

# A Primer on Critical Thinking and Business Ethics

*Recent Conceptualizations of Critical Thinking*

VOLUME I



Oswald Mascarenhas,  
Munish Thakur & Payal Kumar

# **A Primer on Critical Thinking and Business Ethics**

The post-pandemic world presents leaders with unprecedented levels of dynamism and uncertainty, leaving top management teams no choice but to engage in critical thinking – higher order analyses in which assumptions are questioned and disconfirmation is no less important than confirmation. With critical thinking coming to the forefront of leadership development, we as educators need to reflect on our present MBA curriculum in terms of both content and delivery. These three monographs are a must-read for anyone interested in developing graduate-level critical thinking skills and teaching future corporate leaders how to take a more nuanced perspective on the paradigm-shifting challenges they are likely to face when transitioning into their managerial career.

Peter Bamberger  
Prof Simon I. Domberger Chair in Organization and  
Management, Coller School of Management,  
Tel Aviv University, Israel  
Vice President, Academy of Management

Organizational leaders continually tell us that what they need most are employees that know how to think and learn. Such skills are necessary for identifying problems, collaborating on solutions, and driving organizational change. Including these monographs on critical thinking in the MBA curriculum will go a long way to providing this essential need for the market.

Dr Kevin Rockmann, Professor of Management,  
George Mason University, USA  
Editor, *Academy of Management Discoveries*

As someone who teaches business leadership and human values and courses introducing and providing frameworks for analyzing healthcare markets, critical thinking is essential for me and my students. These authors clearly motivate the importance of critical thinking and present techniques to encourage students' development. I could envision these books enhancing my preparation of students, who will become business leaders so they sharpen interpretations and decisions regarding the production and delivery of healthcare services, to create value for those with a financial stake in their organizations' successes and for stakeholders including suppliers, patients, employees, and the community in which healthcare organizations operate.

Kevin D. Frick, Professor,  
Johns Hopkins Carey Business School, USA

# **A Primer on Critical Thinking and Business Ethics: Recent Conceptualizations of Critical Thinking (Volume 1)**

BY

**FR. OSWALD A. J. MASCARENHAS, SJ**

*XLRI – Xavier School of Management, India*

**PROF. MUNISH THAKUR, PhD**

*XLRI – Xavier School of Management, India*

And

**DR. PAYAL KUMAR**

*Indian School of Hospitality, India*



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INVESTOR IN PEOPLE

*To all teachers who believe in critical thinking as the ultimate differentiator, and to all students who have a penchant for analyzing, assessing, and improving in all that they do.*

*This volume is gratefully dedicated to the late Father William Tome SJ, Founder Director of XLRI, under whom the first author worked for over five years during his first innings at XLRI (1977–1983).*

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## About the Authors

**Fr. Oswald A. J. Mascarenhas, SJ** is a Jesuit Priest from Karnataka, India, with priestly training in scholastic philosophy (1959–1962) and systematic theology (1963–1967). He has an MA in Mathematical Economics (University of Detroit, 1971), an MBA (Wharton School of Finance, 1974), and a PhD in Business Economics (University of Pennsylvania, 1976). He served as Professor of Marketing and Director of Public Systems Research at XLRI – Xavier School of Management, Jamshedpur (1977–1983), and as Charles H. Kellstadt Professor of Marketing Research, in the University of Detroit, Michigan, for 27 years (1983–2010). He last served as the JRD Tata Chair Professor in Business Ethics, XLRI, Jamshedpur (2013–2021). His current areas of research are corporate ethics and critical thinking. He has authored eight books and published over 75 articles in domestic and international business journals.

**Prof Munish Thakur** is a Professor of Strategy at XLRI – Xavier School of Management. He has nearly two decades of experience. Professor Thakur teaches strategy, entrepreneurship, philosophy of research, and research methods. He is passionate about nature, student-centered teaching, and holistic education, especially in management. Throughout his teaching career, he has experimented with a variety of pedagogical learning techniques, such as simulation, case studies, discussions, and reflections. At XLRI, he has been Chairperson of Xavier's Admission Tests (XAT) and Fellow Program in Management. He is a Fellow of the Indian Institute of Management, Calcutta.

**Dr Payal Kumar** is Dean of Research and Management Studies, Indian School of Hospitality, India. She completed her MA from the School of Oriental and African Studies, UK, and Fellow Programme from XLRI – Xavier School of Management, Jamshedpur. She was formerly Professor and Chair HR/OB & Associate Dean–International Affairs at BML Munjal University, Gurugram. Dr Kumar is on the editorial board of several prestigious international journals and is a senior reviewer in A category journals, such as *Journal of Organizational Behavior* and *Personnel Review*. She has published extensively, including 14 books, with Palgrave Macmillan, Springer, and Emerald Publishing. Dr Payal Kumar was recently conferred with the Andre Delbecq & Lee Robbins MSR Retreat Scholarship, 2019 (Academy of Management, USA). She is also an Emerald Brand Ambassador and South Asian ambassador for the Academy of Management Discoveries. In an earlier avatar, Payal was Vice President, Editorial and Production, SAGE Publications Ltd.

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## Foreword

Business schools as *the* major global institution for educating future leaders in business are under fire for at least two reasons. On the one hand, they are accused of not educating their students in a way that prepares them for core management tasks awaiting them in later organizational life. “What” and “how” skills and competences taught in major areas such as accounting, finance, logistics, and marketing are inadequate to help graduates grapple with the problems they face in practice. On the other hand, an arguably more fundamental accusation is the existence of a massive blind spot: the education of leaders fails in going beyond optimizing organizational performance according to traditional items of the balance sheet and take into account the role of organizations as corporate citizens with a coresponsibility to make the world a better place (Mabey & Mayrhofer, 2015).

A common thread runs through major organizational scandals of the past decade, e.g., German payment processing company Wirecard revealing in 2020 what they argued was an “accounting error” that grossly inflated the balance sheet by about US\$ 2.3 billion, German car maker Volkswagen being accused in 2015 of implementing software that could cheat emission tests (“dieselgate”), and international soccer association FIFA being the target of the United States Department of Justice’s accusation of money laundering conspiracy, racketeering, and wire fraud in 2015: simply, not only did their upper echelon have insufficient technical skills and competencies to successfully manage their respective organizations but also made conscious decisions that led their organizations down the dark route of shady business. In a simplistic version of events, finger-pointing, identifying scapegoats, and highlighting personal deficiencies such as greed or lack of a moral compass to navigate the turbulent and dynamic waters of doing business in today’s volatile, uncertain, complex, and ambiguous world serves as explanation. However, a more refined effort would point toward the fundamental problem outlined above: the lack of comprehensive education that many future leaders get in business schools and, more broadly, in universities and other higher education institutions around the globe that goes beyond a traditional “facts and figures approach.”

A major part of a more comprehensive education involves skills and competencies that revolve around reflecting the status quo, questioning assumptions taken for granted, making choices in ethically charged situations, and thinking out of the box. In particular, this comprises critical thinking and aspects of business ethics addressing various facets of doing business. Typical examples at

different levels of social complexity include personal and often contested choices in one's career, such as foreign assignments heavily affecting stakeholders in one's life, interpersonal leadership issues such as in-group versus out-group dynamics that emerge when working in face-to-face groups, organizations externalizing costs by (ab)using natural resources and polluting the environment, grand-scale organizational layoffs affecting whole regions (if not countries), equality and poverty within and between countries, and, arguably, the multiple effects of doing business on the globe and in interstellar space.

The contributions in this book tackle these issues head on. They put critical thinking – in a nutshell “careful goal-directed thinking [whereby...] conceptions of it can vary according to its presumed scope, its presumed goal, one's criteria and threshold for being careful, and the thinking component on which one focuses” (Hitchcock, 2020) – front and center as they explore both the foundation and the application of ways of reflecting on what we find in (and how we construct?) reality, what this means, and how we act accordingly. Of course, critical thinking as such is not new. Some trace it back at least to titans of Greek philosophy such as Plato or Socrates, as well as different schools of Greek skepticism. Others point to the work of John Dewey who has established critical thinking as a potential educational goal. What makes this volume particularly interesting is its comprehensive approach, both in the sense of “horizontally” encompassing a broad range of topics and “vertically” containing phenomena at different levels of social complexity, including the spiritual as well as temporal dimensions of organizing in turbulent and unpredictable contexts (Hitchcock, 2020; Vogt, 2022).

Against this backdrop, the volume is timely and laudable. In it, the authors define critical thinking and examine theoretical developments. They describe and probe the elements, domain, scope, and paradigms of critical thinking, and identify major thinkers, theories, traditions, schools, and strategies. The volume also addresses the problems of fallacious thinking and identifies gaps in business education curricula, in order to show how students develop critical thinking and how it should be taught and measured. With this aim, the authors investigate and design models of critical thinking, including exercises, which unify themes and comprehensive frameworks to help students of business studies deal with complex problems. In this context, critical thinking is explored as being related to “systems thinking.”

I hope the readers will not only better understand critical thinking in its various facets but also include it organically in their own *praxis* of personal and professional lives. It is a must-read for faculty around the world. My compliments to the authors Oswald Mascarenhas, Munish Thakur, and Payal Kumar, who are all senior academics and authors in their own right.

–Dr Wolfgang Mayrhofer

*Dr Wolfgang Mayrhofer, Full Professor and Head, Interdisciplinary Institute of Management and Organisational Behaviour, WU Vienna.*

*Dr Mayrhofer is a prolific author-editor, including *Developing Leadership: Questions Business Schools Don't Ask* (SAGE, 2015).*

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# Acknowledgments

This book represents the latest research and thinking in the domain of critical thinking as applied to corporate ethics and morals of business management. It has taken several years from conception to execution. The contents of this multi-volume book and the plan for it have been presented and discussed while conducting several graduate courses on *corporate ethics* and *managerial ethics* at various colleges of business administration, such as the University of Detroit Mercy, Detroit, Michigan (1983–2010), T. A. Pai Management Institute (TAPMI) Manipal, Karnataka (2010–2011), St. Aloysius (Autonomous) College School of Business, Beeri, Karnataka (2010–2013), and XLRI – Xavier School of Management, Jamshedpur, Jharkhand (2013–2021).

As the first author, my academic background is philosophy, theology, economics, marketing, e-business, and internet marketing, with an emphasis on ethical and moral market challenges and responses. Several professors molded me during my management studies and over the course of more than 40 years of teaching and research. I am especially indebted to Russell Ackoff, Paul Green, Len Lodish, and Howard Perl Mutter of the Wharton School of Business, Philadelphia, Pennsylvania, where I obtained my MBA and PhD. Professors Michael Bernacchi and Ram Kesavan were also my colleagues in the marketing department at the College of Business Administration, University of Detroit Mercy, during the 27 years I taught there. I have published over a dozen articles in refereed journals with them, and they have always supported and stimulated my intellectual efforts and research ventures. I regularly use our joint publications in these books, and I am grateful for their friendship and demanding scholarship.

The second author, Prof Munish Thakur's academic background includes management, strategy, human behavior, entrepreneurship, research, data, and philosophy. He has an MBA from the University of Indore, and is a Fellow of the Indian Institute of Management, Calcutta. He teaches strategy, entrepreneurship, and research methods at XLRI – Xavier School of Management, Jamshedpur, Jharkhand. He is extremely grateful to XLRI for giving him the opportunity to experiment and try new things. His education has been significantly influenced by nature, mistakes, and failures in life, as well as through exposure to great professors and institutions. He is also grateful to all those who have directly or indirectly influenced his thought process through criticism or support, love or resistance. He would like to thank Father Oswald Mascarenhas for giving him an opportunity to coauthor this volume. Although he says his contribution to the book is limited to gathering reading material and having in-depth discussions with

me, his impact on the book is no less significant. He would also like to express his gratitude to his wife, mother, children, and the rest of his family for allowing me to devote time to this endeavor.

The third author, Dr Payal Kumar is a prolific, prize-winning author, who has published 14 books with Palgrave Macmillan, Springer, and Emerald Publishing and several journal papers. Her research interests include diversity and inclusion, leadership and followership, and also mentoring. She would like to thank Nick Wallwork of Emerald Publishers for adeptly navigating these three volumes to the publication stage.

Over the last decade, the first two authors had the privilege of teaching at XLRI, the premier school of management in Jamshedpur, India. They have taught more than a thousand postgraduate students, covering all programs of business management. The encouragement and critical feedback from students on chapters, assignments, and cases have helped us rethink and redesign this book to its current level of readability and assurance of learning. We are beholden to them.

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# Introduction: Why We Need Critical Thinking

Emily Pronin, a Princeton University professor, ran an experiment in which she showed subjects one of two photos. Each of them featured a man whom she introduced to the subjects as an investment advisor and asked them how much of a hypothetical investment – not more than US\$1,000 – they would trust him to make. In one photo, her investment advisor model wore a suit and a tie, while in the other, he was dressed in khakis and a polo shirt. The man in the suit was entrusted with US\$535 on average, while the same man in casual clothing got only US\$352. Pronin conducted other behavioral experiments at Princeton and found that people feel better when they can make quick decisions and move on, as opposed to the more difficult task of exercising patience and deliberation before taking decisions. She concluded that there was a flaw in people's perception: *we seem to have a natural tendency toward lazy and uncritical thinking* (cited in Gor, 2011, pp. 30–31).

The Foundation for Critical Thinking and the Center for Critical Thinking are two nonprofit sister organizations in the United States that work together to promote educational reform. The Center conducts research and disseminates information on critical thinking. It sponsors an annual international conference on critical thinking and has worked with such organizations as the College Board, the National Education Association, and the US Department of Education.

In the 1980s, at the 8th Annual International Conference on Critical Thinking and Education Reform, Michael Scriven and Richard Paul (1987) defined critical thinking as:

the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness.

Critical thinking has often been urged as one of the goals of education in the United States throughout most of the twentieth century (e.g., John Dewey's *How*

## 2 A Primer on Critical Thinking and Business Ethics

*We Think*, 1910; Educational Policies Commission's *The Central Purpose of American Education*, 1961). Despite widespread recognition of its importance, there is a *notable lack of consensus about the definition of critical thinking* (Ennis, 1993; Lai, 2011).

In 1990, the American Philosophical Association (APA) formed a panel of critical thinking researchers for the purpose of reaching a consensus on the definition of critical thinking that could support future research efforts. Although most experts agreed that dispositions were an important component, they disagreed on the particular role of dispositions within the definition of critical thinking, with some arguing that dispositions have merely a laudatory role, while others maintained that dispositions also have a normative role (Facione, 1990). In other words, most researchers agreed that critical thinking is synonymous with “good thinking,” in the sense that truly critical thought can only be exhibited by those with both the ability and the disposition to think critically. By this standard, a person who is capable of thinking critically and chooses not to do so is not a critical thinker (Lai, 2011, p. 12). A critical thinker is a good thinker.

Life can be described as a sequence of problems that each individual must learn to solve for oneself. Critical thinking skills are *nothing more than life's problem-solving skills* that result in reliable knowledge. Humans constantly process information. Critical thinking is the practice of processing this information in the most skillful, accurate, and rigorous manner possible, in such a way that it leads to the most reliable, logical, and trustworthy conclusions, upon which one can make responsible decisions about one's life, behavior, and actions with full knowledge of assumptions and consequences of those decisions.

### **Critical Need for Critical Thinking**

David Orr (1991), an environmental educator, reminded us long ago that our education system could unwittingly create monsters such as Hitler and Stalin. These perpetrators of the Holocaust were heirs to Kant and Goethe. Arguably, the Germans were the most educated people then on earth, but their education did not serve them to combat barbarity. This is the lack of critical thinking in our education system. It shows the lack of critical thinking even among the learned. Or perhaps, it is “skilled incompetence” or “learned ignorance” that Chris Argyris (1986) spoke about.

Critical thinking can and should be applied to all branches of business ethics and its derivatives, as well as to some specific subfields including teaching pedagogy (Howard, Tang, & Austin, 2015), research methodologies, and business communication skills (Seele, 2018, p. 653). In this connection, Habermas turns out to be an important scholar from the Frankfurt School. In what has come to be called the Habermasian approach, he developed a concept of deliberative democracy much in line with critical thinking. We invoke Habermas while discussing the theories of critical thinking.

## Recent Corporate Fraudulent Thinking

Well-known corporations have been found to indulge in unusual business practices, such as creative or aggressive accounting, creative cash flow reporting, earnings management, or income smoothing while basically overstating earnings and understating debts; or, in general, fraudulent accounting and doctored financial reporting. Whatever the name given to these unusual activities, they constitute a *financial numbers game* (Mulford & Comiskey, 2002) or *financial shenanigans* (Schilit, 2002) with a singular ultimate objective – creating an altered impression of the firm’s business performance. It is deception devoid of critical thinking and business ethics.

Through research conducted in 2001 in conjunction with the Booth School of Business, University of Chicago, *Fortune* (2002) exposed 25 large corporate accounting frauds and security scandals. Several multinational companies were involved in accounting irregularities: *Enron* (October 2001) led the gang, followed by *Quest Communications* (February 2002), *Global Crossing* (March 2002), *World.com* (March 2002), *Adelphia Communications* (April 2002), *CMS Energy* (May 2002), *Dynegy* (May 2002), *El Paso* (May 2002), *Halliburton* (May 2002), *Peregrine Systems* (May 2002), *AOL Time Warner* (July 2002), *Bristol-Myers Squibb* (July 2002), and *Duke Energy* (July 2002), to name a few. In addition, early 2000 marked the beginning of some of the worst securities irregularities in the history of corporate America. Rapidly rising stock prices and the market collapse that followed led corporate executives to unusual activities and accounting manipulations that were both morally questionable and reprehensible or were outright violations of the law. Similarly, *Forbes* (2002) featured 25 massive securities irregularities among top management executives, involving a haul of over US\$23 billion, averaging over US\$923 million per company and in excess of US\$257 million ill-gotten gains per top executive. Carefully and willingly cultivated executive critical thinking and business ethics could have prevented such corporate abuse and the global financial crisis.

Several of the accounting scams were associated with onetime respectable companies, such as *Arthur Anderson*, *Ernst & Young*, *KPMG*, *JP Morgan*, *Merrill Lynch*, *Morgan Stanley*, *Citigroup*, *Salomon Smith Barney*, *Marsh & McLennan*, *Credit Suisse*, *First Boston*, and even the *New York Stock Exchange* (NYSE). All these companies represented bad decisions and ethical failures owing to the deliberate absence of critical thinking. Most top executives involved in such accounting and financial irregularities were graduates of some of the top business schools in the United States and Europe. It was unexamined education used as good means to bad ends. It was a massive failure in critical thinking, managerial ethics, corporate ethics, and corporate governance.

David Orr (1991) argues that education is no guarantee of decency, prudence, or wisdom. More of the same kind of education will only compound our problems. This is not an argument for ignorance, but rather a statement that the worth of education must be measured against the standards of decency and human survival – issues that now loom large before us. It is not education that will save

us, but education of a certain kind. It should be an education that can stand the scrutiny of critical thinking.

## **Why We Should Pursue Critical Thinking**

In her expert conceptualization, Linda Elder (2007) emphasizes the fallibility and vulnerability of human reasoning and thinking, and affirms why we need critical thinking.

- Critical thinking is self-guided, self-disciplined thinking which attempts to reason at the highest level of life quality in a fair-minded way.
- People who think critically consistently attempt to live rationally, reasonably, and empathically.
- We should be keenly aware of the inherently flawed nature of human thinking when left unchecked; we must strive to diminish the power of our egocentric and sociocentric tendencies.
- We should use the intellectual tools that critical thinking offers – concepts and principles that enable us to analyze, assess, and improve thinking.
- We need to work diligently to develop intellectual virtues of integrity, humility, civility, empathy, sense of justice, and confidence in reason.
- We should realize that no matter how skilled we are as thinkers, we can always improve our reasoning abilities as all of us fall prey to mistakes in reasoning: human irrationality, prejudices, biases, distortions, social rules and taboos, self-interest, and vested interest.
- We need to strive to improve the world in any way we can and contribute to a more rational and civilized society.
- At the same time, we should recognize the complexities often inherent in doing so. We should avoid thinking simplistically or reductionistically about complicated issues and strive to appropriately consider the rights and needs of relevant others.

Critical thinking starts with us, given where we are, and some fundamental issues and questions in this regard are:

- Global markets are changing.
- Globalized competition is changing, increasing the divide between the rich and the poor.
- Wealth is increasing but only among a decreasing proportion of our population.
- Do we have a geopolitical world of governance to react to this phenomenon?
- Accordingly, is our world of values and priorities changing?
- Are our universities spearheading this change?
- Do our business schools pioneer and motivate this change and in the right way?
- How is it affecting our pedagogy in business schools, particularly in teaching business ethics?

- What impact does it have on our business students and their corporate career objectives?
- How do we contribute to global peace, harmony, solidarity, prosperity, and happiness?

These are current questions and challenges for all who pursue critical thinking. Are business schools facilitating this change? In this context, how do we rethink or redesign the MBA curriculum, its content, program, pedagogy, and delivery? How does assurance of learning and student performance assessment align with or transform these changes? This is the task of hardcore critical thinking when incorporated into business curriculum: pedagogy and delivery. Business is not just about production, costing, accounting, financing, distribution, and marketing problems; business education is not just about updating skills or restating rules and algorithms to solve them. *Business is a living process of human relationships that shape the lives of all its stakeholders* – customers, employees, creditors and suppliers, distributors and retailers, governments and the governed, local and global communities. How do our business faculty and their curricula engage our students in the rigorous intellectual, ethical, moral, and emotional exercise and standards that should be the very heart of our business education? We confront some of these problems by applying critical thinking to the free enterprise capitalist system.

The Association to Advance Collegiate Schools of Business (AACSB) established the development of students' critical thinking as a key accreditation objective (AACSB, 2017). As such, critical thinking has important ramifications in pedagogy and learning outcomes (Whitten & Brahmarsene, 2011). However, despite this importance, a considerable void exists in the business education curriculum and literature concerning how critical thinking is developed in students and how it should be taught and measured (Cummins, Peltier, Erffmeyer, & Whalen, 2013; Gray, Peltier, & Schibrowsky, 2012; Lovelace, Eggers, & Dyck, 2016; Spiller & Tuten, 2015). Notably absent are unifying themes and comprehensive frameworks that help students deal with complex and ill-defined business problems (Dahl, Peltier, & Schibrowsky, 2018; Glen, Suci, & Baughn, 2014, p. 101). Aware of these gaps, we strive to investigate and design models of critical thinking that might provide a remedy.

The *role of a teacher*, a professional role, can be kept analytically separate from the *role of a scholar*. Scholarship implies realized or developing expertise in one's field, regular updating of one's skills, intellectual honesty, and respecting intellectual property. The role of a teacher is to communicate one's expertise, skills, and advances of knowledge to one's students. Both roles assume and imply critical thinking and ethical responsibilities.

Critical filtering of one's knowledge before it is communicated to students is important. Critical thinking should make us good and professional scholars that become the "conscience" of our discipline or field. A good scholar owes it to their profession to be its own objective critic (Senge, 2006). A scholar who loves their profession is not afraid to criticize it. A good person who loves their institution is not afraid to criticize it (Lonergan, 1961).

## **Can Critical Thinking Be Taught?**

Despite evidence suggesting that the average person struggles to think critically, many researchers are sanguine about the capacity of humans to become critical thinkers with appropriate instruction. Kennedy, Fisher, and Ennis (1991) note that empirical research suggests that students with all levels of intellectual ability can benefit from critical thinking instruction. Similarly, Lewis and Smith (1993) argue that critical thinking skills are for everyone, not just the gifted (Lai, 2011, p. 23).

Critical thinking can be taught to children of all ages, even to fourth graders and below, a group notoriously neglected by critical thinking instructors in the United States (Ennis, 1993). Basically, critical thinking can involve simple skills. As Bailin, Case, Coombs, and Daniels (1999) propose, critical thinking instruction at the primary grade levels can include teaching students to value reason and truth; listen to others during discussion; be open-minded; be willing to see things from another's perspective; perceive the difference between definitions and empirical statements; use cognitive strategies, such as asking for examples when something is unclear; and use principles of critical thinking, such as considering competing alternatives before making a decision (cited in Lai, 2011, p. 24).

Similarly, APA's Delphi report recommends that "from early childhood, people should be taught, for example, to reason, to seek relevant facts, to consider options, and to understand the views of others" (Facione, 1990, p. 27). Further, the APA report maintains that explicit instruction dedicated to critical thinking skills, abilities, and dispositions should be built into all levels of the K-12 curriculum, rather than being limited to junior high or high school students.

Many researchers maintain that critical thinking skills and abilities can be taught (Lai, 2011, p. 29). In a meta-analysis of 117 empirical studies examining the impact of instructional interventions on students' critical thinking skills and dispositions, Abrami et al. (2008) found that these interventions, in general, have a positive impact (with a mean effect size of 0.34). The debate about domain specificity has implications for critical thinking instruction.

## **Students Are Not Trained to Think Critically**

Many researchers in critical thinking lament the poor state of critical thinking in most educated adults and children in the United States. For example, Halpern (1998), based on research in educational psychology, concludes that many, if not most, adults fail to think critically in many situations. Kennedy et al. (1991) and Van Gelder (2005) have likewise concluded that many adults lack basic reasoning skills. Additionally, Halpern (1998) observes that large numbers of people profess to believe in para-normal phenomena (e.g., UFOs), despite lack of evidence. Halpern attributes such failures not to the inability to reason well but to simple "bugs" in our reasoning. She argues that human beings are programmed to look for patterns, particularly in the form of cause-and-effect relationships, even when none exist (Lai, 2011, p. 21).

The first goal of imparting information and teaching and testing it via memory-based retrievals is done well in our educational institutions from middle school to college; textbooks and teachers do this well. The second goal is to analyze what thinking is. Acquisition of first-order scientific facts and information took precedence over learning second- and higher-order scientific methods and concepts. Inevitably, the essential accompanying task of transmitting the methods of correct investigation, understanding, and evaluation of all scientific data (that is, critical thinking) was lost. These are taught via critical thinking; this is real learning, which textbooks and teachers do poorly (Schafersman, 1991, p. 2).

Studies have shown that the abilities of studies in the United States in mathematics and science begin on the same level with students in other countries, but then progressively decrease as they make their way through the educational system. By the end of high school, they rank among the lowest in the industrialized world in mathematics and science achievement. Educators in colleges and schools have to deal with students' deficiencies in scientific and critical thinking (Schafersman, 1991, p. 2). Thus, teaching more science facts and less scientific method (rather than the converse) is fashionable and acceptable. The errors of primary and secondary education in mathematics, science, and other disciplines over the last several decades are now well known.

If students are to learn to think, they should be encouraged to ask critical questions. Teachers should employ classroom strategies that produce active rather than passive learners, given the demands of "the global economy" that needs active, creative, and critical workers who are "life-long" and "life-wide" learners (Mason, 2008, p. 1).

Science books, for example, now emphasize critical thinking and scientific method. They focus on teaching students the proper ways to obtain new reliable knowledge for one's self, not on engendering factual overload. It will be another generation before these textbook and curriculum reforms will have achieved results, if ever, and until then, we must be aware of students' lack of critical thinking skills and our need to enhance them. This economic pressure to teach critical thinking skills will fall on educational institutions because these skills, for the most part, are rarely taught or reinforced outside formal educational institutions, such as in the workplace (Schafersman, 1991, p. 3).

## **Approaches to Teaching Critical Thinking**

Lipman (1988) opines that instruction in critical thinking must go hand in hand with instruction in basic skills, such as reading, writing, listening, and speaking. Silva (2008) echoes this, maintaining that knowledge and thinking must be taught simultaneously. Likewise, Case (2005) argues that critical thinking is a lens through which the content and skills embedded in the curriculum can be taught. Van Gelder (2005) insists that students need "deliberate practice" in exercising critical thinking skills and abilities. This type of practice can only occur when critical thinking is taught as a separate and explicit part of the curriculum.

Critical thinking is an important and vital topic in modern education. All educators are interested in teaching critical thinking to their students. Many academic departments hope that professors and instructors will become informed about the strategies for teaching critical thinking skills, identifying areas in one's courses as the proper place to emphasize and teach critical thinking, and developing and using some problems in exams that test students' critical thinking skills (Schafersman, 1991, p. 1). The purpose of specifically teaching critical thinking in the sciences or any other discipline is to improve the thinking skills of students and thus better prepare them to function and succeed in the world. Critical thinking enables students how to think and what to think and believe.

The infusion approach, among other approaches to teach critical thinking, entails in-depth instruction in the subject matter and explicit instruction on general critical thinking principles, provided in the context of specific subject matter. Ennis (1989) indicates that this approach is commonly seen in "across the curriculum" movements. Somewhat related to the infusion approach is immersion. In immersion instruction, students are engaged in deep subject-matter instruction.

The mixed approach combines elements of both the general and subject-specific approaches. Teachers pair stand-alone instruction in general critical thinking principles with application of critical thinking skills in the context of specific subject matter. Explicit instruction in critical thinking skills can be incorporated into both the general and the specific components (Ennis, 1989). Facione (1990) appears to advocate this approach when he notes that critical thinking can be taught in the context of domain-specific content, or content drawn from "events in everyday life" (p. 10). Paul (1992) recommends basic critical thinking skills courses, as well as including critical thinking within discipline-specific courses. After reviewing extant research on the various approaches, Kennedy et al. (1991) conclude that the evidence does not support the superiority of any particular approach. Accordingly, they recommend using the mixed approach.

## **Rationale for This Book**

Educators should approach critical thinking instruction both by integrating critical thinking into regular academic content and by teaching general critical thinking skills as a stand-alone component. Scholars have reiterated the importance of providing explicit instruction in critical thinking rather than simply viewing critical thinking as an implicit goal of a course. Researchers have also found that interventions in which educators received special training in teaching critical thinking had the largest effect sizes, compared to studies in which course curricula were simply aligned to critical thinking standards or critical thinking was simply included as an instructional objective. Thus, successful interventions may require professional development for teachers specifically focused on teaching critical thinking (Abrami et al., 2008).

This multi-volume primer advocates a *mixed approach* to impart *general critical thinking skills* in a stand-alone ambience. Almost all chapters seek to