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Infusing Critical Thinking in the Business Curriculum[1]

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Abstract

Critical thinking has been an important learning outcome of academe since the time of Socrates, yet it remains an elusive objective. The purpose of this study was to demonstrate the academic significance of critical thinking and help business faculty appreciate its potential for student learning. The study indicates how teachers are often the major obstacle in a critical thinking initiative and provides a question-based approach using Bloom's revised taxonomy to help them to be a part of the solution rather than a part of the problem. Recommendations were made for both teachers and the academic administration to help foster a program of continuous improvement in critical thinking for higher education.

Key words: *Critical thinking, business curriculum, Bloom's revised taxonomy, thinking skills*

Introduction

Knowledge is fundamental for critical thinking, and corporate communities operating in a global economy are inundated with data. Critical thinking is instrumental in helping knowledge workers transform the massive amounts of data, they must deal with, into useful information. What is true for the workplace, is also true for classroom. The needs in the workplace, that change continually, must drive the business curriculum. Since these needs cannot always be anticipated ahead of time, it is incumbent on academe to integrate critical thinking throughout the business curriculum.

Despite the clarion call for critical thinking throughout academia, numerous students still do not show evidence of higher order thinking after four years of undergraduate education. There are many reasons for this, but the noteworthy obstacle highlighted in this study deals exclusively with the teacher. This paper, therefore, was written to serve as a wake-up call to business faculty, and help them better appreciate the benefits of critical thinking for students. An instructional framework using Bloom's taxonomy was developed to assist teachers to introduce critical thinking in their classes.

"Only simpletons believe everything they are told! The prudent carefully consider their steps," Proverbs 14:15 (NLT). Solomon's proverb is clear that only those who are inexperienced, accept arguments without proof or evidence, and implies that one needs to separate truth from error, and facts from opinions. As a result, a wise person thoughtfully considers the situation before proceeding. This, in essence, is critical thinking. There is, however, a general misunderstanding of what critical thinking is. This is due in part to 1) a misunderstanding that critical thinking is negative and argumentative rather than evaluative for decision-making, and 2) a lack of consensus about how to define the term. The former is addressed by providing an explanation for the term "critical thinking," and the latter is dealt with by specifying a definition.

What is Critical Thinking?

The term "critical thinking", was coined by educator and psychologist John Dewey in 1910 (Hitchcock, 2018) but most academic scholars attribute Socrates as its intellectual founder (Paul, Elder, & Bartell, 1997). While critical thinking does require a healthy dose of skepticism, so that one does not passively accept arguments and concepts merely at face value, it is not intended to be negative. "Critical thinking should not be confused with being argumentative or being critical of other people. Although critical thinking skills can be used in exposing fallacies and bad reasoning, critical thinking can also play an important role in cooperative reasoning and constructive tasks" (Lau, 2009). It means being objective and not burdened by personal interest, and having a healthy skepticism about what

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one hears, sees, and reads. Critical thinking encourages students to think for themselves, so their thinking is not a mere reflection of other people's thoughts (White, 1903). For too long, education has focused chiefly on memory—overloading the mind with information—which discourages independent thought needed for critical thinking (White, 1903).

The critical thinking concept is complex and difficult which makes it a challenge to synthesize all of its features in a single definition (Nieto & Saiz (2010). As a result, there is no shortage in the number of definitions for "critical thinking," but for this paper, the following three versions were included. Price (2016) states, "Critical Thinking, after all is said and done, is merely endorsing the age-old values of being open-minded and willing to consider all the evidence." Rather than define the term, Nieto and Saiz, (2010) suggested it would be clearer to explain what it is. Halpern (1998, pp. 450-451), did just that by identifying critical thinking as "purposeful, reasoned, and goal-directed." Paul and Elder (2006) provide a succinct definition when they state, "Critical thinking is the art of analyzing and evaluating thinking with a view to improving it." The definition used in this paper is a student-centered eclectic version of these three: Critical thinking is a cognitive process that requires open-mindedness to properly analyze and evaluate one's thinking in order to improve it. Thinking skills have always been important, but today's global economy driven by information and technology makes it even more crucial (Islam, 2015).

Why Critical Thinking is So Critical

Infowhelm

The term "infowhelm" was coined to express the overwhelmingly vast amount of information that floods the Internet. Mitchell Kapor, a pioneer in the computer industry and founder of Lotus Development Corporation, put it this way, "Getting information off the Internet is like taking a drink from a fire hydrant" (Mitchell Kapor Quotes, n.d.).

The Internet was developed in the 1960s to interconnect laboratories engaged in government research but, since 1994, it has expanded to serve a broad user community which includes millions of users for multitude purposes worldwide (Internet Growth, 2017; Leiner et al., 1997). To put this breadth of expansion in perspective, in 1995 there were 16 million Internet users or about 0.4% of world's population, and in June 2017, there were 3.8 billion users that represent almost 52% of the world's population (Internet Growth, 2017). The explosion in data volumes was brought about by technology which has succeeded in fitting increasingly more transistors on a silicon chip (Marr, 2015). The results, of course, are an information tsunami.

The question then is, how is one to navigate through wave after wave of information to determine what is relevant, significant and valid? Halpern (2003, p. xi) offered this advice, "With the deluge of information on the internet, especially unreliable and even false information, the need to enhance one's ability to think critically is more acute than ever before." This, of course is vital for any industry that has a knowledge component or employs knowledge workers.

The Workplace

The requirements in the workplace, drive the business curriculum. Before looking at the influence of critical thinking in the classroom, it is crucial to examine the needs in the workplace. Employers know that good critical thinking is essential for examining and evaluating problems objectively and drawing reasonable conclusions, consequently they put a premium on newly minted recruits who have this ability (Team, 2017; Doyle, 2018). Korn (2014) observed that the number of job postings that mention critical thinking doubled from 2009 to 2014, and that in October 2014, 6,700 management postings made reference to this cognitive skill. In a 2006 study (Jill & Linda, 2006), managers and executives from 431 companies were asked in a survey what applied skill was 'very important' for recent college graduates. The response from over 90% of the participants was "critical thinking/problem solving." The ability to use higher order thinking has always been important, but it has become vitally necessary for those living in the 21st century (Halpern, 2003).

Since knowledge workers, at every level, face an increasingly complex flow of information resulting from globalization and the progressively rapid pace of business, it is essential that they develop critical thinking skills (Chartrand, Ishikawa, & Flander, 2013). These skills help them focus on the most relevant information, ask the proper questions, separate facts from opinion and facts from false assumptions, and compels them to consider all possible solutions before arriving at a final course of action (Chartrand, Ishikawa, & Flander, 2013; Root, n.d.). Critical thinking skills are indispensable in upper level management where the stakes are higher.

The inhabitants of the "C-Suite," make decisions about their organization's strategic direction, competitive positioning, and proper allocation of resources, often with insufficient knowledge—factual, conceptual procedural, or metacognitive (Sanscartier, 2013). In today's fast-paced economy with all of its complexities, uncertainty, and where the threat of economic upheaval is constant, the ability to think clearly, logically, and precisely is urgently needed to effectively and widely lead an organization (Brotherton, 2011; Martinuzzi, 2014). In such an environment, the risks associated with poor decisions are greater than ever (Sanscartier, 2013).

In most cases, those who lead an organization can no longer rely on what has worked in the past, because the business challenges they face are new and continuously changing. This uncertainty, now more than ever, poses a real challenge for strategic management because "traditional approaches to strategy—though often seen as the answer to change and uncertainty—actually assume a relatively stable and predictable world" (Reeves & Deimler, 2011). And the business environment today, is anything, but, stable.

Today's students represent tomorrow's workforce, and higher education must respond to the changing business climate. That means, producing graduates who have the thinking skills to add value to an employing organization as soon as possible. And this begins in the classroom.

The Classroom

In a "topsy-turvy" business climate, where change is a permanent resident, business academic programs would be misguided to myopically concentrate on the current business challenges. Rather, what will it be in ten years, or five years, or maybe even two years? "If we teach today's students as we taught yesterday's, we rob them of tomorrow" (John *Dewey quotes,* n.d.). This highlights the necessity of teaching "soft skills" such as critical thinking which provides students with the tools to be more effective knowledge workers.

Critical thinking skills offer a number of advantages, but two drawbacks for teachers are it takes more time to prepare and it reduces the amount of material covered (Prince, 2004). It is a tool that benefits students by helping them sort through the mountain of data and provides a basis for evaluating and analyzing that data. This is useful when students tap into the vast amount of information available online to complete assignments, individual and group projects, papers and presentations. Critical thinking also helps students become independent, self-directed learners who go beyond the superficial. Ultimately, critical thinking skills help students understand better the experiences and views of others, enhancing their ability to work with different people (Islam, 2015). This mindset is especially useful in an increasingly diverse global community.

The Problem: The Teacher as an Obstacle

Countless books, journal articles, and seminars have been devoted to critical thinking. A Google word search using "critical thinking" generated 124 million results. It is evident that critical thinking has been a topic of importance in the workplace as well as the classroom for over 100 years. Yet, there is abundant evidence indicating that recent university graduates are deficient in this most sought-after ability (*Leveling Up*, 2016; Jenkins, 2017; Paul, Elder, & Bartell, 1997; Paris, 2016; Whitmire, 2017). A landmark study by Arum and Roksa (2011) of more than 2,300 undergraduate students across the U.S. showed students made little improvement in their critical thinking, complex reasoning, and writing after four years of study. Jenkins (2017) observed that there is a disconnect in the way employers define critical thinking, and the way academics do. Jenkins went on to state (para.

5), “Clearly, colleges and universities across the country aren’t adequately teaching thinking skills, despite loudly insisting, to anyone who will listen, that they are.” There are any number of obstacles, but the researcher’s focus for the current study was limited to the teacher. The first obstacle deals with what teachers’ need to do, and the second deals with what they need to undo.

What Needs to Be Done?

Teachers know the importance of critical thinking. Academic literature is brimming with information about the “what,” “why,” and “how to,” of critical thinking. What teacher would be willing to admit they were not teaching to this concept? Van Gelder (2005) observes that many college professors teach a course on critical thinking theory or expose students to examples of good critical thinking and assume this will result in students becoming better critical thinkers. Van Gelder maintains, it is not enough to learn about critical thinking, students must actually engage in critical thinking. Halpern (1998, p. 454) adds, “Thinking skills need to be explicitly and consciously taught and then used with many types of examples so that the skill aspect and its appropriate use are clarified and emphasized.” But few teachers have ever received specific instructions in how to improve the way they think. Halpern (2003, p. 5) notes, “Traditionally, our schools have required students to learn, remember, make decisions, analyze arguments, and solve problems without ever teaching them how to do so.”

A seminal teacher education study conducted over 20 years ago, by Paul et al. (1997), is evidently still relevant because it has been cited more than 2 million times and over 100,000 times for a period of 12 months from September 2016 to 2017. The study revealed that 89% of the teachers participating in their study, claimed that critical thinking was their primary teaching objective. An analysis of their answers, however, revealed that only 9% were actually teaching critical thinking. There is obviously a discrepancy in what teachers think they are doing and what is actually taking place in their classes.

Furthermore, the researchers surmised that the teachers surveyed had only a vague understanding of critical thinking and what was necessary to successfully include it in their instruction. Elder and Paul (2010, p. 38) state:

> It is important to note that, only when instructors understand the foundations of critical thinking can they effectively teach for it. The simple truth is that teachers are able to foster critical thinking only to the extent that they themselves think critically. This may be the single most significant barrier to student achievement of critical thinking competencies. For teachers to aid students in becoming deep thinkers, they must themselves think deeply.

How then, can students be expected to demonstrate critical thinking when their teachers lack these skills. The results of a study by Choy and Cheah (2009) suggests that the level of critical thinking demonstrated by students reflects on how well their teachers understand this type of thinking. Business teachers, as a rule, are educationally handicapped because they have not been exposed to teaching and learning concepts in either their undergraduate or graduate education. As a result, business students are handicapped, because the business faculty, for the most part, have limited exposure to a variety of instructional methods—they teach the way they were taught—they lecture.

What Needs to Be Undone?

There may be any number of policies and practices that do not encourage the presence of critical thinking in the classroom such as a tenure system that gives lip service to teaching but rewards research. But for brevity sake, the focus in this paper has been limited to the lecture, which continues to be the dominant instructional method in university teaching due in part to its efficiency—it allows an instructor to deliver large amounts of information in a relatively short time. It is a one-way channel for delivering information—the instructor speaks, and the student listens. There is neither interaction (instructor-to-student or student-to-student) nor feedback.

The evidence suggests that a lecture is well suited for recalling facts or recognizing the information presented (Halpern, 2003; De Caprariis, Barman, & Magee, 2001). But it is absolutely

ineffective for promoting in-depth understanding; discussion achieves higher levels of comprehension (Halpern, 2003; De Caprariis, Barman, & Magee, 2001). Learning is an active process, that is, it engages the learner by requiring them to do meaningful activities and think about what they are doing (Prince, 2004). If the lecture is the primary instruction method, this would help to explain why so many students struggle to become critical thinkers. It is not the intent of this study to suggest that the lecture should be eliminated, but it should no longer be the default teaching strategy.

A Suggested Approach

What Can Be Done to Infuse Critical Thinking in the Classroom?

Critical thinking skills are activities one develops to the point of competence, and those needed for thinking critically are numerous and varied—running the gamut from simple to complex. Additionally, there is no agreed upon list of skills, and it seems as if every researcher dealing with critical thinking, has their own treasured list. In 1956 Benjamin Bloom devised a hierarchical framework, composed of six cognitive skills (see Figure 1). This taxonomy had permeated teacher training for 45 years until it was revised in 2001 (Wilson, 2016). The revised taxonomy, the brain child of Anderson and Krathwohl, identifies the six skills in their verb form that thinkers encounter while working with knowledge (Armstrong, 2017). These skills may be used to encourage critical thinking by employing a question-based approach. Bloom's revised taxonomy (strictly speaking Anderson and Krathwohl's taxonomy) provides a means for teachers to compose thought-provoking questions using the key verbs for each of the six levels. This is the approach used in this study.

Questions are "an effective strategy that allows the teacher to establish what is already known and then to extend beyond that to develop innovative ideas and understandings (Duron, Limback, & Waugh, 2006, p. 162). Heick (2017) notes, "Questioning is the art of learning. Learning to ask important questions is the best evidence of understanding there is, far surpassing the temporary endorphins of a correct 'answer.'" Questions represent an integral component of teaching and learning but, based on anecdotal evidence, most teachers ask factual questions that merely require rote memory. Thus, such an approach is not effective for facilitating critical thinking. Bloom's revised taxonomy, therefore, serves as a bridge to assist in generating challenging questions.

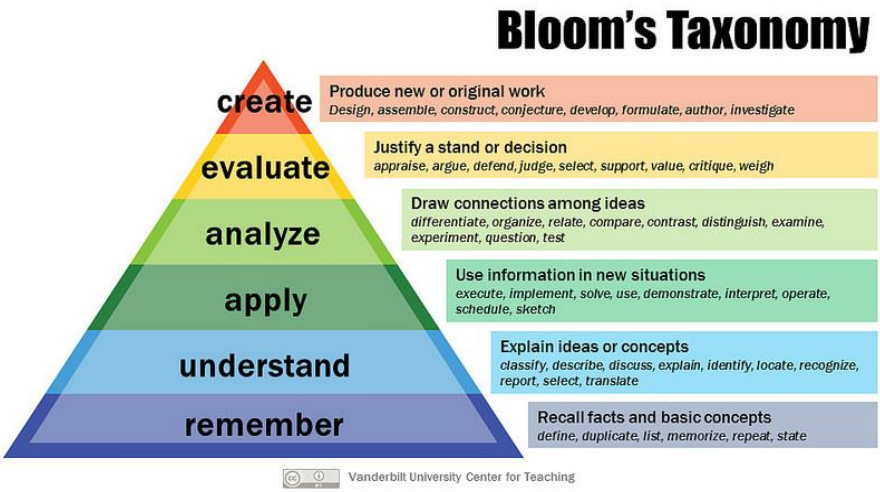

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Figure 1. Bloom's Revised Taxonomy (Armstrong, 2017)

The teacher's goal for questioning should not be used just to determine whether students have learned something or not (which is true for tests, quizzes, and exams), but rather to guide and

assist them in learning necessary information and material (Levels of Questions, n.d.). Questions should be used to teach students rather than just to test them. Questions are not the exclusive domain of the teacher. Students are empowered when they generate their own questions because it helps them link their ideas about information they have heard or read with material they already know (Chin, 2008). Asking good questions, however, does not seem to come natural to most students. It is incumbent on the teacher guide students how to develop engaging questions. And this is where Bloom's revised taxonomy steps in, because it is a framework for both teachers and students.

When a class experiences a plethora of student questions, it is likely that active learning is taking place. Students actively process information when they are able to put lesson concepts in their own words, reflect on implication of new knowledge, or ask pertinent questions. "When students go beyond passive listening to relate, analyze, and use what they are hearing, they are engaged in active learning" (Active Learning Strategies, 2018)

Table 1 was developed to provide an example of how Bloom's revised taxonomy might be used to promote active learning for critical thinking. The first level, even though some may not consider it an element of critical thinking, is, none-the-less, foundational to thinking and learning. It would be impossible to understand, apply, analyze, evaluate or create, if one could not remember.

Bloom's revised taxonomy is intended to move students from the lower to the higher cognitive levels of thinking. The table uses two core undergraduate business courses to provide insight on how Bloom's revised taxonomy may be used to provoke thinking that goes beyond rote memory. It is made up of questions that cover selected elements of the course context from the lowest to the highest cognitive levels.

A study by McEwen (1994) concluded, "with careful thought and planning, business teachers at all levels can encourage critical thinking in students by encouraging open discussion, allowing time for thinking, encouraging improvement, and promoting interactive learning."

An important caveat to be considered is, simply knowing about critical thinking, or even possessing thinking skills is not enough. To fully engage high order thinking one must have the disposition to engage in this type of activity. It is, however, beyond the scope of this study to provide a comprehensive examination of this important concept.

What Can Be Done to Infuse Active Learning Using the Lecture?

Learning is an active process, that is, it engages the learner in the learning process by requiring them to do meaningful activities and think about what they are doing (Prince, 2004). As a result, active learning helps students tap into higher cognitive thinking skills such as application, analysis and synthesis (*What is active learning*, n.d.). It is important, therefore, for teachers to move beyond merely being deliverers of content, to helping students learn how to process that content as active learners (Schlueter, 2016). Table 2 outlines two teaching and learning strategies that may be used with the lecture to help engage students and assist them in taking control of their learning.

Table 1. Bloom's Revised Taxonomy: A Questions-based Approach for Two Core Business Courses

	Principles of Accounting	**Principles of Management**
Remember: Takes place when memory is used to recall facts and information. Key verbs: Identify, Recall, Retrieve	What is the accounting equation? What are debits and credits? How would you define liquidity?	Who was Frederick Taylor? What do you remember about Herzberg's two-factor theory? List Maslow's Need Hierarchy from the lowest to the highest level.
Understand: The ability to interpret or explain what one has heard or read. Key verbs: Clarify, Compare Paraphrase, Summarize, Differentiate	What would happen if the accountant forgot to do the closing entries? How would you differentiate debt financing from equity financing? In your own word, explain how fair value compares with historical cost.	What is the main idea of the scientific management? What can you infer from Herzberg's two-factor theory? What can you say about self- actualization?
Apply: The ability to used what one has learned in another context or in a new situation. Key verbs: Execute, Use, Implement, Perform, Demonstrate, Identify, Construct	What would be the result if the internal controls are neglected? How would you adjust cash dividends during a major economic downturn and still appease stockholders? How would you modify cash discount of 2%/10 net 30 if accounts receivable is extremely sluggish?	What questions would ask a new recruit to determine if he thinks critically? How would you apply what you learned about the two-factor theory to motivate middle managers today? How would you interpret Maslow's for 21st century knowledge workers?
Analyze: To examine critically or break an item/concept into its component parts and understand how they interrelate. Key verbs: Distinguish, Organize, Integrate, infer, Justify	How would you analyze the current ratio to determine its liquidity? How is the balance sheet related to a firm's profitability? What conclusions can you draw if cash in bank has increased more than 75%?	What is the relationship between profits and CSR? What conclusions can you draw from the collapse of Enron? What motive is there to lay off workers during an economic downturn?
Evaluate: To determine the significance, worth, or condition of something, by careful appraisal and study; making judgments based on a set of guidelines. Key verbs: Check, Detect, Monitor, Critique, Judge, Investigate	How do you prove or disprove the efficacy of quarterly financial statements? How would you assess the value of job order costing in today's service-oriented economy? What details would you use to support activity-based accounting?	What is your opinion of CSR? How would you prove or disprove the worth of ethics? What is your opinion of diversity in the workplace?
Create: To put ideas together: a) in an innovative way, b) to form something new. Key verbs: Generate, Design Produce, Construct, Invent, Hypothesize,	How would you formulate a theory for just-in-time production? What is an original way to design financial statements?	What would happen if women occupied 80% of all upper management positions? What elements would they choose to change?

Table 2. Two Teaching Strategies for Infusing Active Learning with the Lecture
(Source: Active Learning Strategies, 2018)

Teaching Strategy	How It Works
Turn and Talk	This strategy begins when a question is posed to the class and students simply turn to the person next to them to discuss. This can serve as a comfortable way for students to share their ideas with others and sets the stage for them sharing with the class. The instructor doesn't need to hear all (or any) of the ideas shared– the important aspect of this strategy is for the peers to share and for individuals to access their prior knowledge about a topic. Example prompt: Ask students to turn to someone next to them and discuss their responses to the following question. Tell them to take five minutes to discuss this with their partner with each person getting some time to talk. Workforce diversity has been a topic of major importance for several years. As the workforce continues to grow more diverse, how will companies create an environment that embraces differences in culture, language, gender, age, and those with disabilities? *(Note: This question was developed for this study and not by Active Learning Strategies.)*
The Jigsaw	Students work in small groups to read information that has been organized into sections. Each student in the group reads one section of the material and then shares that information with the rest of their group. As they read and share information, they refer to prompts such as: what do you think each idea means? What is the big idea? How can this idea be applied to help understand the concept(s)? What questions do you have about what you read? What do you agree/not agree with? There are various permutations of jigsaws. One such model includes expert and cooperative groups: Each group can be assigned a particular aspect/part of the overall information – they read it individually and then discuss in their small "expert" group to make sure they all understand it. Then new "cooperative" groups are formed made up of one-two students from each of the original expert groups. In this way, the new groups have an "expert" representative from each of the original groups so that all of the information is now represented in the new cooperative group. The "expert" has had a chance to practice sharing and hearing other viewpoints about the information in their original group, and therefore likely feels more comfortable sharing in the new group.

Table 2 lists two of the many active learning strategies that may be useful to teachers who are interested in giving their student a learning experience that is designed to better engage them.

Conclusions and Recommendations

"The third-rate mind is only happy when it is thinking with the majority. The second-rate mind is only happy when it is thinking with the minority. The first-rate mind is only happy when it is thinking." Alan Alexander Milne (Brainy Quote, n.d.)

The first-rate mind properly reflects the objective of critical thinking for all knowledge workers. This study was designed to expose teachers to critical thinking concepts and introduce them to pedagogical activities that are useful for developing and harnessing the first-rate mind in their students. Business organizations are looking for, yes, even demanding that higher education do a better job of preparing students for the world of work in the 21st Century. The danger of not providing what our primary stakeholders need (parents, students, and potential employers), means that our educational institution will become irrelevant. This study represents a call to action for teachers to develop a mindset that will be instrumental in guiding students to become life-long learners using critical thinking. As a result, the following recommendations are proposed:

- If teachers are to mold students into critical thinkers, they must themselves be critical thinkers. Critical thinking does not come naturally but requires training, thus, teachers must take the responsibility to learn about this concept by educating themselves through specialized courses, seminars, and readings that broach the subject.
- Teachers must become familiar with a variety of teaching methods that foster active learning. The lecture can be useful at times but should not become the primary teaching method.
- Academic administration and accrediting boards must do more than give "lip service" to the importance of teaching rather than myopically focusing on a "publish or perish" paradigm. Otherwise, teachers do not have incentive to spend time in learning something that has little effect on tenure.

This study was conducted with the purpose of helping business faculty become more effective teachers. It is not the job of the teacher to teach students what to think, but how to think. Bloom's revised taxonomy was introduced as a means of helping teachers infuse critical thinking in their classes to benefit students. Today's students will be tomorrow's business leaders. They will inhabit a world where change will be a constant companion and where higher order thinking will not be an option but a necessity.

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