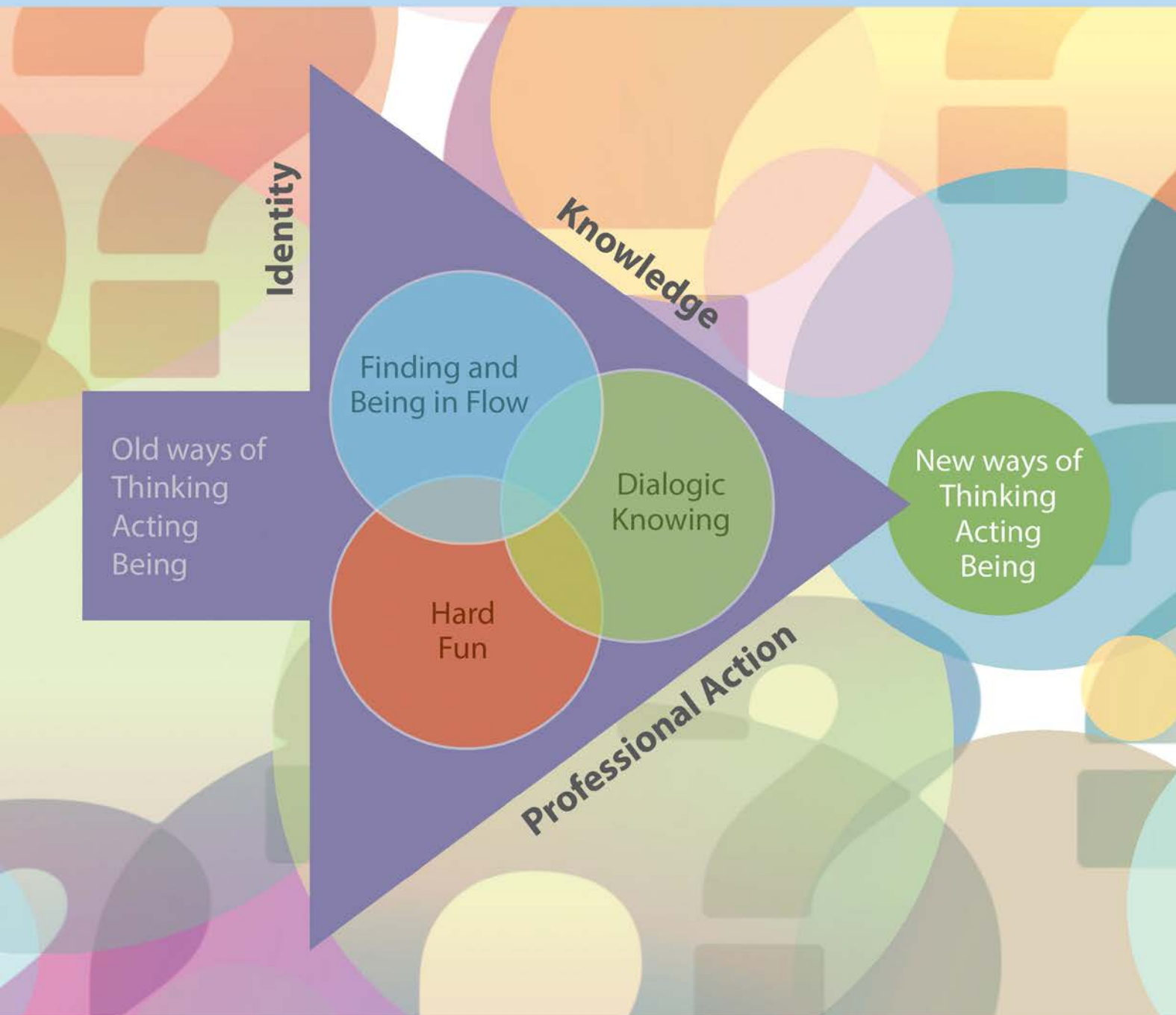


A NEW MODEL OF PROBLEM-BASED LEARNING

Inspiring Concepts, Practice Strategies
and Case Studies from Higher Education

Terry Barrett



AISHE

The All Ireland Society for Higher Education

Author: Terry Barrett

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Terry Barrett

terry.barrett@ucd.ie

terry.barrett500@hotmail.com

Terry Barrett is an Assistant Professor in Educational Development at University College Dublin. She has over twenty years experience of working with problem-based learning (PBL) as an education developer, programme coordinator, tutor, researcher and research supervisor. She has worked in the design and implementation of PBL initiatives in a range of disciplines including nursing, medicine, physiotherapy, ultrasound, science, computer science, English literature, liberal arts, business, agriculture, community development, education, hospitality, tourism and policing. She has worked as a problem-based learning consultant in Ireland and abroad. She has presented keynote papers on PBL in Ireland, England, Finland and Australia. In addition to problem-based learning her research and teaching interests include curriculum design, creativity, academic writing and mindfulness and compassion in higher education.

She was joint co-ordinator of the Enquiry and Problem-based learning Project and is currently the Programme Director for the accredited programmes in University Teaching and Learning at University College Dublin. She facilitates a scholarship of teaching writing group and academic writers' retreats.

Terry was a founding member of the All Ireland Society for Higher Education (AISHE) and is the co-chair of Facilitate (The Irish Enquiry and Problem-based learning network) and a SEDA (Staff and Education Development) Fellow.

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The PBL students I have facilitated have inspired me as to the potential of PBL for dialogic knowing, creativity and hard fun and I am grateful for that.

Dedication

May this book contribute to providing challenging, collaborative and creative learning environments for students across the globe and across a range of disciplines.

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Chapter One

Introduction

Why should you read this book?

This problem-based learning (PBL) book is the first to place students' talk at its heart. It focuses on the valuable lessons we can learn about problem-based learning from listening to students talking in PBL tutorials. The uniqueness of this book is its focus on the power of student discourse in tutorials to teach us how to both understand and practise problem-based learning. It uses a discourse analysis study of students' naturally occurring talk in PBL tutorials (Barrett 2008) as a starting point. Although students' talk in tutorials is the pivotal learning site in problem-based learning, it has not been given the attention it deserves (Clouston 2007). This talk can be made up of brainstorming, debate, arguments, knowledge sharing and synthesis, jokes, decision-making and presentations. Talk is action (Fairclough 2003). We have much to learn from what students are doing through their talk in tutorials.

This book is for both experienced problem-based learning (PBL) practitioners and people starting a new PBL initiative. As PBL practitioners you will be able to re-imagine and re-invigorate your problem-based learning courses through adapting the concepts, practice strategies and case studies presented in this book to your own context. The new inspiring concepts elaborated in this book are fresh ways of re-conceptualising problem-based learning. New concepts are important, as we need new ways of thinking about PBL in order to find new ways of designing and implementing PBL. Practice strategies linked to these concepts are presented in ways that will enable you to choose and adapt the ones most relevant to your context. International case studies of PBL practitioners using these strategies from a variety of disciplines provide examples to offer you inspiration. Questions and online resources provide you with further material to develop your PBL initiatives.

What is Problem-based learning?

Barrows defined problem-based learning as:

the *learning* that results from the *process* of working towards the understanding of a resolution of a *problem*. The problem is encountered first in the learning process.

(Barrows and Tamblyn 1980: 1 my emphases).

Many learning strategies use problems, but a key and defining characteristic of problem-based learning is that students experience the problem at the *start* of the learning process before other curriculum inputs. This *motivates* them to gain new knowledge through independent study, constructing knowledge together in tutorials and learning from other curriculum inputs. The four key characteristics of PBL are:

- 1) The problem
- 2) The PBL tutorial
- 3) The PBL process
- 4) Learning

For people new to PBL who want to see what PBL looks like in practice and for experienced PBL practitioners looking for new video-clips of PBL to show staff and students you may want to begin by viewing some of the following.

Figure 1.1 Problem-based learning in practice

Problem-based Learning at Stenden University

<https://www.youtube.com/watch?v=-5omNEMWicU>

PBL at Maastricht University

<https://www.youtube.com/watch?v=IZS2MbxBGCM>

FH Wein, University of Applied Sciences,

Austria <http://www.youtube.com/watch?v=gE04TbxQWS8>

Learning about problem-based learning from listening to students' talk in tutorials and PBL practitioners' practice

As teachers, researchers and theorists in your own discipline and as PBL practitioners you look for educational strategies that are supported by research and have theoretical foundations. The research study at the core of this book is a discourse analysis study of the naturally occurring talk of the PBL tutorials of two teams of students (Barrett 2008). In the study, two teams of eight lecturers completed a module on problem-based learning that was part of a Postgraduate Diploma in Learning and Teaching in Higher Education. Although they were lecturers in their own disciplines, for the purpose of this module they were PBL students. The aim of the module was to enable participants to design, facilitate, assess and evaluate PBL curricula. The content of the module developed out of the students' work in teams on two consecutive problems about PBL. The participants were facilitated by PBL tutors and used a PBL process to work through the problem. Thus, both the content and the process of this module were PBL. All the tutorials for both teams were video and audio recorded. Pseudonyms were given to these PBL students, the name of their programme and the teams. You may find that some of the words of these academic staff will resonate with you and your experience as a teacher interested in PBL.

Throughout the problem-based learning (PBL) process, students' talk both generates and demonstrates learning. The practice strategies recommended in this book are based on this discourse analysis research study, and on my professional experience gained from over twenty years as a problem-based learning curriculum designer, programme director, education developer, tutor, researcher and research supervisor. It also draws on my experience of teaching problem-based learning staff development workshops, courses and summer schools for academic staff in a range of disciplines and countries.

PBL practitioners that I have worked with generously provide case studies of these practice strategies in action.

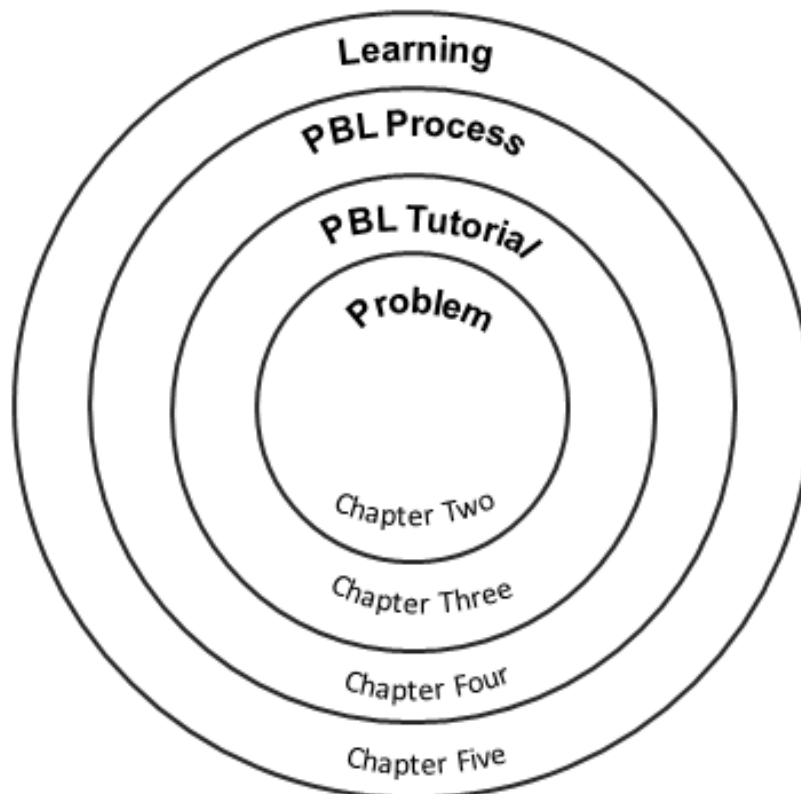
This book addresses the common concerns of PBL practitioners including:

- How do I design engaging and challenging problems for my students?
- How can I be an effective PBL tutor?
- What about PBL with a large number of students and a small number of tutors?
- How can I use PBL to encourage student creativity?
- Do I need to change the assessments?
- How do I prepare students for PBL?
- What are effective and interesting ways of facilitating PBL staff development?

What is the structure and outline of the chapters of the book?

The four core chapters of the book (two, three, four and five) focus on the four key characteristics of PBL namely: the problem, the PBL tutorial, the PBL process and learning.

Figure 1.2 Book chapters and the four key characteristics of PBL



Chapter two is entitled: **Suggestions for Designing Problems to Expand Students' Knowledge, Professional Action and Identity Development.** It discusses designing problems/triggers/scenarios to develop your students learning. Well-designed problems are a key success factor for PBL initiatives. This chapter presents the concept of *the problem as a provoker of a liminal space*. This liminal space is an in-between space between

- 1) current levels of knowing and new levels of knowing,
- 2) habitual forms of professional action and forms of professional action new to the learner and
- 3) satisfaction with current identities and a desire to explore other possible identities.

You can select practice strategies for operationalising this concept in your teaching practice. These are presented as suggestions for designing problems to expand students' knowledge, professional action and identity development. Case studies of sample problems from different countries bring these practice strategies to life.

Students discuss the problem in the PBL tutorials. Chapter three is entitled: **Possibilities for Promoting Student Dialogue and Learning in Tutorials.** The PBL tutorial is a key defining characteristic so no matter how large the number of students you have, it is important to divide them into teams of eight or less. In PBL, students work in small teams in a tutorial to resolve the problem. Chapter three presents the concept of *the PBL tutorial as a potential site for dialogic knowing*. This highlights the capability of PBL tutorials to provide fertile ground for students to create knowledge together and to learn from one another. Practice strategies for promoting student learning and dialogue in tutorials are elaborated. These are specific strategies for promoting democratic social relations, the co-construction of knowledge through co-elaboration and shared control. The examples of these strategies in action will help you to choose from the range of possibilities.

The PBL tutorial is part of a wider PBL process. Chapter four is entitled: **Strategies for Encouraging Flow, Creativity and Mindfulness in the PBL Process.** Some people think PBL consists solely of students working on problems in tutorials and doing independent study. This is *not* the case. The PBL process is an expansive learning environment including independent study consulting a variety of resources, preparing presentations/reports/related to problems together with presenting these and receiving feedback. The problem drives the design and sequencing of the other curriculum inputs. These other curriculum inputs can include lectures, seminars, skills training sessions, work placements and practicals. Students are challenged to make connections between the different elements of the PBL process. Designing the PBL process to foster creativity, flow and mindfulness is the focus of chapter four. It presents the inspiring concept of *the PBL process as finding and being in flow*. Practice strategies are discussed as options for

encouraging flow, creativity and mindfulness in the PBL process. The related case studies are from a variety of disciplines. A PBL practitioner's response to the chapter is inspirational as it recounts the ups and downs of one university lecturer's journey of encouraging creativity through PBL.

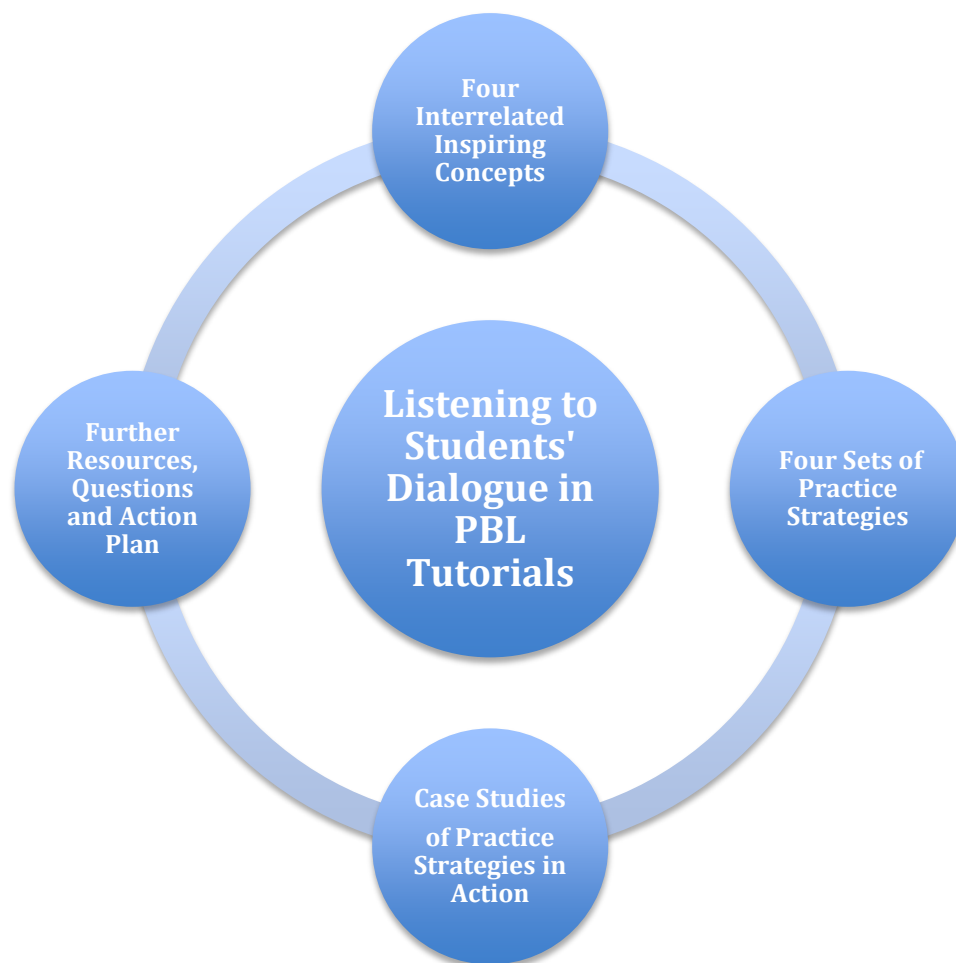
A defining characteristic of problem-based learning is a focus on students learning rather than on teachers' teaching. This learning is the topic for chapter five, which is entitled: **Enhancers of Learning as Hard Fun**. Chapter five presents the illuminative concept of *learning as hard fun*. Student dialogues show that learning was fun and hard at the same time. A variety of practice strategies that are enhancers of hard fun are explored and illustrated with case study examples.

This book revolves around these four illuminative concepts linked to four key characteristics of problem-based learning, namely,

- 1) *The problem as a provoker of a liminal space*
- 2) *The PBL tutorial as a potential site for dialogic knowing*
- 3) *The PBL process as finding and being in flow*
- 4) *Learning as hard fun*

Chapter six, the final chapter presents and discusses the new model of problem-based learning that is the interrelationship between these four concepts. It offers you the last of many specific spaces in this book to reflect on and plan your PBL initiatives.

Figure 1.3 Key elements of the book



How should you use this book?

Many people may choose to read the book straight through. However if you are interested in a particular aspect of problem-based learning you can skip to that chapter. For example, if your current concern is with facilitating PBL tutorials you can skip to chapter three. The practice strategies are presented and discussed in the body of the chapters. These strategies are summarised in a list at the end of the chapters. Many will read the sections of the chapter in order. Others may prefer to read this list first and then read the rest of the chapter.

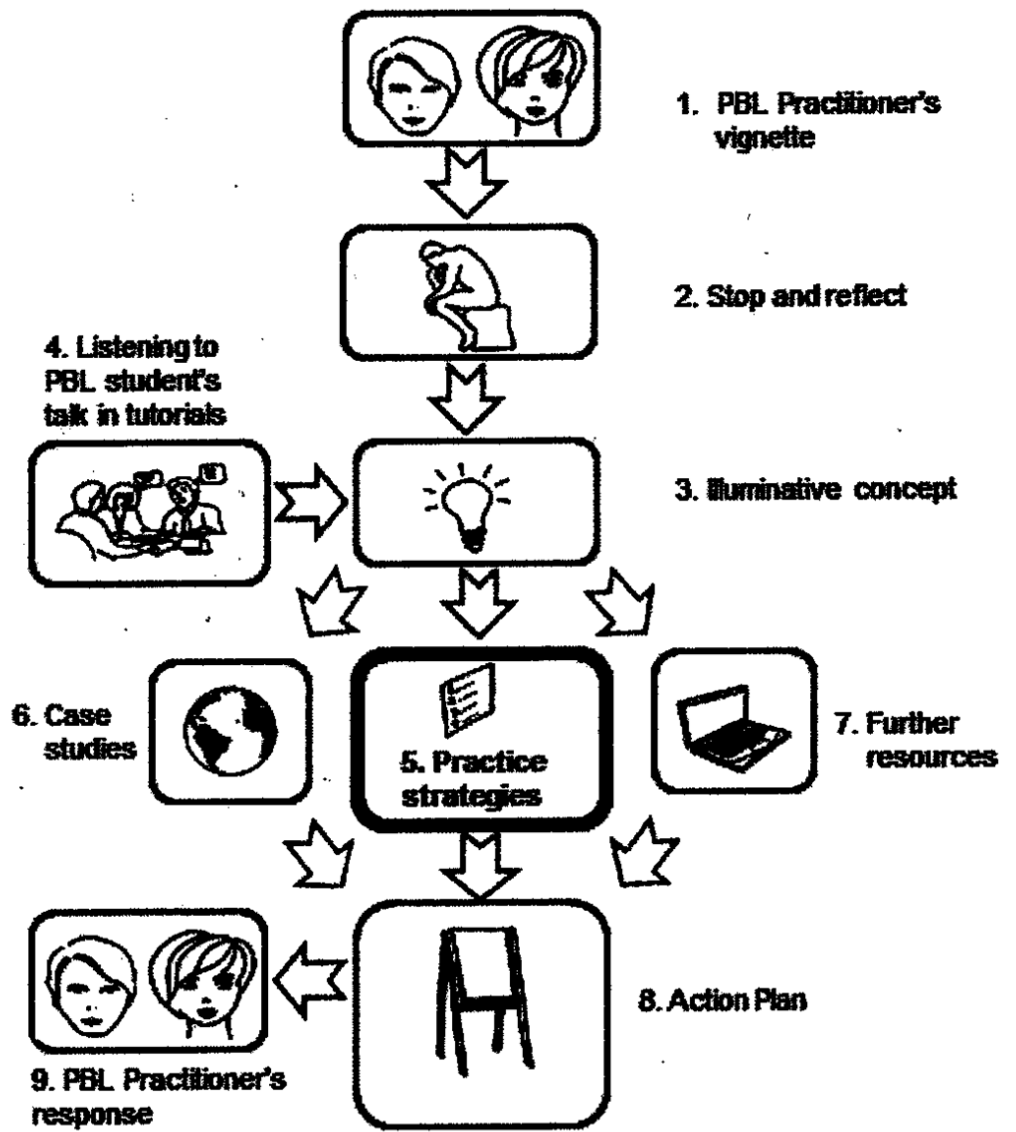
Each chapter begins with PBL practitioners' vignettes where they comment on their concerns in relation to the characteristic of PBL that is the topic of the chapter. You can see if these concerns resonate with you. This is followed by an overview of the chapter. Then there is an opportunity for you to stop and reflect on the experiences and questions you bring to reading this chapter.

Next you are introduced to an illuminative concept that provides you with new ways of thinking about the key characteristic of PBL. This inspiring concept is based on listening to students' talk about the characteristic in the discourse of the PBL tutorials, and extracts from these student dialogues are presented and analysed. Then practice strategies, ways of translating the inspiring concept into actions, are presented and discussed.

Case study examples using these strategies in a variety of disciplines and countries are explored. Some of these may be particularly relevant to you. You can then decide which of the online further resources provided you want to use. Next you are encouraged to make an action plan. You can combine your understanding of the illuminative concepts, your choice of practice strategies and the information from the further resources to inform your action plan for designing, implementing or re-energising your PBL initiative.

Lastly each chapter finishes with a response to the chapter from a PBL practitioner. The following figure shows the sequencing of the sections in each chapter. You can look out for the icons that signal the different sections throughout the book.

Figure 1.4 The sequencing of sections within each chapter



And now the first of your many opportunities in this book to stop and reflect

Stop and Reflect



- What are your motivations for reading this book?
- What type of inspiration are you looking for?
- What do you like most about facilitating learning?
- What are your specific concerns about PBL practice?
- What have you learned about learning processes from listening to your students?
- What types of resources would you find helpful?

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