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A Starting Point

The approach outlined in this book gives secondary school teachers a process for designing lessons that both teach facts quickly and help to develop critical thinking. We understand that students will be tested, and the test results will be important. We also understand that people need more than mere facts to succeed in life; they need the understanding and ability to carefully analyse the available information to make the best possible decisions. Although facts are always readily available to students in this current generation, their ability to analyse the data beyond mere memorisation will be a significant part of their success.

How to Use This Book

This book is a guide to help secondary teachers develop Green Light lessons that include elements of critical thinking. It's been designed around the idea that many teachers lack the time necessary to read an entire book.

To get the most value out of it, here is a suggestion. Please carefully review the next section, which introduces the five steps to consider when developing your own lessons. Then, just *scan* the section on the suggested translation techniques. Once you have a basic understanding of these techniques, begin to browse through the lessons to see how they are constructed. The subject areas vary greatly, and it may be most useful to begin scanning lessons designed around content with which you are familiar. Familiarity with the content will help free your mind to study *how* the lesson is organised. From there, branch out and peek at other lessons. Soon enough you'll begin to see the consistent, underlying structure to each of the lessons, *regardless* of the content!

Finally, dip into the last section of the book, which tackles four fundamental keys to making engaging lessons more effective:

Recall	Teaching your students memory pegs
Rock	Using music to support activities and learning
Reorganise	Matching your classroom setup to your lesson
Reflect	Setting up productive student conversations

As you implement your new lessons, this might be a section you revisit to find additional tactics to manage what will almost certainly be a more dynamic teaching process.

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The Process

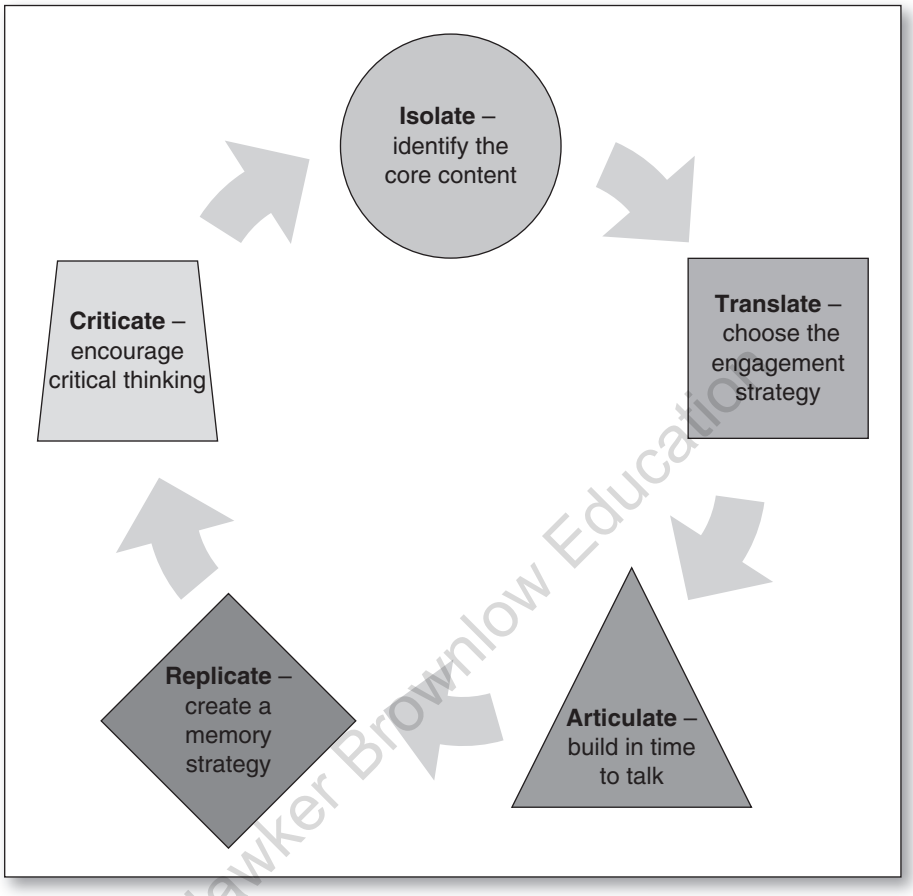
Transforming Core Content Into Dynamic Lessons

A Little Perspective

Before we start, let's be clear. You don't have to be creative, artistic or imaginative to design your own dynamic lessons. Nor do you need a flamboyant personality or a dramatic talent to present them. As long as you understand your content and are willing to try something a little different, you can design and present engaging lessons that promote critical thinking in secondary school students.

If you feel slightly daunted at the prospect of designing a dynamic lesson, that's a very healthy reaction. It's the same reaction we have when it comes to doing anything unfamiliar for the first time, whether it's scuba diving, making a soufflé or driving a truck. They're all pretty daunting until someone shows you *how*.

Five Steps to Designing a Dynamic Lesson



Separate the wood from the trees

STEP 1 Isolate – Identify the core content students need to remember as the foundation information to support critical thinking about this topic.

The first step is to identify the core information you want your students to take away from this lesson. This is likely to include

- **A key concept**: The single most important idea they must understand; may include a procedure, diagram or process they have to be able to remember
- **New vocabulary**: Any unfamiliar terms they need to be able to use correctly

For example:

Lesson	Key Concept	New Vocabulary
Comparative study of texts in a pair of texts: Sonnets of Barret Browning F. Scott Fitzgerald's *The Great Gatsby* *English*	Understand context of Barrett Browning's *Victorian Age* & Fitzgerald's "Roaring '20s" plus inherent values; ability to demonstrate how shift in context leads to change in values	Binding notions, love, feminism, social mobility, optimism, religion, mutability, values
Different types of angles *Maths*	Ability to identify the different types of angles	Right angle, acute angle, obtuse angle, straight angle, reflex angle, angle of revolution, corresponding, co-interior and alternate angles
Offset surveys (field diagrams) *Maths*	Transferring an actual block of land to a field diagram	Field diagram, offsets
Cell – surface area to volume ratio and rate of movement of materials in & out of cells *Science*	Efficiency of smaller cells in exchange of materials Surface area to volume ratio	Surface area to volume ratio, diffusion

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Lesson	Key Concept	New Vocabulary
First-, second- and third-order levels *Science*	Ability to observe a lever & identify as first, second or third order Position of load, fulcrum, effort in different levels FLE-123	Fulcrum, load, effort
Height on maps *Geography*	Ability to view landscapes in three dimensions	Contour lines, contour interval, aspect
Resilience of ecosystems *Ecology/Geography*	Ecosystems *bounce back* from stresses Dynamic equilibrium curve	Amplitude, malleability, elasticity, threshold, human modification
Business life cycle *Business Studies*	Each business goes through the stages of the business life cycle with identifiable characteristics Business life cycle diagram	Establishment, growth, maturity, postmaturity (decline, renewal, steady state), market share
Marketing – product positioning *Business Studies*	Positioning refers to the perception of the product/brand compared with competitors' products/brands in the mind of the consumer Product positioning matrix	Positioning, competitive advantage, perception
Circular flow of income *Business Studies*	The flow of income in the economy varies according to level of leakages/injections Circular flow of income diagram	Injections, leakages, recession, imports/exports, taxation, government spending, saving, investment, factors of production

Important: This information is the foundation on which everything else depends. This is what you teach in the first part of your lesson – or in the first lesson, if this is a multisession topic. Only this, and nothing else!

Why?

Imagine a friend offers to take you hiking on the weekend. She picks you up and drives to a remote spot you've never been to before. As soon as you arrive, she leaps out of the car and hurries off down a

twisty path. You call out to her, but she ignores you. Frightened of getting lost, for the next hour, you scramble over increasingly difficult terrain, with your (soon to be ex-) friend always just slightly too far ahead for you to catch up. Along the way, you pass breathtaking views, but you're too stressed to really appreciate them. Suddenly, just when you think you really can't go on any longer, you round a corner and discover you're back at the car where your friend is unpacking a picnic lunch.

What should have been an enjoyable experience – an hour's circular walk with stunning views before a picnic – turned into a nightmare because your friend didn't tell you where you were going or what to expect. This is exactly what happens to our students when we include too much detail at the beginning of a lesson, as demonstrated in the following case study.

CASE STUDY

The purpose of a maths lesson was to teach students to calculate the remaining area when a circle was cut out of a square. The teacher started well. "First we calculate the area of the square," but then started diving into detail: "So, how do we do that? Well, let's look at an example. Suppose..." The class was lost within seconds. When asked afterward, half the students said the topic was very tricky.

Next time, the teacher took a different approach. "There are three simple steps to calculating the remaining area: first, calculate the area of the square (A); second, calculate the area of the circle (B); third, subtract B from A." The class relaxed, immediately grasping the simplicity of the idea, and paid attention while the teacher expanded on each part of the process because they knew where this was going. Afterward, every student could recall the concept and thought it was pretty simple.

We need to start teaching every new topic from the perspective that our students can't process or remember details until they grasp the core information. Once they have this in their heads, they can connect new information to it and see those connections.

This is basic schema theory. For decades, cognitive scientists and psychologists have discussed the schema theory of human memory (Ausubel, 1967; Bartlett, 1932; Head, 1920; Piaget, 1926). The core idea is that humans organise new information around their previously