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The Rise of Critical Thinking

Adapting to the New Goals of Our Education System

"Learning without thinking is labor lost; thinking without learning is dangerous."

—Confucius

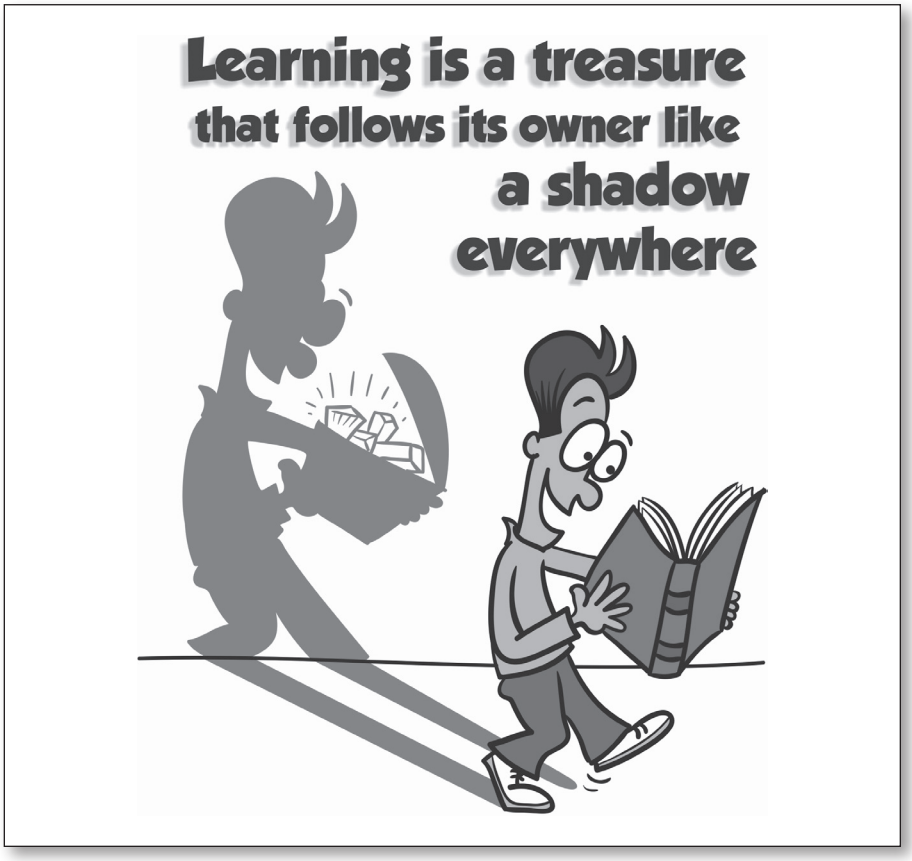
Around the developed world, high school educators are facing perhaps the biggest curriculum change we have ever witnessed. In the United States, the United Kingdom, Hong Kong, New Zealand, and Australia, the rise of critical thinking as a determinant of success in state and national testing is introducing a new level of challenge in almost every subject. Suddenly, teachers, who are already struggling to get through their content, are finding it is not enough to teach the facts. Students must also be able to use those facts to solve problems, draw conclusions, and form new arguments.

Clearly, curriculum change is not new. For as long as we have had high schools, teachers at this level have had to adapt to an education system that routinely moves the goal posts. Curriculum changes are sparked by any number of factors: new industries requiring new skills,

new technologies, and new government advisers. Some are local, and some are global. Some are short-lived, and some are foundational.

The rise of critical thinking is likely to be pervasive and profound because it is being driven by societal and economic change. In the 21st century, we are experiencing exponentially rapid change created by the information age. In a world where students and workers can retrieve any amount of factual information at the click of a mouse, a large proportion of education's traditional rote learning is fast becoming superfluous (Wiggins & McTighe, 2008).

Increasingly, the world's governments are recognizing that the skills required to support productivity in the digital economy are very different from those required in the industrial era. Our 20th-century education systems were essentially designed to turn out factory fodder: workers who showed up on time, had specific skills, and reliably performed rote tasks. Now that Western economies have shifted from manufacturing to services, the skills prized by today's employers are profoundly different. They are innovation, creativity, and critical thinking.



This has created a profound change in the overarching goals of the world's education systems. The Obama administration's Strategy for American Innovation is committed to the following: "Educate the next generation with 21st century knowledge and skills while creating a world-class workforce" (www.whitehouse.gov/administration/eop/nec/StrategyforAmericanInnovation). At the Association of American Colleges and Universities Annual Meeting in January 2010, U.S. Department of Education undersecretary Martha Kanter said: "In today's world, we know that our students will have many jobs and will likely change career paths a number of times, so they have to be equipped for lifelong learning and continuous improvement. We talk about preparing students for STEM [Science, Technology, Engineering, and Mathematics], but they're not going to pass Statistics or Calculus or Freshman Composition, which are gateway courses into STEM fields, without a general education foundation that gives them the critical thinking and analytical reasoning skills to use in whatever field or fields they choose" (U.S. Department of Education, 2010).

This trend is being mirrored throughout the world. In 2010, for the first time, high schools in the United Kingdom began offering critical thinking as a dedicated subject. In Hong Kong, according to the *Basic Education Curriculum Guide* (Education Bureau, 2002), educational priorities for 2001–2006 were "communication, critical thinking and creativity." Since 2008, Australia has been developing a new national curriculum in which the ability to think critically receives special mention in each subject area; see the examples in Table 1.1.

Clearly, critical thinking will be an increasingly important and relevant topic in the world's high schools for years to come. The question for high school teachers is *how* to teach this dramatically new skill to complement their normal subject matter—and how to find the time to do so.

In previous curriculum changes, educators had to include new information, but their teaching strategies could remain unaltered. By contrast, this curriculum change is not in the content—it is in the way students think about the content. In the high schools of the future, learning the core content will merely be the starting point of the teaching process, or Phase One. In Phase One, students will learn, understand, and remember the core content and vocabulary. In Phase Two, they will critically assess, evaluate, and reflect on this content (Swartz, 2008, p. 27).

Although this is already happening in some high school classrooms, many teachers are finding the process extremely challenging. Either they struggle to get through Phase One, leaving no time for Phase Two, or they have no formal training in teaching

Table 1.1

Subject	Australian National Curriculum Syllabus Comments
Math	In a democratic society, there are many substantial social and scientific issues raised or influenced by public opinion, so it is important that citizens can ***critically examine*** those issues by using and interpreting mathematical perspectives.
English	Students are creative and resourceful and are able to think critically, analyze information and solve problems with the "general capabilities that underpin flexible and ***critical thinking.***"
History	There is a greater emphasis on skills associated with ***critical thinking*** and analysis of sources, and the contestability of historical interpretation.
Geography	By using current events to explore geographical questions, students of geography are given practice in ***critically thinking*** about contemporary issues.

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critical thinking, or both. This book offers practical strategies that address both areas. It shows educators how to do the following:

1. Teach the material in a *rapidly memorable* way so that you can . . .
2. Devote significant class time to *critically analyzing* this information

You may be wondering about the book's focus on *rapidly memorizing information*. Some might argue that this is simply rote learning, and, in fact, at this level that would be correct. However, facts are the beginning point—without them, there can be no in-depth processing or discussion. When students have no easy way to recall essential information, they spend 100% of their class time on simply remembering, with no time for critical thinking. Instead, if they can quickly recall key information, class time can be devoted to critical thinking opportunities. Simply put: You can't have an informed discussion unless all parties have a basic understanding of the core facts.

Accelerating Core Content Learning

It's time for education systems to accept that, if they require students to become critical thinkers, they must equip teachers with accelerated

learning strategies that allow every student to quickly understand and remember core content. This means letting go of the traditional *chalk and talk* approach to education, which is increasingly inefficient and ineffective.

To clarify, chalk and talk is where a teacher's primary mode of information delivery is to stand at the chalkboard—or PowerPoint screen or smart board—write or show information, and then talk about it while students listen, copy the information, and then do a worksheet.

This lecture-saturated educational approach is what we call *Red Light* as opposed to *Green Light* teaching. These terms come from the book *Green Light Classrooms: Teaching Techniques That Accelerate Learning* (Allen, 2008). The central tenet of the book is that lecture-based teaching has never worked well for every student, and certainly doesn't work for the vast majority of the digital natives inhabiting today's classrooms. The book draws its theories from brain-based research that reveals many traditional teaching assumptions—expecting students to usefully pay attention for longer than 10 minutes; expecting teachers to talk more than students; and expecting students to learn when they are feeling stressed—actually *stop* students from learning (hence Red Light) and waste huge amounts of teaching time on fruitless endeavors.

Red Light teaching is the illusion that, if you can get your students to sit quietly while you talk, you are succeeding as an educator. Green Light teaching offers an opposite view. Its premise is as follows: You may have *said* it—and your students may have done a credible job of pretending to pay attention—but if they didn't hear, understand, and remember it, then you didn't *teach* it.

Green Light strategies focus on what works, based on the latest research on how the human brain learns and remembers new information and on the psychology of today's kids. The result is a host of new and creative ways to teach that will restart the learning process, boiled down into nine key strategies:

1. Memory	Pegs, association, body location, acrostics, and rhyming
2. Connections	Creating meaning; allowing students to own the material
3. Movement	Physically engaging students in the learning process
4. Novelty	Harnessing something *different* to capture students' attention

5. Tone	Music, chants, teacher's tonal changes, and pauses
6. Emotion	Using laughter and surprise to fire curiosity and excitement
7. Socialization	Student-to-student discussions, processing, and debriefs
8. Drama	Theatrics, story-telling, and students acting out the learning
9. Visuals	Posters, mind maps, doodles, and drawing

Around the world, these strategies have been proven to accelerate learning, reducing the amount of time it takes students to learn the content and increasing the number of students who truly understand it. They are the keys to zipping through Phase One so that you have time for critical thinking.

Defining Critical Thinking

Definition

"Critical thinking involves the ability to make appropriate judgments, based on the evidence available."

Teachable and Observable Behaviors

Critical thinkers seek to

Understand the logical relationship between ideas

Assess, appraise, and evaluate various lines of reasoning

Detect inconsistencies, mistakes, and errors in arguments

Identify the relevance and importance of ideas

Reflect on their own beliefs, principals, standards, and values

Before we dive into how to teach critical thinking, we must begin by agreeing on a working definition of what that actually means.

As you might expect, education already has a wide variety of definitions of the expression *critical thinking*. Some are simple and use language common to many people. Others are complex and include lots of higher education jargon. Fortunately, many of the definitions share some common themes. For the purposes of this book, we have adopted a working definition that is simple to state and yet underpinned by teachable, learnable, and observable behaviors.

You may feel there is much more to the idea of critical thinking. In fact, we agree. For example, one aspect of critical thinking not stated

above, yet surely important, is developing one's intellectual humility and intellectual empathy, where one becomes less biased and more open to new perspectives. Or another component might be the need to understand the essential difference between perception and judgment. Although we agree with both of these ideas, the nature of this book requires a steady focus on tangible, and ultimately learnable, concepts and constructs. We believe the five qualities shown in the box on page 6 best meet these criteria.

The Overtesting Plague

As this book addresses curriculum change, we would be remiss if we did not put this change in the context of the blight that is affecting most of the world's education systems: Overtesting has become a plague of epidemic proportions. Although government officials, high-level administrators, and others well-distanced from the everyday classroom applaud the data-driven test frenzy, overtesting has brought forth a landslide of negative reactions from teachers and students alike. Students resist the constant assessment of their skills, failing to see any relevance in the persistent need to test, test, test (Nichols & Berliner, 2008). And teachers decry the need to *teach to the test*.

Overtesting teaches students the *sealed box* theory of education—sealed boxes representing the facts students must learn. The sealed box theory is simple: Teachers show students many sealed boxes. The teacher states that the sealed boxes are very, very important. Teachers show students how to pick up and move the sealed boxes from point A (the textbook/board) to point B (the test paper). Students are primarily tested, and judged, on their ability to move the sealed boxes from point A to point B. Success equals moving those boxes! Move more and succeed better! Become the best sealed box mover in your class, in the school, in the country. Move them—harder, faster! Move more, more! Succeed! Succeed!

This approach to education creates an enormous number of problems, but let us deal with three of the most important.

First, students never learn *why* what's inside the box is important, in any meaningful way; nor do they learn *how* the contents of one box might relate to the contents of another. In this approach to education, although some students become incredibly skilled at moving sealed boxes from point A to point B, this is not a talent of any real use in today's world.

Second, students are sold the erroneous idea that doing well on the test will make them good, successful, and generally worthwhile people. Clearly, this is an unhelpful and demoralizing message for those who don't do well in a Red Light classroom and under test conditions. Nothing stifles lifelong learning like teaching a child he or she's a failure.

But it's also bad for those who do succeed. Overtesting leads straight-A students to believe they've done all that's required to be good citizens and do well in their choice of career. Yet, as any academic graduate in the first few months of a corporate job will tell you, most are woefully unprepared. Organizations don't want young people who know the answers on the test; they want self-starting innovators who are good at working in teams, have strong communication skills, and are adept at solving problems. In this

environment, most graduates take a good three months of frantic learning and adjustment before they are able to contribute anything of actual value to a company. For those who believed the education system's claim that the only thing they need to do is pass the test, the experience is extremely sobering.

Third, and perhaps most important, overtesting further undermines the position of teachers in our communities. For many years, teachers were revered by society. We, as communities, handed them our children with one powerful mandate—to help them learn, grow, and mature into responsible members of society. As we are all too aware, this respect for teachers has faded in recent years, and overtesting is partly to blame because it has stripped two crucial responsibilities from the teaching profession.

We used to trust teachers, first, to understand what our kids needed to learn; and second, to decide how best to teach them. But now, since it's *all about the test,* teachers no longer have the freedom to adapt to the needs of their students. Instead, we merely ask educators to teach students *these* facts in *this* way. In some states, teachers are actually given teaching scripts to control the education process down to the spoken word level!

But this approach assumes that all students learn at the same speed and in the same way. In a test-driven environment, teachers are no longer able to make appropriate choices for the students sitting in front of them. They can no longer adjust the ebb and flow of the learning process to maximize the effectiveness of each lesson and unit. And, ultimately, they are no longer able to see students as individuals with unique needs—they must teach to the standard. Power has been wrested from their control for the "greater good" of making all students learn the same thing, at the same time.

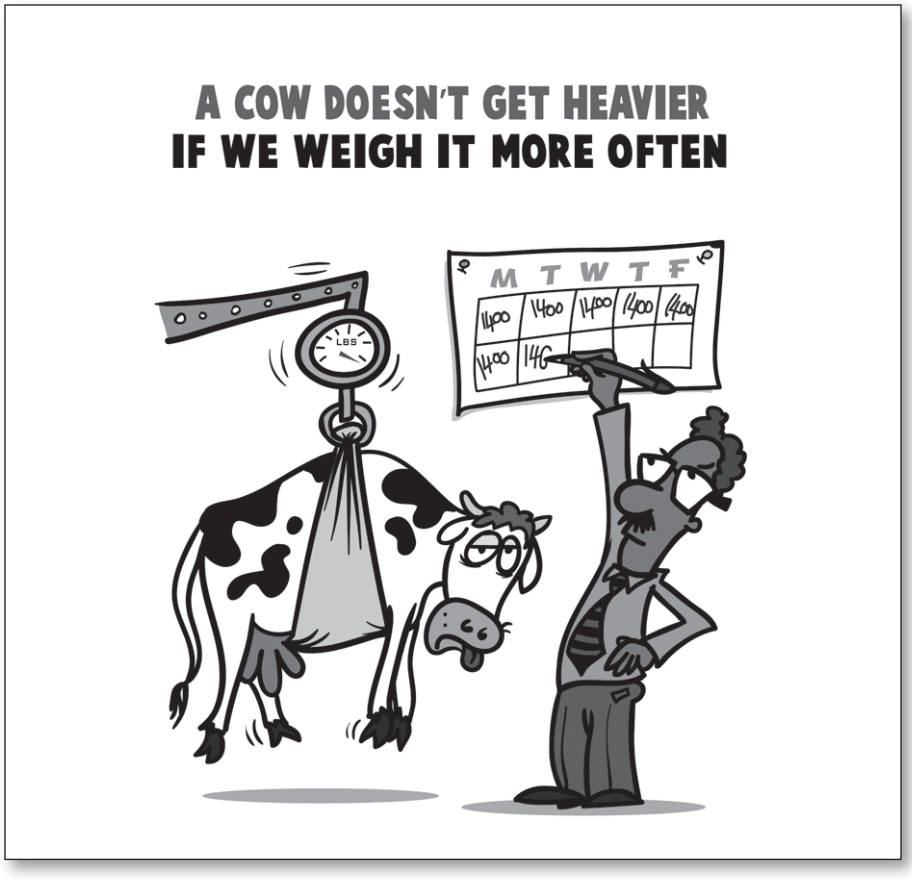
In the end, what does this untrusting environment create? It builds a climate of reluctance and suppression, of failure and negative competition, of anger and resentment, on the part of both the teacher and the student.

Perhaps the entire issue of overtesting can be summed up with the following phrase:

"A cow doesn't get heavier if we weigh it more often."

Similarly,

"Students don't get smarter if we test them more often."



That said, let us be clear that *testing itself is not a bad thing*. Used properly, it can accurately assess student knowledge, and subsequently act as a guide for teachers in knowing where to direct future lessons. The current widespread dissatisfaction is the result of testing being done too frequently, and with unrealistic emphasis and importance placed on the results.

Proper testing procedures will always be a part of the educational process, at some level. But we should *not* test students every year, several times, simply to see them perform. And most important, we should *not* let them ever believe that the results of those tests in any way indicate their worth as people. Instead, we should seek to comprehensively revise our fundamental approach to teaching and learning at the secondary level and actively seek to develop those skills in students—teaming, communication, problem-solving, respect for diversity—that they will truly need to succeed in life.

A Starting Point

The approach outlined in this book gives high 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 analyze the available information to make the best possible decisions. Although facts are always readily available to students in this current generation, their ability to analyze the data beyond mere memorization 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 organized. 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
Reorganize	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.

Why Bother?

Changing the way you teach can be challenging, time-consuming, and downright scary. But, as the thousands of Green Light teachers around the world will tell you, it's worth it. Not only will your students achieve more than they or you could ever have imagined, but you will start to have fun again. If you can reengage your students in the learning process, their behavior will improve, their results will soar, and you will remember why you got into teaching in the first place. Green Light education strategies will allow you to teach beyond the test, giving you the time and influence to teach your students the life lessons they really need to be effective, responsible citizens.