Practical eTeaching Strategies for Predict – Observe – Explain Problem-Based Learning and Role Plays

James Dalziel

LAMS INTERNATIONAL

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Chapter 1

Introduction

Near the end of my first year at university, I decided to leave home and get a part-time job so I could pay the bills while continuing with my study in psychology. I decided to become a taxi driver – I enjoyed driving and the pay was relatively good if you could endure the long hours. I also suspected that driving a taxi would be an eye-opening experience (it was). To become a taxi driver I needed to do a four day course which was mostly lectures on rules and regulations.

By the end of the third day, I was getting quite anxious, because I didn't feel like I was learning what I needed to know. It wasn't that the lectures weren't relevant; it's just that they never seemed to address the practicalities of actually driving a cab – something I would be doing "for real" in a matter of days!

On the fourth day, there was a special component of the course where small groups of trainees went out in a mini-bus with an experienced taxi driver for a drive around the city. Before we started our trip, the experienced old hand turned to us and gruffly said, "You're probably all wondering what to do when someone gets in your cab and asks you to take them somewhere you've never heard of. What do you say then?"

The effect was immediate – we all chorused "Yesss" as our greatest fear had been articulated for the first time in the course. Despite all the lectures on regulations, we hadn't addressed this core practical challenge of being a taxi driver, so it was a great relief to finally discuss it.

The experienced cabbie told us that most passengers know where they are going, and if you explain that you are a new taxi driver and politely ask them to show you the way, 99%

of people will help you out. When the passenger doesn't know the way either, you stop the meter, explain you are new, and ask to look up the way in your street directory before starting the trip. If you are polite, the vast majority of passengers don't mind this (so long as you can use the directory effectively to get them where they want to go). In my subsequent five years of taxi driving, this advice worked for thousands of passengers with only a handful of exceptions. It was the most important lesson I learned in my training.

I'm often reminded of this story when working with people who are learning to teach – be they trainee school teachers or university lecturers. Many courses on teaching provide educational theory and general background, but are thin on practical teaching strategies. As a result, trainee teachers and lecturers often get to the end of their teaching courses with a similar anxiety to my experience in the taxi course – "What will I do in the classroom?"

This book provides practical advice on adopting three established teaching strategies: Predict-Observe-Explain, Problem-Based Learning and Role Plays. The focus of each chapter is on practical advice about adopting each approach and adapting it to suit your own teaching context. It doesn't try to cover all the theory and background – there is a wealth of existing material on these topics – it offers practical advice on what to do.

The first section of each chapter describes the strategy independent of technology so that you can apply the approach in face to face teaching. The second section describes how to run the strategy online using e-learning systems such as LAMS and Learning Management systems. It also includes advice about online facilitation and what can go wrong. The third section describes how to use LAMS to edit a template of the teaching strategy to suit your own subject area, and how to run this online with your students.

The goal of this short book is to introduce you to three effective teaching strategies, and to provide practical tips on how to implement these approaches online. I also hope this will be the first of several books of this kind, so I would welcome your feedback on what you liked, what could be improved, and suggestions for other strategies.

Underlying the strategies in this book are two guiding principles: 21st Century Skills and Learning Design – so I'll briefly describe them here by way of background (or if you prefer, you can dive straight into the chapters, and come back to these later).

21st Century Skills

We are in the midst of an explosion of knowledge – we are learning more about our world every year, and so it is hard to keep up with the sheer breadth of today's knowledge. As a result, there is a temptation for educators to keep adding more topics and deeper information into their courses to try to cover all that is known.

The downside is that students are often overwhelmed with knowledge without spending enough time on the more fundamental general skills of critical thinking, problem solving, working in teams, oral and written communication and other qualities that should form the bedrock of their education.

This issue goes by various names – in school education it is often referred to as "21st Century Skills", in universities it is sometimes called "generic skills" or the "generic attributes of a graduate". While there are nuances between these different ideas, the basic concept is that education is deeper than subject knowledge, but if courses only teach "content" then they run the risk of failing to help students develop these more general capabilities – the capabilities that employers say are most important for modern work.

However, these skills cannot be taught independent of subject knowledge – the subject is the vehicle for developing these skills. But when the subject is taught in a "content heavy" way with little time for development of these skills, the outcome can be far from ideal. We need to make space in our course curriculum to allow time for development of these skills, and this means covering less content overall.

The challenge of developing 21st Century Skills is exacerbated by assessment methods – if exams focus only on recall of small, disparate pieces of knowledge, students will approach their courses in a superficial, piecemeal way to match the assessment requirements. To change student approaches to learning, you need to change assessment so that the skills you wish to develop are central to your actual assessments. In many cases this means more time for assessment (both in preparation and marking) but without this investment of time, students are unlikely to change their approach of "cram then forget".

The focus of the three strategies in this book is the development of these 21st Century Skills. While some of the strategies can be used for other purposes (e.g., role plays can be an effective part of language learning in a way that is different to the approach described here), this book describes the strategies in ways that support the development of skills such as critical thinking, problem solving and teamwork.

Learning Design

This book is based on the new field of "Learning Design". This field seeks to describe and share effective teaching methods. These methods may be in the form of generic teaching templates that can be adapted to many different topics, or they may be templates which include subject-specific content and hence are ready for immediate use "as is". In either case, the goal of Learning Design is to propagate new and effective teaching methods to a wide audience of educators in ways that make them easy to understand and adopt.

The field of Learning Design has a strong focus on technology for creating, sharing and running these approaches online – called "eTeaching Strategies" in the title of this book. My own work in this field has been on the development of a Learning Design system called "LAMS" – the Learning Activity Management System. LAMS allows teachers to rapidly implement eTeaching strategies (or "digital lesson plans") and monitor their students' progress. Most importantly, LAMS makes it easy for teachers to create and share these strategies, which means I can provide templates to accompany this book to make it easy for you to implement the approaches described, and you can adapt these and share them with other teachers – or even create your own strategies.

There are different approaches to the adoption of Learning Design in educational institutions. In some cases, teachers engage in a detailed reflective process about their teaching, their subject and their students, and work through an extended process of course redesign to adopt new teaching methods – an example of this approach is when a university medical school changes its whole degree from a traditional lecture approach to a small-group Problem-Based Learning approach. One of the advantages of this approach is having an extended period of reflection prior to choosing new teaching methods.

At the other end of the spectrum are approaches which focus on rapid adoption and

iterative development – this is the approach encouraged in this book. One of the great advantages of LAMS is that teachers can see a visual representation of a strategy, and can also "Preview" how this strategy will appear to students when running "live". The LAMS Authoring environment allows teachers to rapidly change and Preview their strategies, which assists with iterative development and refinement of a digital lesson plan.

In addition, a further reflective process often happens after a new approach is implemented with students, where the teacher considers the strengths and weaknesses of a new method based on real classroom (or online!) experience. This approach benefits from rapid implementation with students, followed by teacher reflection, followed by modified implementation, followed by further reflection and so on. It illustrates a "learn by doing" approach to adopting new teaching strategies.

One of the challenges of the new field of Learning Design is finding the right language. Some people prefer the phrase "teaching method" or "teaching idea" to "teaching strategy". Going further, a specific teaching strategy (such as Predict-Observe-Explain) can be implemented in a variety of different ways in terms of timing of activities, size of student groups, etc; and in an online context, which online tools are used during implementation (e.g., chat vs forum, quiz vs essay submission, etc).

A specific implementation of a specific teaching strategy is the core "thing" that we talk about in Learning Design – by this we mean a particular digital lesson plan which is ready to run in a Learning Design system (or its non-digital equivalent). A particular plan is also sometimes called a "learning design" – which is confusing as it is also the name of the whole field of study. In my own work with LAMS, we call a particular plan a "sequence" to distinguish it from all these other possible terms. So I hope you can forgive me if you find that my choice of words doesn't match your own way of thinking about this topic – but I trust that regardless of labels, the core ideas of Learning Design will become clearer to you as you read this book.

The ultimate goal of Learning Design is the improvement of teaching quality through the sharing of effective teaching strategies among educators. I hope that one day we will see a great collection of effective eTeaching strategies shared on the internet, built by teachers for teachers, and drawing its vitality from the same collaborative development processes that have driven the success of open source software and websites like Wikipedia. I hope this book will make a contribution towards this worthy goal.

Further Reading

In keeping with the practical style of this book, I won't provide references throughout the text, but instead will provide recommended further reading at the end of each chapter. To learn more about Learning Design and LAMS, see:

Cameron, L. (2006). Picture this: My Lesson. How LAMS is being used with pre-service teachers to develop effective classroom activities. In R. Philip, A Voerman & J. Dalziel (Eds), Proceedings of the First International LAMS Conference 2006: Designing the Future of Learning (pp25-34). 6-8 December 2006, Sydney: LAMS Foundation.

http://lamsfoundation.org/lams2006/pdfs/Cameron_LAMS06.pdf

Dalziel, J. (2003). Implementing learning design: The Learning Activity Management System (LAMS). In G.Crisp, D.Thiele, I.Scholten, S.Barker and J.Baron (Eds), Interact, Integrate, Impact: Proceedings of the 20th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education. Adelaide, 7-10 December 2003.

http://www.ascilite.org.au/conferences/adelaide03/docs/pdf/593.pdf

Dalziel, J. (2008). Learning Design: Sharing Pedagogical Know-How. In Opening Up Education: The Collective Advancement of Education through Open Technology, Open Content, and Open Knowledge. (Ed. T. Iiyoshi and M. S. V. Kumar), Boston: MIT Press.

http://mitpress.mit.edu/books/chapters/0262033712chap24.pdf

Dalziel, J. Alexander, C. & Krajka, J. (2010). LAMS and Learning Design. Cyprus: University of Nicosia Press.

For a wide range of presentations about the use of LAMS in schools and universities, see the "Program" section within the various LAMS Conference websites listed at

http://www.lamsfoundation.org/conferences.htm

For more on 21st Century Skills, see:

Assessment and Teaching for 21st Century Skills. http://atc21s.org/

Barrie, S. (2005). Rethinking Generic Graduate Attributes. HERDSA News 27, 1-6. http://www.herdsa.org.au/wp-content/uploads/2007/06/1_herdsa_news_april_2005.pdf

Partnership for 21st Century Skills. http://www.p21.org/

Pink, D. H. (2006). A Whole New Mind: Why Right-Brainers Will Rule the Future. New York: Riverhead Trade.

Chapter 2

Predict – Observe – Explain

Part 1: About Predict – Observe – Explain

Introduction

I was in my first year at university, sitting in a psychology tutorial watching a grainy black and white video about an obedience experiment run in the 1960s. Two middle aged men entered the laboratory, having answered an ad in a local newspaper seeking participants in a study on memory. A slightly younger man in a white lab coat – the experimenter – proceeds by asking the men to choose from two folded pieces of paper to decide who will be the "teacher" and who will be the "learner".

The "learner" is led into a separate room and strapped into a chair while an electric shock device is attached to his right arm. Amid embarrassed asides about the unusual equipment, the learner mentions that he's had heart problems and asks the experimenter whether there are any risks. The man in the white lab coat replies, "although the shocks may be painful, there will be no permanent damage".

The "teacher" is led to the room next door and seated in front of an imposing looking "Shock Generator". It has a row of 30 switches running left to right across its front, with the words "Mild shock" above the first few switches and voltage numbers of 15, 30, 45, then "Medium Shock" with rising voltage numbers, then "Strong Shock", "Very Strong Shock", "Intense Shock", "Very Intense Shock", until it reaches 375 volts and the label "Danger: Severe Shock" and then to the right of this, the highest levels reaching 450 volts and the label "X X X".

The experimenter gives the teacher a sample of the shock so he knows what it feels like. After this, the teacher is told to read out a list word pairs to the learner via a microphone and speaker setup (e.g., “blue – girl”, “fat – neck”). After finishing the list, he then reads the first word of each pair to the learner, followed by four choices. If the chosen answer is not the word that was paired with the first word in the original list, the teacher is instructed to press the switch to give the learner a shock. As the learner gets other answers wrong, the teacher progresses up the switches towards the higher shock levels.

The early parts of the experiment pass without too much trouble – some answers are right, some answers are wrong, and following a shock the occasional “ugh” is heard from the learner in the other room. As the shocks increase, louder noises of pain come from the learner more regularly, and the growing discomfort of the teacher is obvious. Two thirds of the way up the switches the learner complains loudly of pain and says he wants to stop the experiment.

The teacher, visibly worried, asks the man in the white lab coat what he should do – the man repeats his earlier comment about the shocks being painful but not causing permanent damage, and then asks the teacher to “please continue”. When the teacher objects, pointing out the pain they’ve heard and the other man’s request to stop, the man says, “the experiment requires that you continue”.

At this point, my psychology tutor did something I didn’t expect. He paused the video, and asked all of us to think about the experiment we were watching, and to write down our estimate of the percentage of average people who would keep shocking the man despite his objections and go all the way to the final 450 volt switch labelled “X X X” if necessary. He also asked us to make notes to explain our choice, and to write how confident we were that our estimate was roughly correct.

As I sat and thought about this, my mind raced with many questions – surely very few people would go all the way to the highest shock – even in the 1960s when scientific experiments were held in higher regard. I toyed with the idea of 5%, but felt this was too high, and settled on 0.5% as my answer. I wrote some notes about why I had chosen this number: few people are this cruel; the man had said he had a heart condition; even the 1960s respect for science wouldn’t be enough to make more than a few people obey. Finally, I wrote that I was very confident the number would be no greater than 5%.

The tutor restarted the video, which soon told us the answer to the question – 50%. Like everyone else in the class, I was stunned. We watched some examples of men go all the way to the highest shock levels – clearly against their stated desire to stop – but time and again they would eventually obey the man in the white lab coat when he told them the experiment required them to continue. Few men simply defied the experimenter and stopped.

Once the video was finished, my tutor led a class discussion about the predictions we had written down (no one had an estimate above 5%) and what we had observed as the reality. We had an animated discussion as we tried to explain the discrepancy.

Why Consider POE?

If students are simply told "the facts" about a situation, such as the outcome of an experiment, they may not reflect deeply on their pre-existing assumptions about the situation. As a result, the new facts may not make much impression on them, because they haven't engaged their own ideas prior to hearing the facts.

But if students are shown a situation and asked to predict the outcome before seeing it, they are need to consider their own ideas of what is going on and why, and to use these ideas to make their predictions. Committing their predictions to paper means they can't pretend they thought otherwise later, and giving an estimate of their confidence in their predictions further pushes them to "lay their cards on the table".

After observing the experiment, students are often surprised by the difference between their prediction and reality (where their prediction was wrong). As a result, they need to come up with a new idea about what occurred and why – a new explanation that matches their observations, rather than any incorrect predictions. They may need to develop a new theory of the underlying factors behind the experiment.

After the mental effort of making a prediction, getting it wrong, and then trying to work out why they were wrong, students are far less likely to forget what they have learned

compared to simply being told “the facts”. The deeper learning that results from this mental effort is one of key benefits of the strategy known as “Predict – Observe – Explain” (POE).

But the benefits of POE go even further than memorable learning experiences. By asking students to describe their confidence in their prediction, we tap into a crucial 21st Century skill – metacogntion – the ability of students to reflect on their own thought processes.

Over-confidence and under-confidence can each be very hard to dislodge in certain students, but POE contains a powerful antidote by confronting the over-confident student not only with his incorrect prediction, but his inaccurate assessment of his likelihood of being wrong. Similarly, the under-confident student who predicts correctly but lacks confidence in her prediction is also shown the reality of the situation. Realistic self-assessment is one of the most valuable skills for students to learn, and its benefits extend to every area of life.

Step by Step Example

My psychology tutor followed a simple series of three steps. First, he presented the situation (in this case an experiment) to the point where I could understand what was going on and I had enough information to make my own prediction of the anticipated outcome. He also asked me to commit to this prediction on paper, record my reasons for this prediction, and write down my confidence in my prediction.

Second, he continued the video so I could see what really happened. In a physical science experiment, this might mean conducting a live experiment and observing the outcome. In my psychology example, it wasn’t possible to see all the examples that led to the overall percentage, so we watched a few representative samples that illustrated the overall outcome. The samples were so compelling – indeed gruelling to watch – that I didn’t doubt the summary percentage given.

Third, once the video was finished, my tutor led a discussion in which we tried to explain the outcome, and how it differed so greatly from our collective predictions. The video had

ended with a series of followup experiments showing that various possible factors (such as the prestige of the location of the experiment) made little or no overall difference to the main finding, so we were confronted with the unpleasant idea that given the right circumstances, obedience to authority was stronger than expected, and we discussed the implications of this for atrocities in war, trust in government and other unsettling scenarios.

I can't help thinking that I remember this great teaching moment to this day not only because of the striking content, but because I was given the chance to predict the outcome and record my confidence in this prediction before discovering the truth. It would have been so easy for my tutor to let the video run on, and for the percentage to just wash over me, and I might soon have forgotten how I felt on first hearing it. Instead, I remember it with crystal clarity to this day.

Other Sample Topics

Predict – Observe – Explain is most often thought of in the context of experiments in science. Here are some examples of its use for other topics:

- History: If you are teaching students about a moment in history where students don't already know the outcome of a significant event, you can provide background information leading up to the event and then ask students to predict what happens and why. You then tell them what really happened and the reasons for this. This approach works best when there is an unexpected outcome, and the reasons for this are known to students beforehand but they tend to focus on other aspects in making their prediction. If the unexpected outcome is due to some previously unknown factor intervening at the critical moment, then it isn't really a fair case for prediction.
- English/Literature: Similar to history, you may find a moment in a story where students can be asked to predict what a character will do and why, followed by observation of what happens next, and discussion of why this occurred. This is most effective where all students follow a story at the same time together (such as watching a movie in class or the teacher reading a poem or short story). It can be more difficult with a novel where different students may be at different points in the story, hence "giving away" the answer for those who have already past the crucial moment.

Summary of Teaching Strategy

POE is one of the easiest strategies to remember because it "does what it says on the tin" – that is, the name describes the process.

Phase 1: Predict

Phase 2: Observe

Phase 3: Explain

Phase 1: After presenting students with all the relevant background information, students predict what they think will happen next and provide a rationale. It is important that they actually commit this to paper (or record it online), so that they can't "wiggle out" of their prediction at a later stage if they find out they were wrong.

An important additional step is to estimate confidence in the prediction. Students may be asked to rate their prediction on a scale of confidence from "not at all confidence" to "very confident"; alternatively students can write a statement of their confidence. This step engages the metacognitive skill of assessing the students' certainty about an idea; and in cases where students make false predictions of which they were very confident, it teaches the important realisation that you can be wrong even when you are quite certain you are right. This realisation is a crucial 21st Century skill, and this can be one of the most powerful aspects of POE for students.

Phase 2: After prediction, rationale and confidence have been recorded, students observe what happens next. In a scientific experiment this may involve closely watching what happens and recording any key information such as measurements. In areas such as History or English, it means students having the chance to find out what happens next, either through the teacher's description or their own reading.

Phase 3: Explanation comes after observation, and it is here that students who have predicted wrongly need to wrestle with their internal assumptions that led them astray (these may be unconscious, and hence need drawing out first). For those who predicted

correctly, they may still have had incorrect assumptions, so this is important to keep in mind (watch out for students with correct answers but low confidence). Once students have gained an appreciation of the factors involved and any divergence from their prediction, you can draw their attention to their confidence ratings to help them recognise any mismatch between their certainty and observed reality, and the implications of this for their thought processes in general.

Timing

Timing in POE depends a great deal on the specific nature of your topic. Describing the background to a simple experiment may not take long, and the experiment itself can be over in seconds. The explanation phase will normally be the longest phase, and may require focussed discussion of commonly believed but incorrect theories about the underlying factors involved. Table 1 gives a rough estimate for a typical 45 minute class.

Phase 1: Predict	Teacher provides the background to the situation; students then write down their prediction of the outcome, their reasons why, and their confidence	10 minutes
Phase 2: Observe	Students observe the experiment, or otherwise learn about how a situation unfolded (History/English)	5 minutes
Phase 3: Explain	Students attempt to understand why their prediction may have been incorrect, and formulate a new theory to explain what happened	30 minutes

Table 1: Sample timing for 45 minute Predict – Observe – Explain class

The Role of the Teacher when Running POE

Phase 1: You need to provide all the important background information about the experiment/situation so that students have the building blocks for a reasonable prediction. It is not fair to leave out critical details if these are central to making a prediction.

Where you or your students are running a live experiment, you may need to provide safety advice and information about the equipment required.

Phase 2: It is important that students participate in the observation phase attentively – it can be a shame to ruin an otherwise great teaching moment through insufficient student attention at a critical moment, leading to them missing the whole point. If the experiment is very brief or the key event is easy to miss, you can draw students' attention to the essential aspect to observe, but this should only be done after their predictions are completed – you don't want to give away the outcome by drawing attention to a particular aspect.

Phase 3: After observation, you facilitate a discussion where students attempt to understand their incorrect starting assumptions or theories, and try to construct new theories that better match the reality they have observed. Depending on the topic and any addition materials that the teacher provides at this stage, there may be little for the teacher to do other than guide the general discussion of students as they develop their new understanding; in other cases, you may need to help students articulate their initial misconceptions, and then help them piece together a new theory by drawing their attention to key observations.

It helps if you to have some understanding of typical student misconceptions of your topic, as these mistaken theories can be hard to dislodge. You should keep an ear out for comments that betray particularly misunderstandings, so you can help address these directly if they persist in the face of the true explanation.

Assessment

There are two main types of assessment that can follow a successful POE scenario:

(1) Testing understanding of underlying factors: you can use true/false, multiple choice and short answer questions to test whether students have understood the reasons for what they have observed. Multiple choice questions can be particularly effective where one or more of the wrong answers embodies a common misunderstanding that leads to wrong predictions – in this way you can test whether students really have moved from their previous incorrect ideas to a correct understanding.

(2) Testing the ability of students to apply their new knowledge to a similar situation: you may give students another related experiment or scenario where they need to use the same knowledge they gained from a correct understanding of the original situation to work out a solution to the new situation. The goal is a "transfer" of knowledge from one example to another, which helps students to develop a more general theory of the factors underlying these scenarios.

Basic Psychology of Why the Strategy Works

There are two psychological factors at play in POE. The first is a memory factor – people tend to remember things better when they have actively engaged in thinking about something rather than simply receiving knowledge passively. When students are required to think through their own prediction (and provide a rationale), they must activate their prior assumptions about the situation, and try to apply these to the scenario to come up with a solution – all of which leaves a deeper memory "trace" than if the knowledge simply washes over them with little personal engagement. This is an extremely common teaching technique used in many contexts other than POE. For example, the lecturer who stops for a few moments and proposes the question "Why is it so?" is using this approach.

The second factor relates to the student's confidence in the prediction. This invokes a different mental factor – the ability for students to reflect on their own thought processes – also called metacognition. A student who is prone to overconfidence may be certain that his prediction is right, so capturing both the prediction and his confidence provides a strong antidote to later self-rationalisation that avoids facing the reality of the student's mistaken prediction. Equally, the under-confident student who in fact predicts correctly may learn to have more confidence in her judgements when reviewing her accurate written record, even when her confidence was low.

Accurate self-assessment is crucial to success in the workplace of tomorrow, as many tasks require not only knowledge and skills, but the ability to judge your own capabilities in relation to a task. People who can more accurately estimate the time required to complete a task, or know when they need to get help, or guess that there might be a problem even when they can't see where it is, are valuable in any workplace – especially compared to the unjustifiably over-confident person, who despite great knowledge or skills, can make significant mistakes due to poor judgement.

Part 2: eTeaching with Predict – Observe – Explain

Running POE Online

Online environments are great for POE, as there are many experiments that can't be performed in the classroom, due to their complexity, danger or the time required. Some of the advantages of videos over real experiments include:

- Faster – due to lack of setup time
- Safer – there are many dangerous but interesting experiments that can't be run in class
- Easier to observe – a video could slow down a key moment to better observe an effect, or allow for multiple camera angles
- Possible – some experiments can't practically be shown to students other than by video, e.g., watching an astronaut drop a hammer and a feather on the moon

A key benefit for online delivery is allowing students to work through a step by step sequence at their own pace. Students who need more time are not forced to finalise their prediction or observations to suit the speed of the whole class (as happens in a face to face class). If a student needs a few extra minutes for reflections or wants to watch a video several times, then this is easily accommodated online without affecting the progress of other students.

POE is a eTeaching strategy that relies on students doing each task in order, so it is important that when it is run online, the system stops students from "jumping ahead", as the whole effect can be ruined if students don't complete the tasks in order. Imagine how the impact of the obedience study would be ruined if students could look at the real answer before considering their own ideas first! Avoiding "jumping ahead" is easy to achieve in systems like LAMS, but a typical LMS or website might not be able to stop "jumping ahead", so this is something to keep in mind.

Synchronous vs Asynchronous

POE is typically run synchronously (i.e., in real time) in a computer lab in school contexts, whereas in university contexts it could be run asynchronously between classes (see Table 2). In either case, the Explanation phase is the one to watch – in synchronous use in labs, it could be cut short if time runs out (although a good solution is to allow the discussion to continue online after the class ends).

For asynchronous use such as between two face to face classes, it is important that students don't just post a single comment during the explanation phase and then leave without returning – a good online discussion during the Explanation phase requires students to explore different ideas and draw out their misunderstandings, and this needs students to come back regularly over a period of time to ensure they participate in a full discussion (rather than posting a single "fire and forget" message). In a system like LAMS, you can address this by setting a minimum number of postings of "2" in the Advanced settings of the Forum tool. Another approach is to have students post an initial explanation comment online, then have further discussion face to face in the next class, building on the initial online comments.

	Advantages	Disadvantages
Synchronous	Good for school contexts where the lesson is run in a lab over a fixed time	If online discussion ends when lab session ends, it may limit the chances of students to explore ideas
Asynchronous	Allows students to complete at own pace, so can be set as an online homework task or "between F2F classes" task	Rich discussion in the explanation phase needs students to reach this stage around the same time and log in regularly, otherwise it loses momentum

Table 2: Advantages and disadvantages for synchronous and asynchronous POE

Sample LAMS Sequence

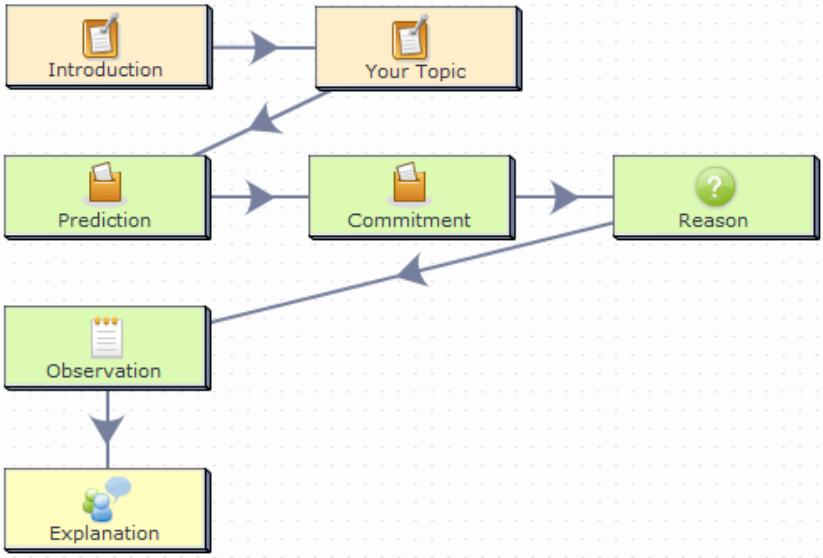

Figure 1: Predict – Observe – Explain in LAMS Authoring

Overview

Step 1 [Text page]: Introduction

Step 2 [Text page]: Description of topic for POE (e.g., describe experiment, show first half of video, etc)

Phase 1 – Predict

Step 3 [Voting]: Prediction – vote on one of several possible predictions

Step 4 [Voting]: Commitment – vote on level of confidence

Step 5 [Q&A]: Reason – describe prediction and reason for this prediction (answers shared with peers)

Phase 2 – Observation

Step 6 [Text page]: Students observe outcome (e.g., video) and record observations in private notebook

Phase 3 – Explain

Step 7 [Forum]: Student post messages to a discussion forum to explain their observations, and any differences to their prediction. They also try to explain the underlying reasons for their observations, and debate ideas with their peers. The teacher may provide additional resources or forum comments.

NB: Information in square brackets, e.g. [Forum] indicates the type of online tool used for each step.

Advice on Facilitating Online POE

A well designed POE sequence will mostly "run itself" except for the final "Explanation" phase. If you want students to come to a correct understanding without your personal intervention, then you need to provide additional materials to help students understand the background or underlying factors in order to correct typical misunderstandings – sometimes relying on peers for correction is not enough!

Alternatively, as teacher you can take an active role in online discussion during the Explanation phase to draw out hidden assumptions or misunderstandings, and assist students to understand the true situation. This would involve you actively monitoring the Forum (or Chat) environment, and intervening with comments or questions to help direct discussion towards an accurate understanding of the issues.

If you are running the sequence in a computer lab, you may wish to add some "Stop Points" between each Phase to ensure that students do not jump too far ahead if they try to "race through" to the end.

Stop Points can also be useful to control the flow of students where you are using a mixture of online and face to face teaching – such as when you want to draw student's attention to a specific issues in the Observation Phase before they all proceed to the Explanation, or where you want to pick up an idea from the online discussion in Explanation and discuss it face to face with everyone.

For the Prediction stages, you should try to ensure that students can't go back later to change their answers – once they finalise their choice, it should be "locked in". LAMS provides this facility by using the "Lock when finished" Advanced option, but keep in mind that other systems may not be able to prevent changes made later.

Special Advice for First Time LAMS Users

While it is often helpful to show new students a walkthrough of a sequence before starting it, this can be disastrous for POE where you "give away" the outcome, so this should be avoided. Better to give a general description of the three Phase process without showing it in LAMS, and if necessary, show a different short demonstration of LAMS to help students understand how the system works.

As a teacher, the main issue is the Explanation Phase, particularly if you will actively facilitate this discussion online. Before you run the session with your class, make sure you have completed a "dummy run" where you test the features for Monitoring a Forum (or Chat) and how to contribute your own messages into these tools as a teacher.

Running POE in a LMS or other Online Tools

When you set up a POE in a LMS, you can list the sequence of tasks down the page (depending on the features of your LMS) or provide a summary description of the tasks. You may also need to tell students where to go in the LMS to perform each task. It is worth numbering the tasks so it is very clear when each should be completed. However, most LMSs will have no control over the order in which students do these tasks, which can be fatal for POE. If your LMS has no way to control this, then you'll just need to stress to students that they do the steps in order otherwise the teaching experience won't work.

For LMSs with a conditional release feature, you can set up a structure where only the first task is visible at the start, and then as each task is accessed, the next task will become visible, and so on until all tasks are completed. Keep in mind that the LMS is likely to release the next task once the previous task has been accessed, rather than when it is

completed, so there is still a risk of students not following the correct process. As students won't be able to see how many tasks they have to do at the start, you should provide advice in the first step on the POE process and the number of tasks.

If your LMS has a teacher controlled release feature (or if you are willing to make edits to the course as you go), you can release the tasks by hand to students over time. In a synchronous environment this can work if you tell students what you are doing, e.g. "you'll have 5 minutes to complete the Prediction task, then I'll release the Observation task to you for another 5 minutes, then after that I'll release the Explanation task".

You can also try to do the same thing in an asynchronous environment (e.g., replace "5 minutes" with "1 day"), but if each individual task is relatively "small" (i.e., it only takes students a few minutes), then some students may find it annoying waiting a whole day for another small part of the activity, then another day, and so on.

You can also run POE outside a LMS, so long as you address the same problems raised above. For example, you could have a blog post corresponding to each phase, with students posting comments to each post as their way of responding to the requirements of each phase. Just keep in mind that if your chosen tool does not have control over what students can access at any one time, you don't want to give away the outcome to a student who "jumps ahead".

What Could Go Wrong

If students don't pay attention to the instructions and information at the start, then the overall effect will be lost, so encourage students to take the challenge of prediction seriously.

For Observation, students should be able to detect the key issues – if a video is too brief or hard to see, the point can easily be lost. For non-experimental examples, such as stories in English or History, it's crucial that the Observation (that is, the next part of the story) doesn't introduce new information that couldn't have been predicted from the initial Prediction stage information.

As mentioned already, Explanation is the key Phase for ensuring students recognise any misconceptions, and come to understand the true underlying factors. As some misconceptions can be quite stubborn, you may need to provide further examples or experiments to help shift these views, or take an active role in discussion to help draw out misunderstandings and point to the key elements of the Observation phase that address mistaken ideas.

Part 3: Create Your Own POE Sequence

Editing the Content of POE

The heart of any effective POE is the selection of excellent content – you want a topic where students often have misconceptions, a resource which sets up a scenario where these misconceptions come into play (but without giving away the outcome), and then further material for an "Observation" which will clearly address the misconceptions and point towards the true situation.

Experiments are ideally suited to these requirements, and an effective video available in two parts is gold for this approach. For example, the video of an astronaut dropping a hammer and a feather at the same time while standing on the moon (to illustrate the effects of gravity where wind resistance isn't an issue) is a wonderful example for POE (and must surely rank as one of the most expensive educational videos ever made!).

However, innovative thinking in History, English and other non-science courses can lead to great POE examples too – they just need care in selection and presentation of content so as to achieve the POE effect.

Changing the Structure of POE

Basic Format: Single cycle of POE

> Variations: If a misconception is particularly "stubborn" (that is, many students don't change their view even after explanation) then a cycle of several POE examples may be required where each example addresses the same underlying issue, but from a slightly different angle. For an experiment, this may require demonstrating several different scenarios to help student see that different extraneous factors are irrelevant.

Basic Format: "Private" student predictions

> Variations: Most approaches to POE keep the predictions of individual students private so as to avoid potential embarrassment (although anonymous collation of answers is often popular with students – e.g., using LAMS tools like Vote and Q&A). However, if student embarrassment is unlikely to be an issue, then having students identified with their predictions can add some fun to the process. You can even turn this into a game if you have several POE examples to see which students get the most correct predictions.

Some other kinds of changes you could consider include:

Confidence: In some cases, you may wish to remove the confidence step if this doesn't suit your topic or otherwise feels out of place.

Synchronous Chat in Labs: If you use a Chat room for discussion in a synchronous lab session, keep in mind that student numbers above 10-15 may be too many for a single chat session, so you could split the chat into two or three groups – but if you do this, you'll need to review all groups to ensure students haven't gone off track. Most teachers choose to use a Forum, even if the sequence is run synchronously, to avoid the problem of tracking multiple groups.

Getting Started with Editing using LAMS

To use the templates described above, visit www.practicaleteachingstrategies.com and access the templates for this chapter. You can open these templates into the www.lessonlams.com website for simplified editing as described below, or alternatively you can import the templates into any LAMS server for traditional editing in the Authoring

area. One template shows the astronaut dropping a hammer and a feather on the moon – this is a fantastic example of POE, and is ready to use "as is" if you teach science.

For the generic template based on this example, you will need to change the content for most of the steps, as you will include your key introductory content (e.g., video) under "Your Topic", and then you'll need to create several likely predictions for student to choose from under "Prediction". You may also want to edit the text of the other steps to relate directly to your topic. You'll need to edit the Observation stage to show the outcome of the experiment (e.g., the second part of the video). For Explanation, you may need to include comments on what issues to consider, or provide additional materials to help students gain a correct understanding.

For the "Prediction" and "Commitment" steps there are three choices, but you could expand (or contract) the number of options if you wish – just try to make all of your Prediction choices plausible (and hopefully based on common student misunderstandings).

To add video to LAMS, click the "Insert/Edit Movies or Audio" icon in the rich text editor (second from the left on the second line of tools). To see the rich text editor in the Planner, you need to click the tiny downwards pointing arrow at the top left of the text box for a tool. If the video is from another website, you just enter the URL of the video into the URL space (this appears after you click the icon), and LAMS will embed the video for you. If you have the video as a file, then you click the "Browse" button next to the URL space, then at the bottom of the next page there is an option to Browse for the file, then Upload it. Once uploaded, click on the link for this file to have it added to the URL space, then click OK to finalise.

NB: You won't see the video in the editing view (just a jigsaw piece icon), but when you Save and Preview from the student's view, you'll see it running.

Things to Try after your First Success

Once you've had your first success with Predict – Observe – Explain, you'll know how easy it is to implement this great strategy. The key to success is choosing a really good topic and accompanying resource, often a video. In fact, you may find after watching an interesting video online, you'll suddenly think, "Hey, that would make a great POE!".

A fun enhancement to POE is the game option – where you run several POE cycles, and then work out which students had the highest number of correct predictions. If you want to make this really exciting in a lab environment, you could do it in a "last man standing" style – that is, everyone tries the first round, but only correct predictors get to be in the second round (with knocked out students watching on a projector). You keep going until only one student makes the correct prediction, and they are the winner. The tension of the final rounds can be electric, so make sure you have some good examples up your sleeve!

Conclusion

The obedience study mentioned at the start remains one of my all time favourite moments as a student. The interesting thing is that the tutor who ran this session was not one of the greatest teachers I ever had (he was about average – which was good in absolute terms!). But that didn't stop him using a strategy that had a profound effect on me which I remember vividly to this day.

Moreover, I suspect he'd never heard the name "Predict – Observe – Explain" – I think he just thought this was a good way to teach this topic, or perhaps he inherited this idea from another teacher. So even when a teacher does not know the theory behind this strategy, a well implemented POE can have a big impact on students. I hope you find ways to use it with your students that can have a similar impact to my experience!

Further Reading

I am indebted to Matthew Kearney for some of the ideas in this chapter, which build on his earlier work on Predict – Observe – Explain. For further reading on this topic, I'd suggest starting with his article listed below.

Champagne, A., Klopfer, L., & Anderson, J. (1980). Factors influencing the learning of classical mechanics. *American Journal of Physics, 48(12)*, 1074–1079.

Dawson, C., & Rowell, J. (1995). Snapshots of uncertainty: a new tool for the identification of students' conceptions of scientific phenomena. *Research in Science Education, 25(1)*, 89–100

Kearney, M. (2003). A new tool for creating predict-observe-explain tasks supported by multimedia. *Science Education News (SEN), 52(1)*,13-17.

White, R., & Gunstone, R. (1992). *Probing understanding.* London and New York: The Falmer Press.

Chapter 3

Problem-Based Learning

Part 1: About Problem-Based Learning

Introduction

While I was teaching psychology at the University of Sydney in the 1990s, the Medical school embarked on a bold redevelopment of its entire medical degree. For over a hundred years doctors had been taught mostly via lectures, whereas the new approach would have hardly any lectures at all. Instead, students would primarily learn medicine by working in small groups on a series of carefully structured problems.

So imagine, for a moment, that you are a student who is beginning study in the redeveloped medical degree. Instead of a lecture for your first class, you go to a room with seven other students and a teacher. After initial introductions, the teacher begins:

"You are a GP in a suburban practice. A 51 year old man comes into you office. He is overweight and slightly flushed. He says he is suffering from chest pain and shortness of breath. What do you do?"

There is a stunned silence for a few moments. You and the other students look at each other initially bemused, then a little concerned. After a few embarrassed looks and some laughter, one of the students says "What do you mean, what do we do?"

The teacher repeats the scenario as before, and silence returns. Now you feel a creeping panic as you realise that you don't know what to do – is he experiencing indigestion or a

heart attack? Is he in a little passing discomfort after a big meal, or could he be dead in the very near future?

"We don't know what to do," says one of the students, "we don't even know where to start!"

"Really?" says the teacher, "What are your initial thoughts on the situation?"

At this point different students suggest what the problem could be – heart attack, indigestion, muscle strain and so on. With occasional prompting from the teacher, the students start to group their ideas into different categories depending on the proposed underlying problem – some students think the problem is most likely in his stomach, others think his heart.

The teacher then encourages the group to break into smaller teams to go away and research the potential problems in more detail and then come back in a few days to report their findings to the group for further discussion.

"But he could die right there in your office!" says a worried student.

"Perhaps", says the teacher evenly, "alternatively, you could waste a lot of money by misdiagnosing indigestion as a heart attack – consider the ambulance costs alone."

So the group forms into four teams of two – the first team will research indigestion, the second will investigate the mechanisms of heart attack and immediate responses required for a life-threatening situation, the third will research the anatomy of the chest and likely causes of chest pain, and the fourth will investigate the costs of mistaking indigestion for a heart attack.

A few days later after the pairs have researched their topics, the group reconvenes and discusses the finding of each group, and how they relate to the immediate scenario. Later on, after further research based on the outcomes of some diagnostic tests, the students put

forward their proposed solution and rationale. The teacher then provides further information about the case and the underlying scientific and medical factors involved and recommends topics for further reading. The teacher concludes with comments on how the specific issues of this case generalise to other patient scenarios.

Why Consider PBL?

"Problem-Based Learning", or PBL as it is widely know, is a teaching strategy that inverts the traditional teaching process. Instead of presenting new ideas to students at the start of a topic (e.g., give a lecture), and later getting students to engage with the new ideas (e.g., class discussion), students start with a real world problem, and to solve it, they will need to learn new ideas along the way.

Students must analyse the problem as a team, work out what they need to know, and then conduct their own research to gain knowledge to solve it. They will share ideas and test different hypotheses of how their research helps address the situation, and finally they will put forward their solution and their rationale based on what they have learned from research and discussion.

PBL addresses several 21st Century skills – critical thinking, hypothesis testing/problem solving and teamwork. Students use each other as a source of knowledge and as a sounding board for their initial ideas, as well as to help plan their research. Later, they share their research and try to construct a plausible solution to the problem – which involves critical reflection on evidence and evaluating different ideas from members of the group. Students will also test hypotheses with each other to unpack and evaluate the arguments proposed for any given solution.

The research dimension of PBL extends teamwork in an important "real life" way, as it acknowledges that people with different ideas and skills will be needed to research various elements of a complex problem, and the team as a whole will need to rely on each member to contribute to the overall solution. Many problems of the 21st Century require collaboration among experts from different perspectives or with different skills, so PBL provides a great model of team-based problem solving in action.

Conducting research is an important 21st Century skill, especially in the context of "information literacy" or "critical literacy", where students need to evaluate different sources of information in order to distil valuable and accurate information to help them solve problems (and not be led astray by dubious material).

Step by Step Example

The initial step is the presentation of the problem itself – in the example above, the tutor's description of the man with chest pain. The problem needs to be carefully constructed to provide a genuine challenge to students. Solving the problem should involve further research, not simply relying on existing knowledge. Where possible, the initial problem statement should be crafted to allow for different possible interpretations (e.g., indigestion vs heart attack) that require further investigation to tease apart.

Students analyse the problem and share their existing knowledge and initial theories. This stage involves consolidating existing understanding within the group in relation to the problem, and working out what students don't know. Students also generate hypotheses and test these for their plausibility. The analysis of gaps in existing knowledge is crucial to an effective research phase. Once students have determined what they need to know, they decide on how to proceed with the research.

Next, students conduct research, either individually or in small groups. For simple PBL contexts, all students research the same issue, whereas in more complex cases such as the man with chest pain, different students will research different aspects of the problem.

Students then come back together to share what they have learned from their research, and to discuss how this helps to solve the original problem. Students should critically evaluate the different research findings and test hypothetical solutions with each other to determine the best response to the problem. In some cases there may be more than one proposed solution, in which case the rationale for each proposal should be articulated, including the differing assumptions that lead to a different solution.

For simple PBL cases the students finish by presenting their solution and rationale, and

then the teacher discusses the background to the case, the proposed solution and its rationale, and explores alternative approaches where relevant. The teacher will often finish by commenting on how to generalise the lessons of this particular problem to a wider category of similar problems.

In more complex PBL cases, the teacher may contribute to the discussion after the research stage by probing the students' ideas and assumptions, or by providing more information about a case (e.g., the outcomes of diagnostic tests that the students propose based on findings from their research). The teacher may even pretend to be the individual in the problem to simulate the experience of students asking further questions of the individual, which leads to new ideas for research or analysis. Students will then refine their ideas and hypotheses through discussion, and prepare for a second research phase.

After a second research phase, students come back together to share their new information and consolidate a solution to the problem, and the PBL finishes in the same way as the simple case.

Other Sample Topics

PBL has had the greatest impact in medicine and other health care areas, but its benefits are being discovered in a wide range of other areas. Here are some examples of PBL for topics other than health:

- Business: There are many great opportunities for PBL in business – the case can be based around a company rather than a person, and students might need to solve a business challenge such as poor sales or inefficient production. Problems don't always have to be negative – the challenge could be how to effectively invest increased revenue, or how to create a great new product.
- Science: Many science topics can be taught using PBL, especially those that allow for practical investigation or experiments. The key to these PBL examples is ensuring the topic is not too simple or obvious – otherwise an easily guessed right/wrong answer can undermine student motivation during research. It's best to target topics with surprising or unusual answers.
- Law/education/other professions: Professions such as law, teaching and many others lend themselves well to real life problems that present challenging

scenarios that students may encounter in their future professional careers. PBL can be used with problems that don't have an obvious "right" answer so long as students can provide a compelling rationale for their chosen solution – it is not unusual to have groups develop several different solutions in these cases, and the process of teasing out the different assumptions underlying the different solutions can lead to particularly rich learning experiences.

Summary of Teaching Strategy

There are five Phases to a simple PBL case, although each phase may have sub-parts.

Phase 1: The Problem

Phase 2: Initial Reflection, Analysis & Discussion

Phase 3: Research

Phase 4: Followup Discussion & Solution Preparation

Phase 5: Solution & Feedback

For the purpose of this chapter, we'll consider the simple PBL case where there is only one research phase – but for the more complex "two research phases" version, you would repeat Phases 3 and 4, with possible extra input from the teacher during Phase 4 to help direct further research.

Phase 1: Students are presented with a plausible real-world scenario based on a problem that needs a solution. Although the problem must be carefully selected to achieve the goals of the PBL method, the initial statement is often brief, vague or contradictory so as to encourage students to determine the additional information they need in order to refine their proposed solution.

Phase 2: Students start by reflecting on their existing knowledge about the problem, and their initial thoughts about the factors involved. This process may take the form of brainstorming as a group, or reflective individual work that is then shared with others later. Once students have shared their knowledge and ideas, the group needs to discuss the problem, and generate and test potential hypotheses to determine which angles are plausible for further research.

Phase 3: Students conduct research either individually or in small groups. Younger (or less experienced) students might be given recommended readings or a specific resource (e.g., encyclopaedia) to use for research, whereas older (or more experienced) students could be expected to make their own decisions about what sources they will use to conduct their research. Where students are working in small groups, they should discuss their research to help refine their findings to be shared later with the whole group.

Phase 4: Students come back together as a whole group to share the findings of their research, and discuss the implications of these findings for the problem. Typically this involves testing hypothesised solutions against research outcomes and probing assumptions to see if the approach to a solution is on the right track. The teacher may participate in this discussion to help identify gaps or problems in the group's approach.

Phase 5: Students complete the PBL by proposing their solution and providing a rationale for this solution. This could be a single group decision, or where agreement is not reached, several solutions and their rationales could be proposed. Alternatively, each student might put forward their own version of a solution and rationale based on the group discussion.

Timing

PBL is normally conducted over two separate sessions to allow for a research phase in between discussion phases. The example in Table 3 assumes two 45 minute classes, with a research phase in the middle (the research phase could be run as an additional class period, e.g., in the library/computer lab). Research could start during the second half of the first session if appropriate resources are available – otherwise a longer Phase 2 could be substituted. For a more complex PBL, it is not unusual to have two hours for each class, and even more time expected of students during the research phase.

The Role of the Teacher when running a PBL

One of the crucial elements of the PBL approach is a change in the role of the teacher – no longer do you play the "sage on the stage" role, but rather the "guide on the side". You can

assist students by helping them realise gaps in their approach or their assumptions, and you may even pretend to be a character in the PBL in Phase 4, but you are not there as the source of knowledge. That doesn't mean you can't probe students about their ideas – a well-aimed question may greatly assist their understanding, especially in Phase 2 as they prepare for research. Nonetheless, the teacher in PBL is primarily facilitator rather than a source of knowledge.

Phase 1: The Problem	The problem is presented to students either by the teacher or using materials	1-5 minutes
Phase 2: Initial Reflection, Analysis & Discussion	Students reflect on their existing knowledge, analyse the problem with their peers, generate/test hypotheses and discuss key questions for research	25 minutes
Phase 3: Research	Students conduct research individually or in small groups.	60 minutes (e.g., 15 min in class, then 45 min later)
[Break between classes]		
Phase 4: Followup Discussion & Solution Preparation	Students share their research findings, debate their implications, and test hypothesised solutions to the problem against their research and their assumptions about the problem	35 minutes
Phase 5: Solution & Feedback	Students provide their proposed solution and rationale, and then the teacher provides feedback, and generalises the problem to wider use	10 minutes

Table 3: Sample timing for Problem-Based Learning over two 45 minute classes

Phase 1: You present the problem to start the PBL, or alternatively you can use resources such as text or a video.

Phase 2: For students who are new to PBL, you may need to actively facilitate this stage for them – help them recognise their existing knowledge and consolidate it (e.g.,

brainstorming followed by discussion), assist them to analyse the problem from different angles by generating and evaluating hypotheses. You will also need to help organise students into research teams with appropriate topics. For students who are experienced with PBL, you may only need to prompt them from time to time to consider issues that they have missed.

Phase 3: Students conduct research without teacher assistance. If students are new to research, they may need additional guidance prior to the start of the PBL, or as part of Phase 2 (e.g., printed resources on where and how to search for appropriate materials, and advice on evaluating sources to determine whether they are credible or dubious).

Phase 4: You may need to facilitate the research reporting and analysis phase for students who are new to PBL. For both new and experienced students, a key role for the teacher in Phase 4 is to ask probing questions that will help identify misunderstandings or "blind alleys" arising from the research, or as students develop their solution and rationale.

One variation of Phase 4 is where the teacher briefly pretends to be a key person from the problem – e.g., a patient in a medical scenario, or a client or boss in a business scenario. This can be lots of fun, but try not to give away too much too easily – it is important students work out the right questions to ask you to gain new knowledge. Another option for this Phase is to allow students to propose certain actions to gain more knowledge about a problem – in medicine this might be conducting certain diagnostic tests and getting the results, in science it might be describing the outcome of certain variations of an experiment that can't be conducted in class due to time or safety reasons.

Phase 5: Once students have put forward their solution and rationale, you provide feedback on the problem, especially if they have not provided a good solution. Often you will identify key issues that were missed in problem analysis, research or solution preparation – sometimes a single fact is all that is needed to solve a problem, but if students never think to research this or ask about it, they can head off on a wrong track.

In cases where there is more than one reasonable solution, the teacher can compare the solutions in terms of their likelihood or plausibility. While two solutions may be possible and have appropriate rationales, one may be far more likely in real life than another, so this is worth drawing out (e.g., heart attacks are very serious, but indigestion is more common).

A final step for Phase 5 is to help students generalise their knowledge from the specific problem they have solved to a more general category of similar problems. This is not easy, and sometimes the best way to achieve this is conducting several PBLs on related topics, but where this isn't possible, it is worth acknowledging the underlying concepts of the problem and drawing attention to other contexts where they are relevant. Ideally, PBL should help students to think abstractly about a category of problems so they can solve different situations based on the same underlying factors.

Assessment

PBL assessment is usually based on the solution put forward by students together with the underlying rationale. The rationale can often be more important than the solution itself, as a thorough grasp of the underlying mechanisms is the key to generalising the understanding gained from PBL. In cases where multiple solutions are possible, then the quality of the rationale is particularly important.

As PBL is usually conducted in groups, you will need to decide whether the assessment is group-based or individual. Even though the group worked as a team, each student could still write up their solution and rationale individually, and differences in the rationale may be central to your assessment.

Where the assessment is group-based, you need to determine how to ensure fair assessment across the group. In some cases, PBL is not marked other than via recognition of the "completion" of the task, and perhaps personal feedback from the teacher on the group's work. Where group-based assessment involves marks, then the teacher needs to consider the relative contributions of students during the process, and use these as a basis for any differences in student marks.

Another option is to have students provide feedback on peer contributions. This can be tricky as students will often "band together" to give each other similar assessments (generally good, rather than bad). However, where one student has failed to contribute in an appropriate manner, students often feel this is unfair, and so they may appreciate an opportunity to acknowledge this as part of a peer assessment process. Rather than asking students to give each other scores or grades, you can ask students to apportion effort across

the group members, and watch for low effort scores for a particularly student showing up across many members of the group.

Basic Psychology of Why the Strategy Works

One of the great underlying challenges of learning is how to motivate students – and PBL provides two powerful factors to increase student motivation compared to more traditional teaching methods.

First, students are not simply presented with the facts about a matter – instead, they need to learn about the facts for themselves, and choose which information is useful to their understanding. This leads to a much more actively engaged mind as students try to solve problems and conduct research, rather than simply being provided with knowledge "on a platter". And while the amount of knowledge "covered" by students in a PBL will be less than a traditional lecture (on an hour for hour basis), the greater student engagement with the material means students are more likely to retain the knowledge learned during PBL, in addition to other benefits such as the development of problem solving and teamwork skills.

Second, real life problems are usually much more motivating that abstract discussion "from first principles". For an expert (like a lecturer or teacher) it may be elegant and appealing to describe a topic from first principles, but for a novice, it is often better to engage with real world examples, and as understanding of these specific examples grows, then the abstract principles start to make more sense.

I often think that universities get their teaching process almost exactly wrong (at least for early year courses) – in that they take world leading experts on a topic, who think about the topic all the time, and get them to teach this topic to students who are new to it. The result is that the lecturer speaks from the perspective of expert knowledge, but this can be a profound barrier to fostering learning among those who are only just getting their heads around the basics. At least for introductory courses at university level, the teacher needs to have sensitivity for how a novice learner approaches the topic – particularly the mistakes and misunderstandings typical of novice learners – and should adapt their teaching to address the learning needs of the novice. Expert discussion which makes no allowance for novice learners should be reserved for academic conferences.

Part 2: eTeaching with Problem-Based Learning

Running PBL Online

PBL can be run in a fully online mode or in a hybrid mode that includes some online tasks and some face to face tasks (especially face to face discussion in Phase 2 or 4). In either case, teachers typically participate actively in the PBL process – it is difficult to create an effective PBL experience without any input from a teacher (unless your students are very experienced at PBL and have excellent resources to address potential misunderstandings).

Online PBL can benefit from the use of video for case studies (such as patient interviews or company overviews) as well as online tools that mimic a real world processes, such as diagnostic tests or a financial model simulator.

Discussion in an online PBL can have the advantage of letting all students have a voice and the space to put forward ideas or arguments (especially when they run contrary to current group thinking). Face to face PBL can run the risk of a few students dominating the discussion (and hence requiring skilful facilitation by the teacher to solve this problem) whereas the nature of online discussion environments makes this less likely.

The Research phase is particularly suitable for online implementation given the range of resources that can be found with search engines and in online databases. The trick here is to ensure that students focus on achieving an outcome from their research, rather than experiencing "information overload" as they keep searching more and more possible issues at a tangent to the original problem. A solution to this difficulty is general training in information literacy and searching skills prior to PBL, combined with careful selection of topics for research at the end of Phase 2.

Synchronous vs Asynchronous

The classic PBL approach is a mixture of synchronous and asynchronous activities – Phases 1-2 and 4-5 are done synchronously but Phase 3 (Research) is done asynchronously. See Table 4 for advice on entirely synchronous/asynchronous approaches.

	Advantages	Disadvantages
Synchronous	Keeps the whole group together and on track at the same time; limits the risk of excess searching off on a tangent	May not provide enough time for research; may forestall discussion if insufficient time is available
Asynchronous	Allows students to conduct research at their own time and pace, and to their own chosen depth	Group discussion can become laborious or lose momentum if students don't read and respond every day

Table 4: Advantages and disadvantages of synchronous and asynchronous PBL

Sample LAMS sequence

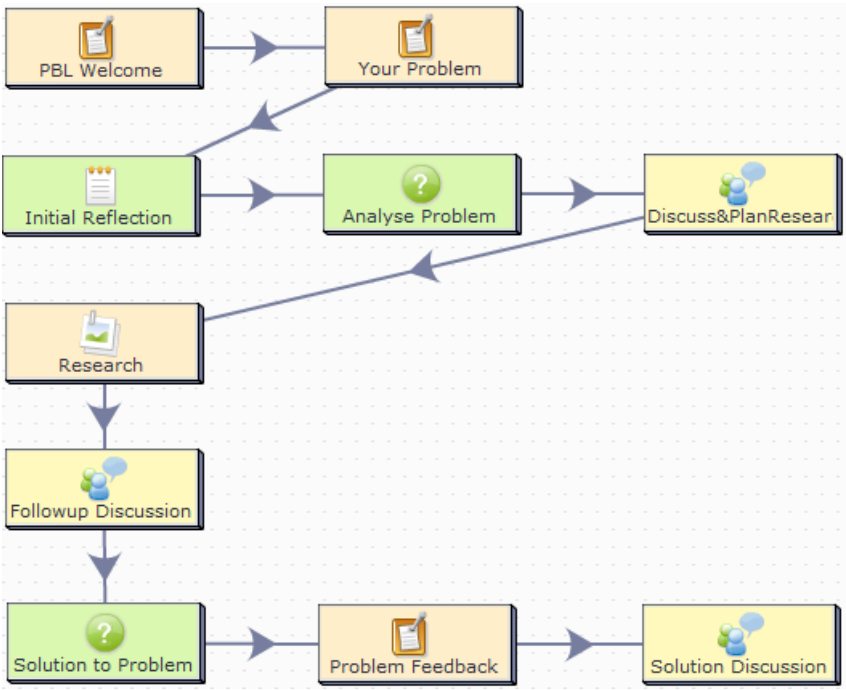

Figure 2: Problem-Based Learning in LAMS Authoring

Phase 1 – The Problem

Step 1 [Text page]: Introduction to the PBL process

Step 2 [Text page]: Description of the Problem

Phase 2 – Initial Reflection, Analysis & Discussion

Step 3 [Notebook]: Reflection on existing ideas and knowledge in a private notebook

Step 4 [Q&A]: Each student analyses the problem and describes their ideas and existing knowledge, and then gets to see the answers of other students

Step 5 [Forum]: General discussion of students' existing knowledge and ideas about approaching the problem, hypothesis generation and testing, together with discussion of topics for research and allocation of topics to students

Phase 3 – Research

Step 6 [Web Search/Share Resources]: Individual/small group research on topics agreed and allocated in Step 5 using a search engine (students can also share their chosen resources using the LAMS tool for this step).

Phase 4 – Followup Discussion & Solution Preparation

Step 7 [Forum]: Students discuss their research findings, followed by exploration of their implications for the problem, leading to the preparation of a solution and rationale

Phase 5 – Solution & Feedback

Step 8 [Q&A]: Each student describes his/her solution to the problem and rationale (individually), and then gets to see the answers of other students

Step 9 [Text page]: Feedback resources on the problem, together with comments on generalising the problem and its solution to other contexts

Step 10 [Forum]: Comments from the teacher on student solutions, and any final student discussion of different solutions and rationales

Advice on Facilitating Online PBL

For students who are new to PBL, you will need to play an active role in the discussion forums. For the first forum, you may need to help students focus their ideas and refine their approach to the problem to ensure that their topics for research are appropriate for working towards a solution. You may also need to help students allocate research tasks – e.g., suggest different topics that are needed and how many students should work on each topic (although for a simple PBL topic, each student might conduct research on their own on the same topic as all other students – this approach requires less facilitation and is common for simple topics).

For the second forum (Step 7), you may need to probe students' ideas to ensure they are thinking critically about the evidence from the problem and the research they have

conducted. If a crucial piece of research is missing or weak, you may need to point this out and suggest further research (or if time is limited, provide key information into the forum). Watch out for students who get part of a problem right, but are unclear on the underlying rationale – encourage students to question their assumptions if they need more work on their rationale.

In the PBL example provided, the feedback on the problem in Step 9 is prepared ahead of time by the teacher (when the sequence is edited, prior to running it with students). As a result, it is necessarily general in tone, rather than providing comments on the specific solutions put forward by students during their PBL lesson. To provide an opportunity for the teacher to make specific comments, the final Forum (Step 10) can be used for individual feedback from the teacher, as well as any final discussion among students after seeing each other's solutions from Step 8.

If your whole PBL is asynchronous, then it is important that students understand the need to read and post regularly – I'd recommend at least once per day as the requirement. Even with this requirement, you need to make sure you have enough time overall to allow for real debate to evolve in the various Phases – I'd suggest two weeks for a fully asynchronous PBL – even with daily reading and posting!

Special Advice for First Time LAMS Users

For first time teachers, the important educational issue to keep in mind is the change in your role as teacher – from "sage" to "guide". This means letting students unpack the problem for themselves as much as possible, and avoiding your natural impulse to point out mistakes or gaps in their thinking. The one partial exception to this guide role is at the end of Phase 2 as students prepare for research – you may need to do some prompting at this point to ensure their choice of topics will help contribute towards a solution if their initial discussion has gone completely off-topic. However, try to keep your prompting limited, and if students are partly on the right track, it can be best to leave them to it, as they may realise their gaps as they make progress on their research, or in their discussion later.

First time teachers need to know how to use the LAMS Monitoring area to participate in a Forum. Teachers should go to the "Sequence" tab in the Monitoring area, then double click on the relevant Forum tool, and then click the "View Forum" button at the bottom of this page. This will take you into the forum where you can participate along with the students – simply click on a thread, and then you can post messages using the "Reply" button. If you haven't used this feature before, I recommend setting up a live "dummy" run of this sequence (with just yourself as a student) so you can practice using the forum before running the sequence with your real students.

For first time learners, the problems are usually related to the educational processes of PBL – especially the end of Phase 2 where they need to choose research topics and allocate students to these topics. One technical feature that students need to know about is opening a previous task into a second window – to do this, they double click on the blue circle in the progress bar for the relevant task – this allows them to keep their current task active in the main window, but also refer to their earlier task in the pop-up window. This is particularly useful during the Phase 4 discussion where students refer back to the resources shared during Phase 3.

Running a PBL in a LMS or other Online Tools

While a typical LMS doesn't manage the flow of student tasks in the same way as LAMS, you can replicate the general PBL structure in an LMS – in fact, you can sometimes run the whole experience through careful use of a single discussion forum. After creating a forum area for the PBL, you post the problem, together with instructions for students to share their initial ideas and then discuss these with others. As the discussion evolves, you might add a few posts of your own to prompt students about ideas they may have missed, or difficulties in their current approach to the problem.

After an appropriate period of discussion, you add a new thread to ask students to prepare their research topics and decide who will work on each topic. Once this is agreed, students go off to conduct their research, and later they post their chosen websites (as links) or articles (as attachments) into this forum area so other students can review them.

Once the research phase is complete, you create another thread with advice on how to analyse the research and apply it to solving the problem. As this discussion progresses, you may want to offer comments on students' ideas, especially if they are missing something important.

To finish the PBL, you can create a final thread where students post their solution and rationale, and once this is done, you can provide feedback on the problem and their solutions, and generalise the problem to a wider context. Students may also post final comments or questions to this thread.

So, a PBL can be run in a discussion forum in a LMS, or in a stand-alone forum tool on the internet, provided that you are quite active in both structuring the tasks for students and offering advice on the problem at the same time. You won't have the advantage of a prepared LAMS sequence that steps students through all these tasks automatically, and you have less control over students jumping ahead or seeing each others answers before they post their own, but in general PBL can work quite well in a simple forum.

What Could Go Wrong

The main problems with PBL arise from a failure of the group to organise its discussion of the problem, or to arrange for effective research. This means you need to keep a keen eye on your students' discussion – just because you are a "guide" instead of a "sage" doesn't mean you have less work to do!

In fact, excellent PBL facilitation is quite a demanding task, even when your comments or questions are brief and occasional – because a well timed and well aimed question can make a crucial different to the PBL process. So in one sense, the thing that can go wrong is you – if you take over too much of the discussion, or start giving away the answers rather than letting the students find their own way. Just try to remember that students will learn more deeply if they find it out for themselves – that's why teachers consider using PBL instead of lectures in the first place.

Part 3: Create Your Own PBL Sequence

Editing the Content of a PBL Sequence

A carefully constructed problem is central to an effective PBL experience. You need to create a problem which students will find compelling – often something from real life (especially believable scenarios from potential future work) or a problem with some surprising aspect to it. As students will be largely self-directed in PBL, you need a topic that provides strong motivation in its own right.

Your initial problem statement needs to allow for more than one interpretation so that students will have different topics to research. Even if the problem has a single correct solution, there should be enough ambiguity about the initial statement that several different angles might prove to be the correct approach – even though later information could narrow this down to one angle (this extra information is often given in the Phase 4 discussion – e.g., results from a diagnostic test).

PBL is often used as a teaching method throughout a course (or even a whole degree) – so in these cases, it is important to have a "map" of all your different problems to ensure that you cover all the important topics across the suite of PBLs, and also to check that you have variety across the scenarios (e.g., not every sick patient should be an older man!).

In cases where you prepare the feedback materials ahead of time, such as the online example above, you also need to edit this content to suit your topic. It can be challenging to think up useful general advice on a problem and potential solutions when you haven't seen the students' answers yet – but try to frame your comments in general terms such as "some student think that…." or "a common misunderstanding in this case is…". Don't forget to include comments on how the problem and the solution can be generalised to a wider category of problems – one of the goals of PBL for developing 21st Century skills is that students can use their problem-solving skills in a wide range of scenarios – not just the narrow confines of the given problem.

Changing the Structure of a PBL Sequence

Basic Format: Single research phase

Variation: Two research phases

For simple topics, or for students who are inexperienced with PBL, it is often best to limit the structure to a single research phase. However, some of the best PBL experiences rely on a two research phase structure, together with a discussion session in the middle where students try to unpack the problem using their initial research, and work out areas where they are still lacking in knowledge, and hence need further research.

Not only does this variation make for a great PBL experience, it also mimics the experience of real research more closely – in that you rarely discover all you need to know in a single session of research, but rather you go through an iterative process of research and discussion, followed by more research and more discussion as you try to understand a complex problem. So using this more advanced version of PBL has many advantages for complex topics.

Basic Format: Students present the solution and rationale individually

Variation: Students present the solution and rationale as a group

Even though students work together on the PBL solution, it can still be useful to have each individual student state their version of the solution and rationale to help identify any residual misunderstandings or gaps in their knowledge. However, a common alternative in PBL is to have the students produce a single group statement of their solution and rationale. This has the advantage of requiring students to debate their different ideas to try to come to a common perspective – which can make for more incisive probing of unresolved issues as the group seeks the best solution, rather than deciding to let some students "have their own way" without a thorough debate.

Group solutions can be agreed within a discussion forum (e.g., one student acts as editor for the solution while other students post suggested changes or improvements). Another option is to use a wiki, where all students edit the solution

until they are happy with its final form. An advantage of using a wiki is that the teacher can see who has made which edits, and this may be useful for diagnosing underlying misunderstanding or for assessing individual participation in the group task.

Basic format: All online/all face to face

Variation: Mixed face to face and online

PBL is well suited to teaching contexts that provide opportunities for both face to face and online interaction. The initial problem and discussion could be in a face to face class, but further discussion and research could then take place online over the days after the first class. When students come back together for further face to face discussion, this is enriched by the debates that are already occurring online. Further debate can continue online after a second face to face session as students try to finalise their solution, and potentially conduct additional research. A final face to face session could be used for presentation of the solution and rationale, followed by in depth discussion of the problem and solution by the teacher, and discussion of other contexts in which this solution applies (that is, generalising the problem to help develop abstract thinking skills).

Another kind of change you could consider is:

Synchronous/Asynchronous: PBL in universities is often a mixture of synchronous and asynchronous or fully asynchronous. In schools (and universities with long lab sessions) it is possible to run a complete PBL synchronously – the trick is to ensure there is enough time for each stage, but not so much time that students get bored waiting for their peers. Students should be given fairly strict timing for each phase – especially the research phase. One way to implement this in LAMS is to add Gates between Phase 2 and 3, 3 and 4, and 4 and 5, so that students focus on each phase in turn – but make sure you tell students how long each phase will be!

Getting Started with Editing using LAMS

To use the templates described above, visit www.practicaleteachingstrategies.com and access the templates for this chapter. The first is a content example appropriate for a typical school science course on the classic question "Why is the sky blue?" It uses a single

research phase to suit the topic and the level of the students, and all students conduct research on the same topic individually.

A generic template of this example is provided to allow you to create of your own PBL sequence. The text for most activities has been written in a generic way (referring simply to "the problem") – there are only two activities where editing is essential – the description of the problem at Step 2, and the feedback on the solution in Step 9. All other activities can be edited to adapt them to your specific topic or to enhance the advice given to students, but the generic text provided in the template means this isn't necessary – just make sure you edit Step 2 and Step 9.

You can also use LAMS to create more sophisticated PBL templates, such as the "two research phase" approach mentioned – full authoring will allow you to change any part of the structure of the template provided.

Things to Try after your First Success

PBL is a very effective teaching method, and whole courses can be built using this approach, so one thing to try after an initial success is a short series of PBL sessions on related topics, together with a final discussion session where you draw out general concepts across the suite of PBL scenarios – this can assist students to development abstract thinking about the general principles underlying the specific cases.

If you are successful with a single research phase PBL, then consider trying the two phase approach – you'll need a more complex problem that allows for multiple phases of research, and you'll need to explain to students that they don't need to solve the whole problem after their first period of research. A good way to implement this is to have additional information that students only learn after the first phase of research – a fun way to do this is to try the approach where you pretend to be a person in the problem (e.g., a patient, client, or historical figure) and have students ask you questions to find out the information that they'll need for the second phase of research.

Conclusion

One of the strongest themes of modern educational thinking is the importance of students being active participants in their learning. PBL is a fantastic methods for making this a reality, and because of its structure, it limits the potential for teachers to revert to "teaching mode", and instead places the learner at the centre of the process, with the teacher as the "guide on the side".

At first, some teachers find this change of role difficult (I know I did – part of the hidden psychology of being a teacher is the chance to be an expert with an audience). But once you get used to the flow of PBL, you start to focus on different things – like watching out for an easy consensus among students when key issues haven't yet been addressed – and this is where a single well placed question can prompt more learning than many minutes of lecturing!

I also think that the focus on real world problems is crucial. If you are an expert about a topic, it is easy to see how the abstract ideas apply to real world scenarios. But when you are a novice about a topic, as students generally are, it is hard to see the implications of abstract principles (as you are struggling to understand these in the first place!). So starting with a real world problem and building "up" from there towards abstract principles ensures students can see the benefits of their new knowledge, and this is a powerful motivator for sustained learning.

Further Reading

The article below by my colleague Leanne Cameron provides an overview of PBL and its use in LAMS. The other references provide more general background on PBL.

Barrows, H. S. (1996). Problem-based learning in medicine and beyond: A brief overview. *New Directions for Teaching and Learning*, 68, 3-12.

Cameron, L. (2010). Why re-invent the wheel? Sharing teaching strategies that work. In Z. Abas et al. (Eds.), *Proceedings of Global Learn Asia Pacific 2010* (pp. 796-804). AACE.

Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn?

Educational Psychology Review, 16, 235-266.

Savery, J., & Duffy, T. (1996). Problem based learning: An instructional model and its constructivist framework. In B. Wilson (Ed.), *Constructivist learning environments: Case studies in instructional design* (pp. 135-148). Englewood Cliffs, NJ: Educational Technology Publications.

Savin-Baden, M. (2007). *A practical guide to problem-based learning online*. New York: Routledge.

Chapter 4

Role Play

Part 1: About Role plays

Introduction

"Look, I'm finding this really hard" said Eva suddenly in a frustrated voice, breaking the rhythm of the class discussion.

Eva was a student in my Master of Education course, and we were debating the benefits and problems of adopting interactive whiteboards in a typical school.

"I mean, I really like using interactive whiteboards, so it's hard to keep arguing why they're a bad idea" said Eva, trying to explain her outburst.

Eva was participating in a "role play" – a teaching technique where students imagine themselves in a particular scenario (in this case, a school considering the adoption of interactive whiteboards) where each student takes on a role, and then plays out the scenario from the point of view of their allocated role.

In Eva's case, she'd been making some quite cogent arguments against the adoption of the interactive whiteboards, as she had been allocated to the "against" role in a simple two role scenario. Each student was pretending to be a teacher at the imaginary school, and half had been allocated to the role that was "for" the introduction of whiteboards, and the other half (including Eva) had been allocated to the "against" role.

More than a few students had raised an eyebrow at the effectiveness of Eva's arguments against the whiteboards, because everyone knew that normally she was a great advocate of

technology in education, so it was interesting to hear her argue the opposite case so effectively. And to make matters more interesting, she had then suddenly broke out of her role and admitted she was finding the whole experience a challenge.

Why Consider Role Plays?

There are many topics where students need to see the world from a perspective which is not their personal point of view – they need to learn to "walk in the shoes" of another person – someone who holds different views to themselves.

In my example, many trainee teachers have an interest – indeed a passion – for using technology in schools. There are many benefits to this interest, but one downside is that students do not always think critically about how technology is used. For students who have a natural inclination to see the positive side of technology, it can be challenging to look for potential negatives.

This need to understand other viewpoints isn't limited to trainee teachers - it might be important in a History course, where students try to understand the reasons given by two sides for engaging in a conflict, even though a student's own view may gravitate to one particular side (think of the Middle East). It might be in an English course, where a student is trying to understand the motivations of a character in a novel who is so different to the student that she struggles to understand the character's actions.

Underlying these topic examples is a deeper kind of learning that is one of the most important 21st Century skills – the ability to see the world from different points of view. The role play is one of the most powerful techniques in a teacher's armoury to help students develop this deeper skill.

Step by Step Example

Eva's role play experience about the adoption of interactive whiteboards in a school followed a certain structure. In the summary below (taken from my actual class with Eva) I

assume it all takes place during one class, but often it is split over several sessions:

Initially, I explained to my students that they would be participating in a role play and how it would progress. I also explained the scenario for the role play (a school considering the adoption of interactive whiteboards) and the roles (two roles – teachers "for" the adoption of the whiteboards and teacher "against" the adoption).

Once the explanation was complete, I allocated each student to one of the role groups. I then invited students to reflect on their allocated role and the scenario, and to write down their initial thoughts on the situation and how they would respond, given their role. I then sent all students in the "for" role to one end of the class, and those in the "against" role to the other end of the class, and each role group discussed their ideas and the arguments they would make when the main role play started. During this time, I circulated some information about the pros and cons of interactive whiteboards for the groups to consider.

I then brought all students back together for the main role play session. Students were seated in their role group facing the other group, and I helped lead off the discussion by inviting a few students from each side to make some initial points. From there, the debate developed of its own accord as students made their case according to their allocated role and argued the pros and cons of the scenario.

After an extended period for discussion and debate, I called the role play to a close and asked students to move their chairs back to their normal positions. I invite them to write some private reflections on the role play experience and what they have learned. I then led the class in a discussion about the experience of being in the role play (encouraging students to "debrief" on how they found it interesting or hard), and after this, I led a discussion on the topic of the role play itself, particularly encouraging students to talk about how their ideas might have changed, or how their ideas differed from those of their role.

Other Sample Topics

Here are some examples of role plays for other topics:

- English: When studying a novel or play, you could run a role play in which you identify the main characters, and students are allocated to one of these characters. You could then take a key moment in the narrative and change what happens – perhaps someone lives instead of dying (or the other way around – but not for one of your chosen roles!); or a battle is won instead of lost (or the reverse); or perhaps two friends are reconciled (or fail to reconcile) – there are many possibilities – the key is to see how well students understand their character so as to improvise their reactions to the new situation.
- Science/Geography: Take an issue of importance to the wider society (e.g., pollution, global warming, water management, fishing) where there are conflicting points of view. Create roles to reflect different groups in society who have a stake in the issue (including businesses who provide jobs), and create a scenario where resolution of these conflicts is needed. Try to avoid scenarios which are tilted too far towards one viewpoint, otherwise you'll get little debate.
- History/Politics: Try to illustrate a conflict by having students take on the role of the countries (or leaders) involved, and have students attempt to find a solution to the conflict - particularly a different solution to a past outcome in the case of historical conflicts. Examples include the Versailles negotiations at the end of the First World War, the end of the Second World War and the rise of the cold war, or many examples of conflicts from Ancient History.
- Mathematics: Students could take on the role of different variables in an equation to conduct an interpretive dance of the interactions of the equation. OK, maybe that isn't such a good idea. Role plays aren't so well suited to maths!

Summary of Teaching Strategy

When most teachers think of a role play, they think of the part where students take on different roles and interact or debate with each other based on their allocated role. But this is only one part of the overall technique – as the example above shows, there are typically four main "Phases" to a complete role play:

Phase 1: Background and preparation

Phase 2: Role allocation and reflection/research on role

Phase 3: "Role play proper" – the acting out of the role with the whole group

Phase 4: Post role play debriefing and reflection.

Phase 1: First, you give students information about the scenario of the role play, as well as practical information about the running of the role play, such as how many roles there will be, how long each phase will take and what they are expected to do during each Phase.

Phase 2: Next, you allocate students to a role, and then they take some time to reflect on their role and how their role would behave in the scenario. This often involves background reading or research – you may give students information on the scenario and their role to better understand the situation, or students might be required to conduct their own research to discover information to help them prepare.

While it is possible to have a role play where each student is given a different role, these are difficult to organise with more than a handful of students. In larger classes, it is typical to have a small number of roles with multiple students allocated to the same role (in my earlier example, half the class were allocated to the "for" role, and the other half to the "against" role). The students in each role group get together to discuss their ideas about their role, and formulate strategies and arguments for the main role play. This discussion is done in "private", that is, away from other role groups.

Phase 3: After a suitable period of time for reflection on the allocated role and any further research, you bring all students together for the main role play where they play out their role with their peers. The scenario can be a static situation where the students debate the merits of the different possible actions (e.g., whether the school chooses to adopt the interactive whiteboards or not). In other cases, the scenario might change during the course of the role play (e.g., a history role play about two countries on the brink of war, where midway through the role play you announce a natural disaster in the stronger country, hence changing the dynamics of the conflict).

Phase 4: Once the main role play is complete, you help students step back from their roles and reflect on the experience. You should try to facilitate discussion of the role play experience in a way that allows students to "debrief" and return to their normal selves, and discuss not only the topic covered, but the feeling of being in the role play. Students may also write private reflective thoughts before and after class discussion.

The deep learning that comes from the role play strategy arises mostly from the Reflection phase at the end where students try to come to grips with their own natural views and how these compare to the views they have just been playing in their role. By reflecting on this experience, students can develop a better ability to see multiple points of view. While some of this reflection is best done privately, it is also appropriate for you to facilitate whole class reflection and discussion, particularly for a student like Eva who needed to give voice to the challenges she felt during the role play experience.

Timing

Role plays tend to take quite a bit of time, often over several sessions. A single session role play based on the example above can be run over a 90 minute class as illustrated in Table 5

Phase 1: Background and preparation	Teacher gives directions to whole class	10 minutes
Phase 2: Role allocation and reflection on role	Students are allocated to roles; Students discuss in small groups (i.e., role groups)	20 minutes
Phase 3: "Role play proper"	Students discuss as whole class (acting in roles)	30 minutes
Phase 4: Post role play debriefing and reflection.	Individual student reflection & teacher facilitation of whole class discussion	30 minutes

Table 5: Sample timing for role play over one 90 minute class

This process would work if the roles did not require much research or reading on the part of the students. In cases where research and reading is important, such as a history example, Phase 2 should be expanded to allow more time. One way to achieve this is to have a break between class sessions so that students can do further research on Phase 2 as a "homework" activity.

For an extended role play experience, Phase 2 could include initial discussion, then research/reading (potentially over several days), then reporting back to the role group followed by further discussion and preparation of arguments/ideas. For a complex topic, individual students might research different parts of the topic, and each share their findings back with their role group later. Phase 4 could be extended to allow not only a period of debriefing and reflection on the role play itself, but then further teaching on the topic and further discussion of the new material in the light of the role play experience (this could be particularly suitable to a history example where the teacher shares more details about events after the scenario). Table 6 illustrates an example of an intensive role play over 4 sessions of 45 minutes.

Phase 1: Background and preparation	Teacher gives directions to whole class	10 minutes
Phase 2: Role allocation and reflection on role	Students are allocated to roles; Students discuss topic in their role groups, and decide on allocation of research tasks	35 minutes
[Break between classes – students conduct research]		
Phase 2 (cont): Sharing and discussion of research on roles, preparation for main role play	Students report back on research findings and discuss in small groups (i.e., role groups), and prepare ideas/arguments for main role play	45 minutes
[Break between classes]		
Phase 3: "Role play proper"	Students discuss as whole class (acting in roles)	35 minutes
Phase 4: Initial post role play debriefing and reflection.	Individual student reflection & teacher facilitation of whole class discussion (focus primarily on debriefing feelings rather than topic)	10 minutes
[Break between classes]		
Phase 4 (cont): Further post role play reflection, and teaching about topic	Individual student reflection & teacher facilitation of whole class discussion (focus primarily on topic)	45 minutes

Table 6: Sample timing of complex PBL over four 45 minute sessions

The Role of the Teacher when running a Role Play

A well organised role play can sometimes "run itself" without much teacher intervention. The key is for students to have a very clear understanding of the scenario, the roles and how the role play will progress before they leave Phase 1.

Another organisational element for face to face role plays is re-arranging furniture to allow students to see each other during the main role play (usually grouped into areas according to roles).

Phase 1: You start by providing information and instructions on the step by step progress of the role play (this may include a handout or instructions on the board so students have something to refer to later on). You should also remind students about appropriate and inappropriate behaviour when they are involved in discussions. Making sure students know what to do and when is crucial to smooth running during the rest of the role play!

Phase 2: For the allocation to roles, you can do this randomly, or if you know your students well enough, students could be deliberately allocated to the role most likely to "stretch" them. For the rest of Phase 2, you may simply observe the different role groups get underway with reflection and research, possibly interrupting if they get off-track or if you feels they are missing an important issue they should consider.

Phase 3: You should observe the role play closely throughout, but may need to do very little if students play their roles appropriately and respectfully. In some cases you may need to intervene if things get too heated. It can be difficult to decide whether to intervene or not, because the intervention itself will "break the spell" of the role play scenario (especially if students have really "taken on" their role with great imagination). On the other hand, students can get too carried away with their role (especially in passionate debates) or may get lost in irrelevant details, in which case you may need to step in.

In scenarios that evolve during Phase 3, you should interrupt after an appropriate period to provide new scenario information. While this could be simply described or provided as a

hand-out, another option is where you yourself join the role play in a new role. If you do this, it is important for students to know that you too are acting a role, as you may still need to step back from this role later to ensure "crowd control" or to bring the role play to a close.

Phase 4: It is important to have a period of post-role play reflection and debriefing because some students may have gotten carried away with their role, and depending on the nature of the scenario and debate, may feel quite passionate about the issues. So once the role play is concluded, it is worth spending some time helping students to explicitly "step back" from their role, remember who they are, and acknowledge that the views they put forward during the role play may not be their personal views. If any students had significant disputes, you may need to facilitate some reconciliation and stepping-back from statements made during the role play.

Assessment

Many role plays are run without any formal assessment due to the high level of student participation required by the approach. Going beyond this, here are three areas that could be further assessed:

- Knowledge: Students could be assessed on their understanding of the scenario and role, particularly in cases where research was required – so this assessment tests both recall and investigative skill. A quiz or essay after the role play could be used for this purpose.
- Quality of ideas/arguments: Students could be assessed on the quality of the ideas/arguments they presented in the main role play, and how they respond to the ideas/arguments of others. While this draws on knowledge gained in Phase 2, it demonstrates a further skill which is the ability to craft responses to challenges that are coherent and plausible. To make assessments of this kind, you would review the comments of individual students in Phase 3.
- Ability to see other viewpoints/personal insight: Students could be assessed on the extent to which they have developed the deeper skill of seeing the world from other perspectives. This is best assessed as a reflective essay written by students at the end of Phase 4, in which they draw on their own reflections and comments throughout Phases 2, 3 and 4 to demonstrate how their ideas have changed or deepened. As these essays are often quite personal, you may choose

not to give a "score" to these essays, but rather offer your own reflections on their essay by way of a comment – particularly focussing on examples of deep reflection and understanding of multiple viewpoints.

Assessments 2 and 3 will involve quite a bit of your time to provide feedback to students, but individual feedback combined with the rich learning environment of a role play makes for some of the most powerful learning experiences that students can have towards developing the 21st Century skill of understanding multiple viewpoints.

Basic Psychology of Why the Strategy Works

While there are many psychological factors behind the learning that occurs during a role play, one of the more interesting factors is a phenomenon known as "cognitive dissonance".

Cognitive dissonance is based on the finding that it is hard to maintain two conflicting ideas at the same time, especially where you are required to act according to one idea which is in conflict with what you believe internally. The resulting tension or "dissonance" of acting one way and thinking another leads people to often solve the tension by changing their internal views to align more closely with their behaviour (in the case of a role play, the "behaviour" is what they are saying on behalf of their role), even if their actions are not of their own choosing!

It's the same trick that door-to-door salesmen use when they get a foot in the door – the vacuum salesman is hoping that the homeowner, having been unable to stop him coming into the house for a demonstration, will then go through a subconscious mental process along these lines: "I didn't want him to come into my house to sell me the vacuum; but here he is in my house selling it to me anyway, so perhaps I did want him to try to sell me a vacuum, so ok, I'll consider the possibility of buying." It's important to note that this process is mostly unconscious – people are not aware of this thought process – that's part of how it works.

In the case of the role play, a student who holds one set of views, but then needs to argue a

different set of views because of her allocated role, may experience this feeling of dissonance. As a result, she tries to resolve the tension by thinking more deeply about the views that the role is requiring her to argue, and whether she can reconcile her behaviour of presenting these role views (as required in Phase 3) with her own pre-existing views. The resolution of this tension can lead to a new synthesis of ideas.

The process described won't always happen, and some people have no trouble with acting one way while maintaining contrary thoughts inside, but according to cognitive dissonance theory, the role play experience may well encourage some students to find a new middle ground between their own previous views and those of their role.

Part 2: eTeaching with Role Plays

Running Role Plays Online

At first blush it might seem that running a role play online runs counter to the visceral experience of acting out a role in a vigorous face to face debate. While it's true that the immediacy of the face to face environment is sometime (though not always) lost online, there are two key reasons that an online role play can work even better than a face to face role play.

First, online environments are great for research tasks, so Phase 2 research can be much faster and richer online. Of course, all the usual caveats about relying on internet resources apply here, and students need to have (or be developing) a sceptical eye on the quality and biases of online resources. Nonetheless, there are usually many great resources on the web, so you can either point students directly to the good resources, or for more advanced students, give them a search engine and the task of finding and evaluating resources to help them prepare.

The second reason for online role plays is that many students, especially those who are shy, find an online role play easier to participate in than a face to face role play. There are

several nuanced factors at play here:

- students may find it embarrassing to confront another student "eye to eye", particularly over views that they don't hold personally, so the online environment limits feelings of embarrassment;
- online environments give students more time to reflect and prepare a reply (and edit or delete ideas before responding), unlike the need to respond immediately when debating face to face; and
- online discussion forums allow students to post and read different argument in parallel – not everyone is forced to follow a single voice at the same time as in face to face contexts. All of these factors can make for a richer and more thoughtful role play when it is conducted online.

Phase 4 reflections can also benefit from an online approach – for example, if students are able to share their reflections in an anonymous way, they may be more honest about their experience and what they have learned. Also, an online forum allows for ongoing discussion over time, rather than being limited to the constraints of the classroom schedule.

Synchronous vs Asynchronous

As with most online activities, a role play can be run synchronously or asynchronously. The table below summarises the advantages and disadvantages of each approach.

	Advantages	Disadvantages
Synchronous	All students together for a set period of time – ensures availability for participation	-May not allow enough time -Conversations can become hard to follow if there is too much overlapping
Asynchronous	No time constraints – students can develop ideas over days or weeks	-Students must return to forums regularly to keep momentum and ensure sufficient discussion

Table 7: Advantages and disadvantages of synchronous and asynchronous role plays

While the benefits of extra time for asynchronous approaches are strong, the downside of students not participating often enough can be a real practical problem. Students who are not used to regular participation in asynchronous activities need a lot of reminding and encouragement the first time they do an online role play to ensure momentum remains throughout.

Sample LAMS sequence

Figure 3 shows an example of a LAMS sequence for a role play with two roles. This simplified version of a role play is suitable for teachers who are new to this strategy as it relies on only two groups – "for" and "against" – and can be used with a wide range of topics with minimal editing. However, this simplification tends to make the role play more like an online debate rather than the richer role play experiences which occur with a wider range of roles. Advice on more complex role plays is given at the end of this section. The first four activities correspond to Phase 1, the Branching to Phase 2, the "Forum – Everyone" to Phase 3, and the final 3 activities to Phase 4.

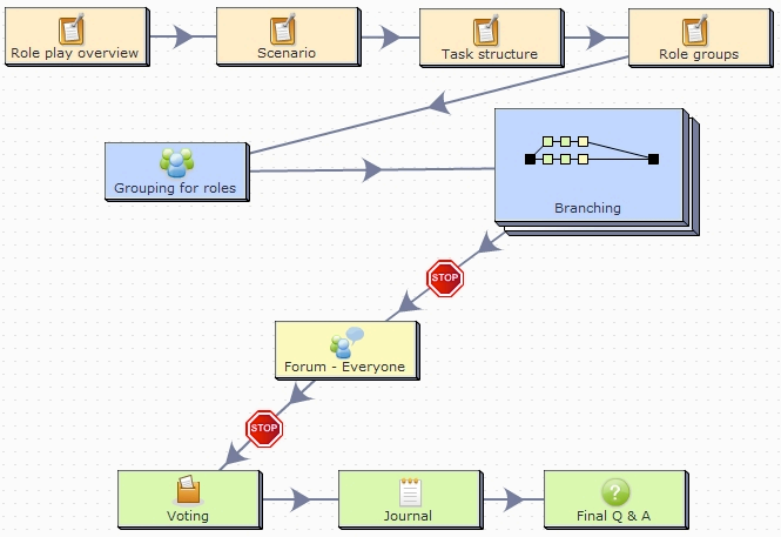

Figure 3: Sample Role Play in LAMS Authoring

Phase 1 – Background and Preparation

Step 1 [Text page]: Welcome

Step 2 [Text page]: Description of scenario

Step 3 [Text page]: Description of task structure for the progress of the role play

Step 4 [Text page]: Description of roles

Phase 2 – Pre-Role Play Reflection

Step 5 [Grouping]: Allocation to roles (random allocation)

Step 6a [Notebook]: Reflective Notebook for initial thoughts about allocated role in the given scenario

Step 6b [Q&A]: Question & Answer about initial thoughts on role – students answer the question for themselves, then see all answers from their role group

Step 6c [Forum]: Further discussion of the role among others in role group

NB: Step 6a/b/c are "private" branches, which means only the students allocated to a certain

branch (based on the role allocated in Step 5) are able to view activities within this branch.

Stop point

The teacher manually "opens" this gate after at an appropriate time (students cannot progress past this point until it is opened). Opening is done in the LAMS Monitor area.

Phase 3 – Role Play Proper

Step 7 [Forum]: Discussion forum for all students – students post their initial views to their role thread, and then continue discussion/debate across all threads as ideas develop.

Stop point

Part 4 – Post Role Play

Step 8 [Voting]: Students steps out of their role and each decides his/her own view "for" or "against"

Step 9 [Notebook]: Student reflects privately on what he/she has learned

Step 10 [Q&A]: Students debrief by sharing what they found interesting or surprising from the activity by answering a question, then seeing the views of others

Advice on Facilitating Online Role Plays

All the general advice about running a face to face role play is relevant to online role plays – such as issues around teacher intervention.

The main challenge to online asynchronous role plays is ensuring that students go online to read and post regularly. If too few students participate, especially in the early period of Phase 2 and 3, the role play can collapse from lack of momentum.

I've tried several approaches to this problem, such as gentle encouragement and explicit requirements, and for students who are new to online role plays I've found it is necessary to set explicit requirements – such as a requirement to read and post at least once every day. This requirement may sound heavy handed, but it makes all the difference to a good overall experience, and once the role play is going well and has its own inherent "pull" on students to participate, it is no longer necessary.

For synchronous role plays, the problem can be the reverse – too much happening at once! Student need to be encouraged to take time to read each other's answers, not just post a response to every minor point. In online forums, this problem can occur when students read and post within only one thread, instead of reading across different threads.

In chat rooms, the problem can be that too many students together at once produce so many rapid conversations, which all overlap, that it can be hard to follow. Although to be honest, many students today are used to rapid overlapping chat conversations; it is often teachers (and students without chat experience) who find this difficult! One way to solve this problem is to run separate "role play proper" phases in different chat areas, with 8-10 students in each area. Keep in mind that if you use this approach, students won't have seen the debates from other chat areas, so in Phase 4 you will need to pull together reflections from different groups who may have addressed different issues.

One problem that can arise with role plays is that students forget which students are in which role groups, and so when a student posts a comment, others don't know which role the student represents. One way to solve this is to ask students to start their comments with an acknowledgement of their role, e.g. "As a 'for' teacher, I think…". Typically students only need to do this for the first few posts in a forum area, as it becomes obvious who represents which views as the discussion evolves.

A different solution is to allocate students to groups according to the first letter of their surname (e.g., A-K "for", L-Z "against") – this way everyone can infer a student's role from looking at their name (which accompanies each forum posts).

Another way to solve this problem is to change the user names of students to their role, so instead of the system showing a post from "John Smith", it shows a post from "ForTeacher3" of "AgainstTeacher5". If you use this approach, you need to hand allocate students to the correct role groups once the sequence is running (don't let random allocation put 'ForTeacher3" in the 'Against" group!). The anonymity that comes with this approach can also help with students taking on their roles more deeply. The difficulty with changing user names is that it often takes some work to set up extra accounts for students under a different user name, and if your online system is controlled by central IT staff, they may not permit multiple accounts.

Special Advice for First Time LAMS Users

I generally wouldn't suggest a role play as the first online activity you try in LAMS – role plays are fairly complicated in their own right, and it is better to introduce students to the LAMS interface with a shorter and simpler sequence.

However, if you are using a role play with novice learners, then I'd suggest stepping students through the whole role play in a face to face class using a projector that all students can see. To do this, use the Preview option in Author – this way students can see what is happening ahead of time and get a feel for the different stages. If you have no face to face contact with your students, you could record a short online walkthrough of the sequence and embed this in the first activity. In fact, a step by step walkthrough of a role play is a good idea even with students who are experienced with LAMS in general, but who haven't previously tried a role play.

For first time teachers, I'd recommend putting extra time into preparation, especially your own "dry run" walkthroughs of the sequence (if you can, try doing a run through with some "spare" student accounts, with you using these accounts as a mock student to see what happens). Make sure you understand how to use any Monitoring features that are required for your role play, such as releasing a "Stop point" or hand allocating students to groups if you are using either of these features.

Running a Role Play in a LMS or other Online Tools

Setting up and running an online role play is possible in a Learning Management System, but you lose the step by step "flow" of tasks and the ability to re-use and adapt existing templates. This means you need to build the role play from scratch, and won't have as much control over student progression through tasks (which means they can get lost).

You first need to set up an area of your LMS for the role play where you can put general instructions and advice. This might be a content module area labelled as "Role play" or it might be a weekly section clearly marked as the role play. You will need to add all the

instructions on how students are to progress through the role play to this area – this could be a webpage or a document.

You will also find yourself adding lots of extra instructions like "once you read this information, then go to the discussion area to the role play thread and post a message about X; then come back here and read Y; then go back to the discussion area and post a message about Z, etc" – I always feel a bit like a "traffic cop" when writing all these "go here, go there" instructions for a LMS.

You'll also need to set up the content and discussion areas for the various Phases, so you will need to create private group discussion areas for your different roles for Phase 2, and then set up a general discussion area with appropriate threads for Phase 3, and then other threads for Phase 4. If your LMS has a "selective release" function, you can hide the later areas until you are ready for students to access them; otherwise you just need to tell students not to go into these areas yet (even though you can't stop them). For Phase 2, you should also try to set up groups for your roles, and then make the content and discussion areas private to the relevant groups (if your LMS supports private group areas).

You can even run a role play outside a LMS if you are inventive – you could email the instructions to each student and use online tools (like a Wiki or Google Docs) for group content. By creating different content at different web addresses, you can then email the URL for specific role content to the students in that role. You then have a general online discussion area for the whole class and for the later reflections.

This approach takes a lot of work to set up, including finding appropriate online tools, and it can also be a pain if students need separate logins for each tool, but it can work if you don't have access to LAMS or a LMS but can get to various free tools on the web.

What Could Go Wrong

Heated exchanges between students are more likely in role plays than in almost any other teaching strategy, as students are intentionally being placed in a situation of tensions between views, and on top of this are being asked to argue ideas which may not be their

own. Some students can take this too far or others may be upset to hear arguments against their own deeply felt beliefs, so you need to be prepared for this and have some strategies for defusing tensions if they grow too great.

Ideally, you will let the exchanges happen in Phase 3, and then address any issues arising from them in Phase 4 when you help students to step back from their roles and defuse tension/build reconciliation between students who had a heated exchange. This can sometimes lead to a great teaching moment where you help students to understand that if they can get so passionate about a topic in a role play (say a social or historical situation), then it must be much harder for real people in that situation who have to cope with it every day.

However, some heated exchanges in Phase 3 may require direct intervention on the spot, such as when a student becomes abusive or says something hurtful or unpleasant. In these cases, you need to "break the spell" of the role play for a moment to explain what is inappropriate and caution the student if needed. You may need to suggest the student take some time out from active participation and just listen. In repeated cases of trouble, you may need to remove a student from the role play.

After intervention, you will probably need to restart the conversation – this can be done by picking a point from an earlier interesting discussion, and encouraging the student who made it earlier to develop it further (you may need to suggest a new direction to help him/her get going).

In the case of online role plays, LAMS and some other systems have the option of editing or hiding certain student comments or posts, and in severe cases you may need to use this functionality. Generally it is better to address the issue openly with students so as to explain the problem and then encourage them to move on themselves. You may need to send a private message to a student to explain the issue in more detail.

While it is rare for serious problems to arise, all of the above should be a reminder of the importance of carefully explaining appropriate behaviour to students at the start of the role play, rather than assuming students will just "know" implicitly what they should and shouldn't do. But even with careful explanations, the emotion of the moment can be quite strong in a role play, so you need to be well prepared.

Part 3: Create Your Own Role Play Sequence

Editing the Content of a Role Play Sequence

The heart of an effective role play is the scenario and the corresponding roles. The scenario needs to be plausible so that students can readily imagine themselves in the situation described – if it's not believable, you'll get half-hearted, wooden performances. Central to a plausible scenario is the likelihood of conflicting views – if there isn't some tension or disagreement, the role play won't have the momentum to be interesting.

The scenario and roles need to provide enough information so that the basic situation is clear, but not too much information otherwise it will overwhelm students and may diminish their natural desire to understand the situation further in Phase 2.

The most important part of a successful role play is a scenario and roles that are well balanced between different possibilities. If a scenario is too biased towards one role, it ruins the spark of debate that would otherwise occur between more balanced positions, and students are prone to reciting "pat" answers that they think are expected of them. Avoiding bias in the initial setup can be quite a challenge when your own views tend towards one role more than another!

Students also need enough information about their role to get started, but further research may be required. In my interactive whiteboard adoption example, my trainee teachers generally don't need much research on what it would be like to be a school teacher; but in a history role play where students are playing out two different countries, the depth of their research and understanding of their allocated country may be central to a successful role play.

One other editing issue is the post role play reflections in Phase 4 – while these can be effective with quite general text (e.g., "What did you learn from this experience? What surprised you most? What new ideas do you have about this situation that you didn't have before?"), you should also consider whether there are specific topics for reflection that are important to your scenario, especially if knowledge acquisition was central to your objectives (not just seeing different viewpoints).

Changing the Structure of a Role Play Sequence

There are many variations to the structure of a role play, and you should always adapt the structure to best suit your topic. Here are some examples of significant structural variations you could try:

Basic Format: Role play with two roles – for and against

> Variations: 3, 4, 5+ roles as suits the scenario. For example, in my interactive whiteboards example, I also run this in a four role format with roles for school management and students, in addition to the "pro" and "con" teachers. You could easily change this to three roles by removing the students (or school management), or expand it to five roles with the inclusion of parents.

Basic Format: "Static" main role play (Phase 3)

> Variation 1: You could make the scenario evolve during Phase 3, so that students have to adapt to changed circumstances. In the history example I gave above where two countries on the brink of war, the stronger country could experience a natural disaster like a flood that changes the relative strength of the countries.
>
> Variation 2: The evolution of the scenario could require each role to go away to conduct further research and discussion, so in this variation you insert an "additional" Phase 2 and 3 between the usual Phases 3 and 4.

Basic Format: Run a single role play on a topic

> Variation: Students only get to play one role in a given role play, so if you want them to see an issue from multiple viewpoints, you can run two (or more) role plays on related topics with the same group – one after the other. For this approach, it is important to hand allocated students to roles (rather than use random allocation) so that you can "switch" students to different/opposite roles when you run the second role play.

Some other kinds of changes you could consider include:

Assessment: Do you include an assessable task at the end of the role play (such as a

reflective essay drawing on experiences from the role play), or is there no "formal" assessment (other than participating in and competing the role play itself).

Synchronous/Asynchronous: Asynchronous role plays rely on discussion forum tools, but a synchronous role play with a relatively small number of students (up to 15) may choose a chat room instead. If you run a synchronous class of 15-30 students, it can be worth breaking the main role play (Phase 3) into several parallel chat rooms (and make sure you have a good mix of each role in each room!).

Getting Started with Editing using LAMS

To use the templates described above, visit www.practicaleteachingstrategies.com and access the templates for this chapter. Here you will find two role play templates ready to use. The first is the two role Interactive Whiteboards example described here – with all the content set up ready to use.

The second template is a generic version of the two role Interactive Whiteboards role play, where you adapt this role play to your own topic. The text in all the tasks (except one) has been written in a generic way that allows it to be used without editing – although I encourage you to refine this generic text to suit your context. The key activity to edit is the second activity – the description of the scenario.

There is also the four role version of the Interactive Whiteboards example. If you want to adapt this to another topic, you'll need to edit the text in most of the activities of this template, as it is not generic, and refers to the four specific roles of the Interactive Whiteboards context – whereas your new topic will almost certainly need different roles!

If you'd like to make more significant changes to these templates, perhaps to try out one of the variations described above, you can open the templates in the LAMS "full" authoring area where you can change anything about the sequence structure as well as the content.

Things to Try after your First Success

A successful role play can be quite an exhilarating experience, and even a less successful role play will give you lots of ideas for how to improve your next attempt. Here are some suggestions for things to try once you are comfortable running a basic role play:

- Add more roles to make the role play more life-like and complicated
- Incorporate a significant research task for Phase 2 and provide appropriate time for research, reflection and discussion
- Plan for a "surprise" in the middle of the main role play which changes the scenario – particularly where the surprise changes any relative advantage/disadvantage between different roles. For example, in the Interactive Whiteboards role play, if the "for" group is winning, then you could say that funding has been cut and only half as many Boards can be purchased as planned; on the other hand, if the "against" group is winning, you could say that the Boards have become less expensive, and now every class can have a Board and still have money left over.
- Run several role plays (on the same topic) in parallel – this allows for smaller discussion groups (if you are finding that 30 students in a single discussion area is overwhelming). You can even try a micro-sized role play where there is only one student per role – so the debate on behalf of a role is entirely up to the allocated student!

Conclusion

Role plays take quite a lot of preparation and facilitation, and can be demanding on a teacher to ensure they go well for all involved. But one of the hidden secrets of role plays is that they are fun. A well planned and run role play, on an interesting topic, can be the highlight of a whole course for many students. It is often an experience they will remember for many years when other course content has long been forgotten, so it's worth it to try something different, and a bit risky, when you consider the impact it can have on students.

And the primary learning goal of a role play is one of the most significant lessons anyone can learn – how to see the world from the perspective of another person. I believe the world would be a better place if more people could see life from the viewpoint of others, so for me the role play has a special place among all other teaching strategies.

Further Reading

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