



THREE SHIFTS FOR  
DEVELOPING CONFIDENT  
AND COMPETENT LEARNERS

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*Thank you*

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Please enjoy this complimentary excerpt from *Rigorous PBL by Design*, by Michael McDowell.

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# Introduction

*In all affairs it's a healthy thing now and then to hang a question mark on things you have long taken for granted.*

—Bertrand Russell

## WHY I AM A PASSIONATE PROPONENT OF PBL

I am the father of two children (ages 1 and 6) and like most educators and parents, I want my children to be strong learners. I want them to possess a well-balanced and diverse level of knowledge and skills so that they can engage in, enjoy, and be successful in the 21st century. Furthermore, I want them to be advocates and partners with others for social justice. To meet these outcomes, I want my son and daughter to be immersed in learning environments that use engaging instructional methods such as problem- and **project-based learning (PBL)**. I say this because I am convinced that when PBL is designed and delivered effectively, it has the potential to provide the deepest and most lasting impact on learning. Moreover, PBL has the potential to provide students with benefits, including, but not limited to,

- a sense of independence in their learning,
- a firsthand experience of how ideas can influence others,
- an understanding of the benefits of collaboration,
- a mindset for encountering and solving real-world problems,
- a belief that *everyone* can learn at high levels,
- an appreciation for the immense and complex diversity of people and ideas, and
- the ability to develop a depth of knowledge and skills that make up the gestalt of 21st century learning.

I want my children, all children, to have educational experiences that involve applying their skills to real problems that are important to them as learners and to the broader community. I want them to have “can’t wait” moments of finding purpose in their work and autonomy in how they approach not only their learning but their life. I want them to infuse play, passion, and purpose in their education from K–12 through to college, career, and civil and familial engagements. The potential of PBL is beautiful because of the limitless ways to engage learners in their learning and the premise that all students can and should have influence over their learning and they can make an important contribution and impact on the world—now. However, in order for such outcomes to be brought forward, specific shifts in project design need to be present. The goal of this book is to present practical shifts in project design that teachers can apply in their classroom with confidence and enthusiasm to significantly impact student learning.

## **PBL DEFINED**

PBL may be defined as a “series of complex tasks that include planning and design, problem solving, decision making, creating artifacts, and communicating results” (Mergendoller, Markham, Ravitz, & Larmer, 2006, p. 583). For the purposes of this text, project-based learning and problem-based learning are synonymous terms. This is supported in the literature as John Thomas (2000) argued, “the problem-based learning studies have all of the defining features of PBL” (p. 6), which include (Gijbels, Dochy, Van den Bossche, & Segers, 2005):

- Learning is student centered.
- Learning occurs in small groups.
- A tutor is present as facilitator or guide.
- Authentic problems are presented at the beginning of the learning sequence.
- The problems encountered are used as tools to achieve the required knowledge and the problem-solving skills necessary to eventually solve the problem.
- New information is acquired through self-directed learning.

This book is designed to enable teachers to apply the vast arsenal of synthesized research on learning to enhance project design and implementation so that they may substantially impact students’ confidence in their learning and

competence in the academic arena. It is important to note that PBL has not *yet* yielded the impact it is capable of. This unmet potential is perhaps due to the fact that PBL is often (though not always) driven by myths that orient the focus of teachers' and students' actions away from student learning of core academic content and that prevent the development of confidence in learning.

## DISPELLING COMMON PBL MYTHS

**Myth 1:** “Sage on the stage” versus the “Guide on the side”

**Truth:** Teachers need to be adaptive

PBL myths are powerful; take for example the influential myth of the teacher's role in the classroom, which has been presented as a dichotomy between the “sage on the stage” versus the “guide on the side.” The sage on the stage versus guide on the side dichotomy is not only false but also misleading to teachers. Facilitative (or guide on the side) approaches are highly valued in the PBL environment though they yield a relatively low effect on student learning. At the same time, the sage on the stage, which often refers to teachers lecturing to students while lacking modeling, guided practice, and checking for understanding, also equates to a low impact (Hattie, 2009). In reality, teachers need to be extremely adaptive in their teaching by constantly clarifying learning expectations, identifying where students are in their learning, and then, in light of student performance data, making instructional decisions that align with learner needs. As Andrew Larson (2016) argues,

It is irresponsible to ask students to direct the course of their own learning if they don't have the appropriate framework for that content. Why would we [teachers] forego our own education, experience, and expertise when it comes to helping students unpack a concept, skill, or historical event? It is entirely possible and appropriate to ask students to apply higher thinking skills such as critical thinking, application, evaluation, and synthesis to content on their own, but we must provide them with the context and framework to do so. Otherwise we run the risk of having our students become curators of disconnected ideas, or worse, misconceptions.

Often more directive approaches are needed for students early on in the learning processes where teachers use direct instruction and give specific feedback on student tasks. Later in the learning, teachers are often found providing resources, offering feedback by way of self-reflective questions, and providing opportunities for students to make key decisions on demonstrating their understanding.

**Myth 2:** Students learn by doing.

**Truth:** Not without the proper support system

Other myths that permeate PBL classrooms include the idea that students “learn by doing.” Such a statement has the potential to be dangerously reductive, as what children learn by doing is largely dependent on their prior knowledge and, as such, results in dramatically different outcomes for students (Nuthall, 2007).

**Myth 3:** PBL professional development should focus on the project.

**Truth:** PBL professional development should focus on learning.

PBL-related professional development often focuses teachers on forming student groups, teaching problem-solving strategies outside of academic content, focusing on the attributes of the project in terms of originality, and offering tools to enable students to be self-directed in acquiring new knowledge. Often, teachers are given tools on how to support students in managing projects, finding ways to present solutions to problems, and finding resources and talking with experts to understand and solve problems. As for quality control, teachers spend a significant amount of time focusing on project features such as the degree of authenticity or originality of the problem that will be presented to students, how groups will be developed, how students will present their information, and how they will access information. In sum, the focus of the professional development is largely on project management, project processes, and project group dynamics. The emphasis is on the *project* and enabling students to manage a project process. In contrast, I argue that we need to deemphasize the term *project* in project-based learning and embolden the term *learning*. Quality projects are those that support teachers in ensuring that students are learning one year’s worth of academic content in one year’s time and are building their capacity to understand and take action over their learning. This does not require that students are in groups to learn (though they should collaborate) or teachers are tutors (though they may be, once students have developed a level of mastery in their learning), or that self-direction is qualified by acquiring new information in isolation (in fact, teachers should use more directive methods to enable students to learn content when learning something new). Project management has a time and place in projects but it is secondary to the learning of core content and confidence.

**Myth 4:** Learning depends on whether you position PBL as the main course or the dessert.

**Truth:** Learning depends on how you design PBL, regardless of whether it is the main course or the dessert.

See “The Three Design Shifts: Clarity, Challenge, and Culture” on page 6 for more on this.

## PBL WITH A FOCUS ON LEARNING AND CONFIDENCE IN LEARNING

This book aims to help educators focus specifically on those actions that have a high probability of substantially impacting student learning in the areas of content literacy and confidence in their learning. Specifically, this book walks educators through practical steps that ensure students have a balance of surface, deep, and transfer understanding of content knowledge and skill and that they have a command over their own learning. In order to do this, teachers need to provide specific actions, either through direct teaching or other means, to ensure that students are able to master important learning outcomes and achieve advanced understanding through high-level, rigorous work. For example, more time needs to be spent on identifying a student's current understanding in relation to academic expectations and providing targeted instruction. Even more, teachers need to design projects that emphasize reading, writing, and talking rather than cutting, pasting, and designing software-based content in the PBL environment. After reading this book, educators will have the tools necessary to assess student performance, target instruction, and help students make the necessary connections between basic-level understandings and the larger questions raised by their projects.

Our work has to be focused completely on a child's learning. And that is the focus of this book—to illustrate how to design projects that focus on substantially enhancing student content knowledge and skill and simultaneously building students' self-confidence in their learning. As such, this book enables teachers and learners to gather defensible and dependable evidence to determine their efficacy on learning. Overall, this book highlights three major shifts (i.e., clarity, challenge, and culture) in project design that have a high probability of enhancing student confidence (assessment-capable learning, growth mindset, and collaboration) and competence (surface, deep, and transfer). When designed effectively, PBL has a high probability of substantially impacting *all learners*.

## PBL FOR ALL

In the chapters that follow, limitations of and suggested fixes to the PBL method will be discussed. In particular, PBL has been shown, time and time again, to yield minimal gains in student achievement at the early stages of learning (Hattie, 2009). When learners need basic knowledge and skills, inquiry- and facilitation-based approaches are weak in leveraging learning. In fact, problem- and project-based learning is one of the least impactful methods in existence at this level. When learners are ready for more advanced knowledge and skills, such methods are ideal. The conundrum that a teacher faces is that all learners need both basic and advanced learning to be fully prepared to engage in rich critical-thinking tasks and situations required for the 21st century.

Simultaneously, there is an inherent danger in providing PBL only to those who are “ready” for it. Too often the narrative of ready is linked to biases, and often deficit viewpoints lead to a particular diagnosis that is largely self-fulfilling. Martin Haberman (1991) wrote an article titled “The Pedagogy of Poverty Versus Good Teaching,” which argued that certain instructional methods are offered only to those of privilege. When certain groups of people are offered a deeper-learning method, regardless of the method’s inherent blemishes, a continued narrative of intelligence and selection is ensured. Inherent or explicit expectations are interwoven in all classes, and a lack of democratization of access to methods is widely apparent to children. The learning lives of students are often filtered by how adults separate them, what privileges are provided through rules and methods, and expectations that are implicitly and explicitly shown from daily behavior.

There are many students regardless of race, economic status, and gender who could be harmed by methods that are not effective at yielding strong results at the early stages of learning. Many students are particularly vulnerable to the inherent instructional challenges of deeper-learning models; and at the same time these students are vulnerable to the absence of the expectations, challenges, and opportunities that are inclusive of such methods. Children and adults require substantial background knowledge and skills to think critically and solve authentic problems in varying **contexts**. Children and adults require high expectations, support, and access to quality content. The argument here is to retool such methods to ensure **surface and deep learning** are maximized in deeper-learning methods and that all students have the opportunity to experience the inherent joys and academic impact of PBL. In fact, even though Hattie’s own published research shows a low **effect size** for PBL, Hattie himself has enthusiastically endorsed this book substantiating the assertion that PBL can be designed and implemented in strategic ways that will dramatically increase the potential for student learning and improvement in student academic achievement.

## **THE THREE DESIGN SHIFTS: CLARITY, CHALLENGE, AND CULTURE**

A long-standing axiom of PBL is that its success in enabling students to learn advanced content and skills depends on how it is positioned—is it the main course, or is it the dessert (Larmer & Mergendoller, 2010a)? The **main course** approach involves beginning a unit using PBL and teaching content and skills within the project. In contrast, the **dessert** approach involves the teacher focusing sharply on the content and skill-building first, and then applying those skills to the project. The focus on the placement of the project is a typical myth in the PBL community that is misguided and shifts our focus away from learning. Whether you chose to implement PBL as the main course or the dessert doesn’t matter when it comes down to student learning. (This book uses the main course approach, as it is the most popular and recommended approach in the PBL community.) What matters is (1) the clarity of learning outcomes

and success criteria, (2) challenging students at their learning level (providing targeted instruction in light of student assessment data), and (3) ensuring a culture that focuses on students taking ownership over their learning and acting as a resource to others in their learning. To simplify, the ingredients of a successful project are clarity, challenge, and culture. Chapters 3, 4, and 5 of this book each focus on one of these essential ingredients.

In order to focus on the learning in PBL, it is imperative that educators design projects from the beginning with the three aforementioned design shifts in mind. The term *shift* is used here to emphasize the point that teachers must reorient their focus and practices away from the projects themselves toward the learning of students.

Briefly, these are the three design shifts:

- **Design Shift I—Clarity:** Students need to be absolutely clear on what they are expected to learn, where they are in their learning, and what next steps they need to take to advance their learning. Their understanding and use of content knowledge and skills should transcend any project situation or context.
- **Design Shift II—Challenge:** Students need to have a consistent balance of surface, deep, and transfer knowledge and to thoroughly understand and apply content to real-world challenging problems. Each level of content complexity requires different instructional interventions, tasks, and feedback.
- **Design Shift III—Culture:** Students need to be able to talk about their learning, monitor their learning, advocate for next steps in their learning, and be a part of a culture that focuses on and models such efforts.

## SPECIAL FEATURES

With this book, you will find a specific focus on designing projects that embed the three shifts to build student competence and confidence. You will read through the perspectives of practitioners in the field as well as researchers and advocates who discuss the critical importance of the shifts illuminated in this text. The tools and methods here will help you as the project designer to move from good to great by focusing on clarity, challenge, and culture. In this book, you will find the following special features:

- A unique focus on learning competence and confidence in learning.
- The three design shifts—clarity, challenge, and culture—provide a framework for successful PBL implementation for classrooms, schools, and districts.



- Each section of the book is thoroughly research based, providing multiple sources to substantiate the benefits and successful strategies of PBL.
- The *four questions* provide an expedient, easy-to-remember guide that students can use to take ownership of their own learning at each stage of their learning.
- The easy-to-follow steps guide you in applying formative assessment and formative teaching practices to ensure that your students succeed at all levels of learning (surface, deep, and transfer).
- The *Questions for Reflection* at the end of each chapter will help you think about how these strategies apply to your own particular school and district setting.
- Each chapter ends with *Next Steps* that encourage you to apply the content of each chapter to get you started in improving your own PBL practices.
- There are multiple examples of sample projects and problems for teachers to use as templates for their own curriculum development.
- Educators who are interested in implementation can find valuable insights from the *Voices From the Trenches* sections where educators reflect on their own particular experience with schoolwide PBL implementation.
- *Activities* will help you create your own learning intentions, driving questions, entry events, and all other aspects of thorough PBL planning.
- Examples, tables, checklists, sample calendars, student activities, protocols, rubrics, and images to facilitate understanding and application of the material are included.
- *Online resources*, such as templates, checklists, and other resources are available both in the book and online for you to use in your own practice.
- *Appendices* offer four very detailed project plans that span grade levels and content areas showing how all of the pieces of the book fit together when designing a project.
- The *Glossary* provides definitions to key words that will aid in understanding all of the nuanced aspects of PBL implementation.