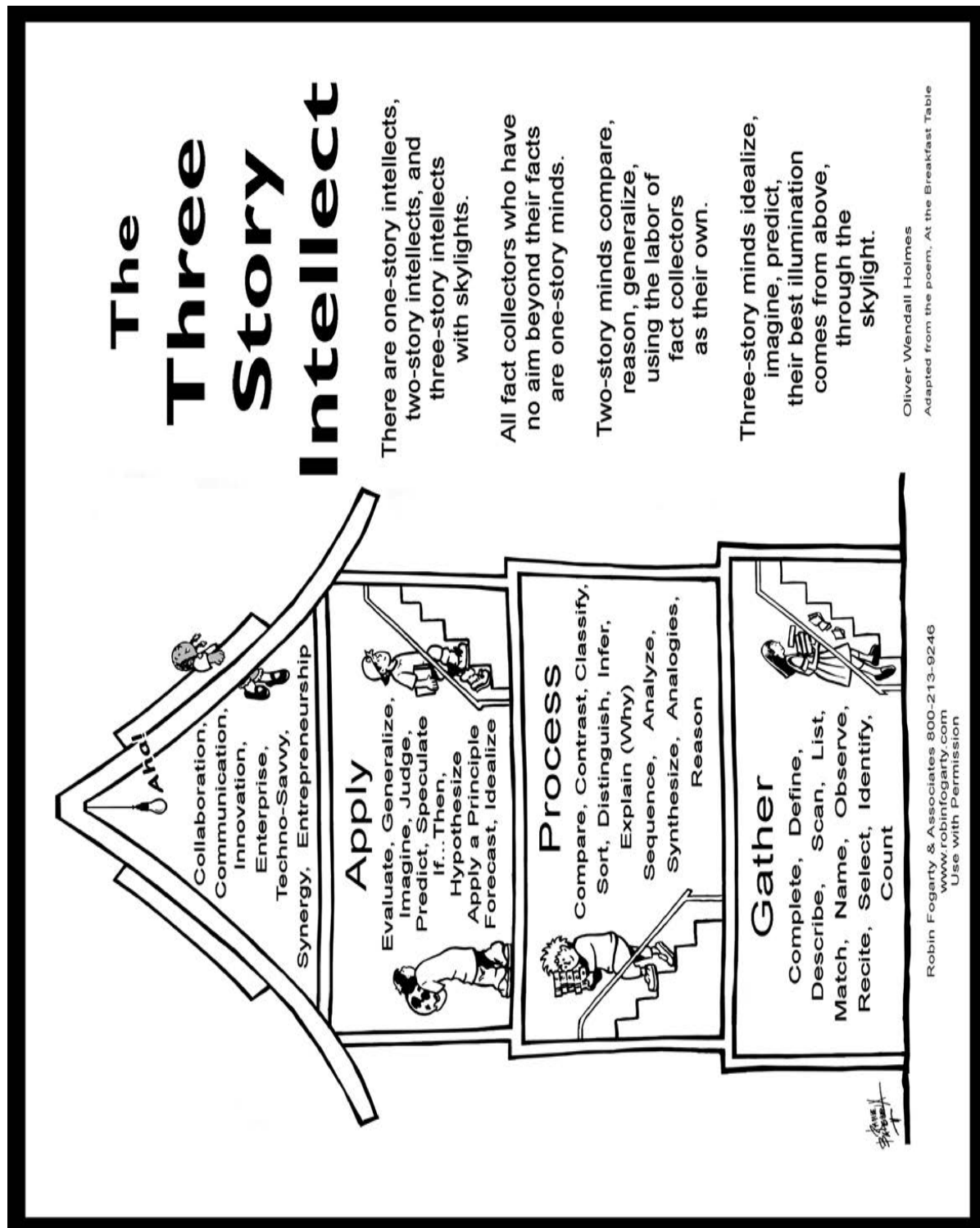
Brian Pete

# Problem-Based Learning

## *Begin with Questions That Matter*

My question was simply, "What do we do if we don't know what to do?"







RFA

## 7 Step PBL Model

### 1-Develop Question

Big open-ended questions, the kind that keep you up at night. Asking questions with no easy answers, that cause students to ask more questions.

### 2-Stakeholder Scenario

"Who" is solving the problem impacts every decision within the process. All stakeholders, pursuing the same goal, with different POV's result in a variety of products.

### 3-Gather Resources

In the "Information Age" learning to skillfully and quickly navigate through the oceans of data on the web is a valuable skill involving critical thinking and decision making.

### 4-Organize Information

Making sense of all downloaded, copied, scanned and handwritten documents is no easy task. To stay out of the weeds focus on the solution and essential question.

### 5-Create Evidence

Creative synthesizing of the collected resources and turning them into a product that solves the problem, means making decisions on the fly with the clock ticking.

### 6-Present Findings

The Presentation of the Findings is as different from Creating Evidence as cooking a turkey is from serving a Thanksgiving dinner. One is the Product the other is the Presentation.

### 7-Assess Learning

If the goal is preparing students for the test of life then the first criteria is, "Was it on time?" Rubrics and checklists for the presentation.



"I don't know . . . this wasn't mentioned in the lesson plan"

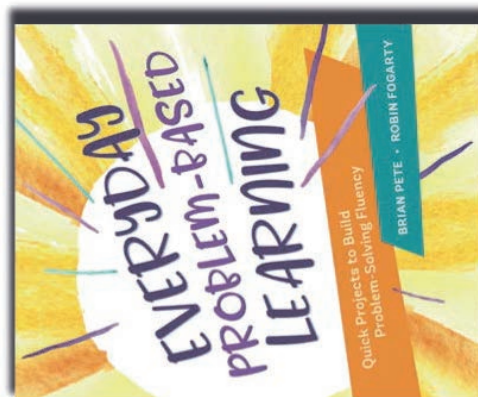
New Title from  
Robin Fogarty & Brian Pete

*Unlocking Student Talent:  
The New Science of  
Developing Expertise*

*The World is Looking for Problem-Solvers*

<i>Top 10 Skills 2020</i>	vs.	<i>Top 10 Skills 2015</i>
1. Complex problem solving		1. Complex problem solving
2. Critical thinking		2. Coordinating with others
3. Creativity		3. People management
4. People management		4. Critical thinking
5. Coordinating with others		5. Negotiation
6. Emotional intelligence		6. Quality control
7. Judgment/decision making		7. Service orientation
8. Service orientation		8. Judgment/decision making
9. Negotiation		9. Active listening
10. Cognitive flexibility		10. Creativity

"For students to benefit from PBL curriculum attributes, such as critical thinking, problem solving, and time management, educators must view PBL as more than an end-of-the-semester project."



Robin Fogarty, PhD Brian M. Pete

### Everyday PBL-

Quick Projects to Build Problem-Solving Fluency

117057 • \$35.95

**45 Minute PBL Lesson**

**1-Develop Question**

## 2-Stakeholder Scenario

You are ... You will ...

(Your POV will be dependent on your role)

Roll the Dice



Record  
the Number

You Will -  
You will -  
You Will -  
You Will -  
You Will -

**3-Gather Resources**

**4-Organize Information**

**5-Create Evidence**

**6-Present Findings**

**7-Assess Learning**

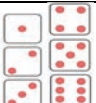
*Reflect on the  
Process*

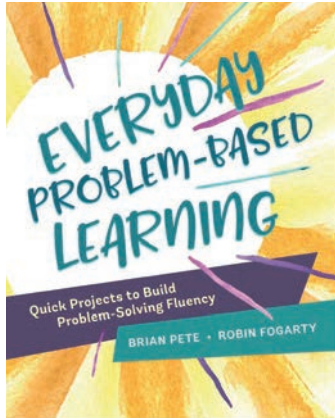
Did You Know: You can do Problem-Based Inquiry, Everyday in a Single Class Period! Really? Daily, embedded, practical, “reach and repeat” iterations, practice, repetitions and rehearsals work. Period!

## Chapter 7 Lesson Plan: History as Art – Eight Lines of Research

*Everyday PBL: Quick Projects to Build Problem-Solving Fluency*

Complete 45 minute PBL Inquiry Lesson

<b>Standards</b> Speaking and Listening Standards: 8.5. Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. 8.6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 8 Language standards 1 and 3 on page 52 for specific expectations.) Language Standards 6–12 8.3 Use knowledge of language and its conventions when writing, speaking, reading, or listening. a. Use verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).	
<b>Develop Question</b>	<i>Are the Arts more Honest about History?</i>
<b>2 Scenario/ Stakeholder Role</b>	<p><b>You are</b> an 8<sup>th</sup> grade history student.</p> <p><b>You will</b> watch the following YouTube video of Lin-Manuel Miranda Performs at the White House Poetry Jam. (It is a spoken word rap about the Alexander Hamilton). Link: <a href="https://www.youtube.com/watch?v=WNFf7nMIGnE">https://www.youtube.com/watch?v=WNFf7nMIGnE</a></p> <p>You will then research a figure from history with at least 4 facts about the historical figure (provide the sources)</p> <p>You will rank the facts in order of importance</p> <p>You will create a spoken word rap of their historical figure of at least 8 lines. You will include all of the researched facts in the recitation performance so the rap will reveal key historical characters to the audience</p>
	Roll the Dice – to determine your Stakeholder Role and POV
<b>3 Gather Information</b>	Search for information on your phone or computer. Find at least 4 facts about your historical figure beyond – Name, date of birth, place of birth, how they died – this can be included in the evidence of learning and the presentation but these stats do not count toward the 4 facts requirement.
<b>4 Organize Information</b>	List the facts that you will use – Put them in order of importance for your evidence of learning Include the source for each fact
<b>5 Create Evidence</b>	Evidence is an 8-line spoken word rap – that incorporates what you have learned about your historical character. Include the 8-line rap on your paper with the list of researched facts.
<b>6 Present Findings</b>	Make video tape of yourself performing the 8 line spoken word rap The video portion of your presentation will be directed to the 8 line spoken word rap that you have written. While you video-record the visual of your poem, the audio portion will be your voice reciting your poem.
<b>7 Assess Learning</b>	You will be prepared to hand in: Your list of facts with the sources arranged in order of importance. Your 8 line spoken word poem. You will upload the video file to the class website.



## Everyday Problem-based Learning

*Quick Projects to Build Problem-Solving Fluency*

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### Ways to Foster Creativity

So how can teachers foster creativity? The four measures in the Torrance tests give us four practices that have proven helpful in fostering or influencing creative behaviors:

- *Fluency* refers to the number of responses one might give.
- *Flexibility* refers to how easily one changes direction to different types of responses.
- *Elaboration* refers to the amount of detail and intricacies in one's responses
- *Originality* refers to the unusualness and uniqueness of one's responses.

Let's explore each of these four methods of fostering creativity in the context of a 3rd grade science lesson on the big idea of *survival*. The teacher's goal is to help students produce an essential question they can pursue to the end of the unit. In an effort practice the process of creative thinking, the four elements are addressed separately.

### Fluency

*Fluency* is the ability to generate many ideas in a flow of brainstormed responses. These build on one another through associations, rhyming, words, meaning, background knowledge, and past experiences. Fluency



is about the number of rapid-fire responses one can produce fluidly and is the first step in problem solving or any creative endeavor because it creates a wealth of ideas to choose from, play with, research, or evaluate, which greatly facilitates the subsequent steps in the process.

Students may initially have some trouble listing enough ideas to have a fruitful discussion. In brainstorming, a simple rule represented by the acronym DOVE can help (see Figure 1.3). A benefit of inquiry-base instruction, and certainly of a tool such as this, is the collaboration, consensus-building, and communication that come into play for the student to learn.

Figure 1.3 | **Brainstorm with the DOVE Chart**

<p><b>D</b> - Defer judgment <b>O</b> - Opt for the outlandish <b>V</b> - Vast number of ideas <b>E</b> - Expand by piggybacking on others' ideas</p>
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***Classroom application.*** To develop the skill of fluency, the 3rd graders are asked to brainstorm ideas, images, characters, and anything they can think of around the concept of *survival*. Working in teams, the students generate ideas on a poster paper, each team using its own color marker. After three or four minutes, the teacher asks the teams to pass their papers to another team; each team then reads aloud the other team's ideas. As they do so, they discover that the ideas from other teams spark their own thinking. They then have a minute or two to add their new ideas to the paper in their own color marker. At the end of the process, each team will have two to three times as many ideas on their brainstorm poster paper than they did at the beginning.

**SURVIVAL:** Escape, alive, protected, okay, you won, fared well, healthy, breathing

To help the students go deeper into the list, have them rank the top three words in the brainstorm—the most creative, most unusual, or most

surprising word. This requires the students to read over the entire list, have a conversation, and make an evaluation to arrive at their final decision..

## Flexibility

*Flexibility* addresses the ability to shift gears, to think, to flex, and to go down many different avenues of thought. It's about how many types of responses branch off the original. Flexibility is changing direction quickly, turning on a dime, and taking that different path, or, as one might say, the road less traveled. It's shifting to an opposing viewpoint, angle, direction, time, place, or modality, or putting oneself in someone else's shoes to look at a question from a different angle.

Being able to consider ideas from multiple points of view requires empathy and understanding, soft skills that are valued in the 21st century (Markham, 2016). Flexibility, like fluency, generates a variety of ideas, but flexibility differs from fluency in that ideas pivot or take a new angle on an existing idea. Students who tend to be adaptive and spontaneous, both characteristics of flexibility, will be more comfortable with this approach than with the initial brainstorm that focused on fluency. There, associations, expression, and prior knowledge were paramount.

***Classroom application.*** To develop the skill of flexibility, the 3rd graders look over the list of words related to *survival* and try to imagine which words apply to them as humans, which apply to animals, and which apply to the environment. They try to determine words they think the teacher might like best, words they might use beyond this classroom, or words or ideas that are featured in the movies or television shows they watch. In short, they flex in different directions on the basis of point of view, perspective, and specific considerations.

**SURVIVAL:** Did not crash, got through the marathon, finished the test, the family vacation

## Elaboration

*Elaboration* is about adding detail to the responses. To elaborate is to go broad and deep. It's paying attention to every little ornament, even the tiniest detail that expands, extrapolates, and stretches the original bare-bones subject, highlighting the minutia of the thing under scrutiny. Elaboration involves embellishing and accentuating ideas that are not possible. It's the ability to see the big picture, the whole form, and add what's needed to take it all to completion. In any complex task, details are always needed to make something real, understandable, or aesthetically pleasing. In the absence of elaboration, others would not see the full potential of a creative inspiration. Those who are good at elaboration because of their ability to generate many good ideas are also the ones who may have a hard time knowing when a project is finished.

***Classroom application.*** To develop the skill of elaboration, the teacher asks students to elaborate on survival techniques by describing the details of an animal survival they have witnessed or read about. For example, they may have seen a bird escape a squirrel chase. Their task is to give as many telling details as possible and sketch the incident. As they add details to their story, they also add elaborations to their picture. It might even become a contest, with students labeling and counting their elaborated details, followed by a debriefing about what details really provided clarity and insight.

SURVIVAL:

## Originality

*Originality* is all about the unusualness of the responses. Originality is the quality that goes beyond commonly accepted ideas to embrace unusual forms and unexpected ideas, approaches, or solutions. Students who are risk-takers, even those who are disruptive, often exhibit originality. For them, it's rare that their habit of taking risks or being disruptive

is rewarded in a school setting. Yet this is one of the times that this trait can become a positive for them, as they see a different angle or innuendo. Of course, these are also students who may go too far with inappropriate responses. Yet the plus is still there because teachers recognize that these students are “quick on their feet” and worthy of feedback that communicates that. Originality involves the production of unique ideas, as well as the synthesis or combining of multiple ideas into a completely new concept. Students who exhibit the traits of originality are often able to generate, integrate, rearrange, reconstruct, reorganize, and revise.

***Classroom application.*** To develop the skill of originality, students might be prompted to look over their brainstorm and combine some of the words into the lyrics of a song, create an acrostic, or combine words to create a new never-before-heard compound word. It’s sometimes called a word sandwich. Originality is one facet of creativity that cannot be forced; yet it’s something we can reinforce and publicly value in our classrooms. When providing feedback on such original ideas, use cognitive language that honors the thinking skills of the student. Instead of saying, “That’s a crazy idea!” try something like, “You took three different ideas and blended them into something totally new. That was a genius synthesis. I’m so impressed!”

SURVIVAL: Made the team (competition), got’er done!(task), on pointe (ballet)

## Creativity and Question-Posing

Once students have practiced creative brainstorming on the seminal concept such as *survival*, the production of the essential question begins. Led by the teacher, as students look over the lists of words they have generated for *survival*, using the four categories of fluency, flexibility, elaboration and originality, the question asked is: “*What do you want to know about survival?*”

Students are coached to look over their cueing words as the teachers records the questions on large poster paper or on the screen.



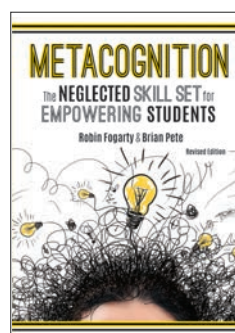


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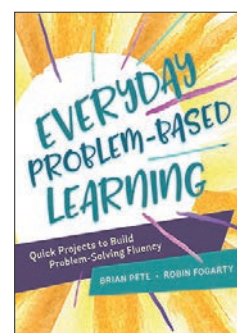
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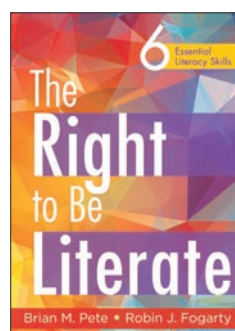
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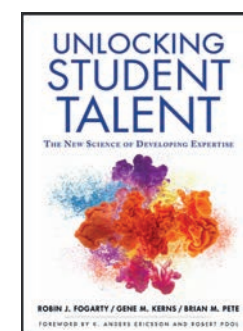
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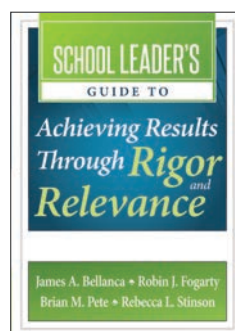
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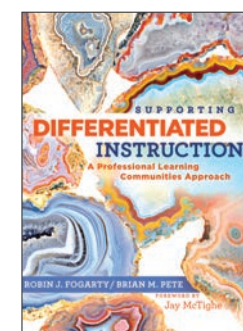
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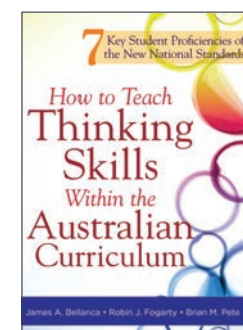
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