INTRODUCTION

Critical thinking is a common term used by educators. Critical thinking has been called "the art of thinking about thinking" (Ruggiero, V.R., 2012) with the intent to improve one's thinking. The challenge, of course, is to create learning environments that promote critical thinking both in the classroom and beyond. Teaching and practicing critical thinking involves an approach to thinking--more importantly to learning--that embraces changing how one thinks about thinking. Critical thinking incorporates how learners develop and apply thought to understand how thinking can be improved. Typically, a person is deemed a critical thinker to the extent that he or she regularly improves their thinking in an intentional manner. The basic idea underlying the study of critical thinking is simple--to determine strengths and weaknesses in one's thinking in order to maintain the strengths and make improvements by targeting the weaknesses.

The word critical for this paper is not intended to denote a negative approach to thinking. Critical thinking involves evaluating thoughts, ideas or judgments with awareness, creativity and refinement of these processes as needed.

Critical thinking has its roots in the work of such notables as Socrates, Thomas Aquinas, Francis Bacon, Rene Descartes, John Locke and Sir Issac Newton in its earliest times. More modern contributions can be attributed to John Dewey, Ludwig Wittgenstein, and Jean Piaget among others. Work completed by Robert Ennis in the 1960s gave rise to critical thinking skills taught in the classroom and reflected in the workplace. Ennis focused on critical thinking as a learned skill that could be transferred to the workplace if taught and practiced. As a result

of many years of research, analysis, teaching and practice, Ennis concluded that critical thinking is "focused on deciding what to believe or do," (Ennis, p. 10).

Ennis separated critical thinking into two categories: dispositions and abilities. The ideal critical thinker, in his writings, is disposed to reach a "right" decision, present that position honestly and clearly, consider others' points of view, seek to be well informed, and to avoid intimidating or confusing others. Additionally, that critical thinker has the ability to focus on a question, analyze and argue, judge the creditability of a source, make and value judgments, clarify and refine their viewpoint, support their viewpoints appropriately, and to imaginatively suppose and integrate the logic of a viewpoint with sensitivity to others (Ennis, 2011).

Vincent Ruggiero writing in The art of thinking: A guide to critical and creative thought describes thinking as "any mental activity that helps formulate or solve a problem, make a decision, or fulfill a desire to understand. It is searching for answers while reaching for meaning" (Ruggiero, 2012 p. 4). He notes that thinking may not always be a conscious effort. There are forces at work--beneath the surface so to speak--within the unconscious that dictate one's overt thinking. An example might be driving to a daily destination such as work without consciously remembering each landmark along the route. This type of thinking occurs without much critical thought at all. Indeed, the brain seems to be on auto-pilot in this situation. Critical thinking according to Ruggiero is more at-

ABSTRACT

Critical thinking in the classroom is a common term used by educators. Critical thinking has been called "the art of thinking about thinking" (Ruggiero, V.R., 2012) with the intent to improve one's thinking. The challenge, of course, is to create learning environments that promote critical thinking both in the classroom and beyond. Teaching and practicing critical thinking provides adults with the opportunity to embrace and take charge of their learning. Adults engaged in critical thinking approach the classroom experience differently. Typically, students who implement critical thinking skills approach the courseware in a more thoughtful and effective manner, ask more challenging questions and participate in the learning process more intensely. This critical thinking process endures beyond the classroom and into the workplace. This session examines the background of critical thinking, its role in the classroom and beyond that to the workplace.
Critical Thinking in the Classroom…and Beyond

To qualify critical thinking will continue throughout the ages and one whose definition suits the occasion is the mostly likely one that a writer will select.

Characteristics of a Critical Thinker

Critical thinkers are those persons who can move beyond ‘typical’ thinking models to an advanced way of thinking. Critical thinkers produce both more ideas and improved ideas than poor thinkers (Ruggiero, 2012). They become more adept in their thinking by using a variety of probing techniques which enable them to discover new and often improved ideas. More specifically, critical thinkers tend to see the problem from many perspectives, to consider many different investigative approaches, and to produce many ideas before choosing a course of action. In addition, they are more willing to take intellectual risks, to be adventurous, to consider unusual ideas, and to use their imaginations while analyzing problems and issues.

Critical thinkers test their first impressions, make important distinctions among choices, and base their conclusions on evidence rather than their own feelings. Sensitive to their own limitations and predispositions, they double-check the logic of their thinking and the workability of their solutions, identifying imperfections and complications, anticipating negative responses, and generally refining their ideas.

Critical thinkers learn to focus. They do not experience fewer distractions than others do; they simply deal with them more quickly and more effectively than ineffective thinkers do. There is no magic in what effective thinkers do. They practice their skills much like any learned skill. Effective thinkers do. There is no magic in what effective thinkers do. They practice their skills much like any learned skill.

Critical thinkers typically (Ruggiero, 2012):
• Acknowledge personal limitations.
• See problems as exciting challenges.
• Have understanding as a goal.
• Use evidence to make judgments.
• Are interested in others’ ideas.
• Are skeptical of extreme views.
• Think before acting.
• Avoid emotionalism.
• Keep an open mind.
• Engage in active listening.

Conversely, non-critical thinkers, typically (Ruggiero, 2012):
• See a limited number of perspectives (sometimes just one)
• Take the first approach that occurs to them
• Judge quickly—maybe too quickly and not critically
• Fail to listen actively
• Think their ideas are the best—all others are less
• Resist change
• Think in stereotypes
• Deceive themselves often

CRITICAL THINKING IN THE CLASSROOM

As noted earlier, critical thinking is an oft-used phrase in classroom settings. Adult learners are encouraged to develop these skills and practice them situationally. Critical thinking means reviewing the ideas produced, making a tentative decision about what action will best solve the problem or what belief about the issue is most reasonable, and then evaluating and refining that solution or belief (Ruggiero, 2012). The effects of developing keen problem solving skills cannot be understated. Problem solving skills have the potential to impact individuals more immediately and often with ramifications for the future. Those who attend to the notion of improving these skills are characterized in some important ways listed in the table below as posited by Ruggiero, 2012)

<table>
<thead>
<tr>
<th>Effective Problem Solvers</th>
<th>Ineffective Problem Solvers</th>
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<tbody>
<tr>
<td>Read a problem and decide how to attack it.</td>
<td>Cannot determine where to begin.</td>
</tr>
<tr>
<td>Bring their knowledge to bear on the problem.</td>
<td>Convince themselves they lack sufficient knowledge.</td>
</tr>
<tr>
<td>Solve a problem systematically: simplify, define and break into parts.</td>
<td>Jump in haphazardly jumping from one part to another as they justify their first impressions instead of testing them.</td>
</tr>
<tr>
<td>Trust their reasoning and experience thus boosting their confidence.</td>
<td>Tend to distrust their reasoning and lack confidence in themselves.</td>
</tr>
<tr>
<td>Maintain a critical attitude throughout the problem solving process.</td>
<td>Lack a critical attitude and take many assumptions for granted.</td>
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At one time, educators believed that content knowledge was enough for students to succeed. It was thought that ‘for the most part—information that students learned in school was the same information that their parents learned. That paradigm has shifted in a changing world typified by instant communication, 24/7 news cycles and the desire to know as much as possible as quickly as possible. The power and speed of technology has created a world where information changes quickly, and new ideas can be distributed and adapted almost instantaneously. It has also resulted in inaccurate and misinformation which has to be sorted through and questioned critically. Today it is important that students learn critical thinking skills, so they can be both the inventors and the critics of the new information. Edward de Bono (2004) in de Bono’s Thinking Course writes, “Knowledge is not enough. The creative, constructive, design and operating aspects of thinking are just as important.” A caution is in order here. To develop critical thinkers is to develop both the best and worst in thinking. Those who master critical thinking—a long and winding path—may at first use their newly found skill in a negative way.
Critical Thinking in the Classroom…and Beyond

It is prudent to remember that to think critically is not to criticize in a negative manner but rather to "think deeply or to question." According to Michael Roth (2013) "In a humanities culture in which being smart often means being a critical 'un-maker,' our students may become too good at showing things don't make sense." The goal of critical thinking is to learn a way to think more deeply, solve problems better and come up with better answers that are more effective and that are still personal as well as organizational lives.

CRITICAL THINKING IN THE WORKPLACE

Why is critical thinking important in the workplace? Critical thinking is applicable whenever people are called to make a decision or resolve a problem. Working people make decisions. Some are good decisions that move the business forward and increase profit. Others are poor decisions that hurt the business and reduce profit. This is a frequent occurrence in workplaces at any level. Management and upper level executives are not the only ones who have the responsibility of making decisions; decision making and problem solving are constant in organizations. Each person in an organization or business no matter what their position makes hundreds of decisions every day and each one is an opportunity for success or failure.

Benefits of Critical Thinking in the Workplace

Critical thinking in the workplace has the potential to impact people either in a negative or positive way through the decision making process. Often decisions are made and passed along to people within organizations without much thought based on the need to take some action. In this case, the impact for "normal" actions may be harmless based on daily routine. But for critical issues/problems, "bad" decisions can negatively impact or render a serious blow to the business. To mitigate the risk of serious negative consequences, it is important to make decisions by carefully weighing them based on information that has been thoroughly analyzed, evaluated and searched for the answers that will have potential organizational impacts of critical thinking are suggested in Appendix B.

Critical thinking brings new ideas and often processes to the workplace. For example when approaching a problem solving issue surfaces in the workplace, a common reaction is to assume that it falls into a predetermined category. Critical thinking does not make any assumptions, and using the process of critical thinking in the workplace removes the temptation to immediately classify every issue under something that has happened in the past. Employees can look beyond conventional solutions, search for new ideas, and contemplate the alternatives to address the problem. Using critical thinking as an approach to problem solving, issue resolution or new product or processes can liberate thinking in many different ways. Additionally, critical thinking brings a new perspective to the decision process; i.e., if step one changes in a decision, then the follow-on steps need to be examined critically as well. This approach to thinking opens possibilities that may otherwise lie untried.

SUMMARY

Critical thinking skills learned in the classroom definitely have an impact on future learning in the workplace. Once learned, these skills imprint workers to think deeply and critically about workplace issues and their individual roles in enhancing corporate cultures while adding value to the products or services that an organization provides to the community or to the world.

Critical thinking skills are transferable from the classroom to the workplace. Transferring critical thinking skills is evidenced by the ability of an individual worker to make effective, well thought out and tested decisions that impact daily life in the workplace. May of these decisions extend beyond that individual worker and have a bearing on others in their own decision making.

Critical thinking is the lifeblood of the most essential workplace skills, including problem solving, decision making, good judgment and sound analysis. Organizations that can attract, retain and develop the best critical thinkers have a significant and measurable competitive advantage in the business world (Facione, 2013).

REFERENCES


Critical Thinking in the Classroom… and Beyond
APPENDIX A
SELECTED DEFINITIONS OF CRITICAL THINKING

- The art of thinking about thinking (Ruggiero, V.R., 2012, p.5)
- Critical thinking focuses on deciding what to believe or do, (Ennis, p. 10).
- Critical thinking is a mode of thinking about any subject, content or problem in which the thinker improves the quality of his or her thinking by skillful analyzing, assessing and reconstructing it. (Elder & Elder, 2008)
- Critical thinking is purposeful, self-regulatory, judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based” (P. A. Facione, 2006, p. 21).
- Active, persistent, and careful consideration of a belief or supposed form of knowledge in the light of the grounds which support it and the further conclusions to which it tends. (Dewey, 1910, P. 9)
- Critical thinking is the ability to apply reasoning and logic to new or unfamiliar ideas, opinions, and situations. (Wisegeek, n.d.)

APPENDIX B
POTENTIAL ORGANIZATIONAL IMPACT OF CRITICAL THINKING

<table>
<thead>
<tr>
<th>Critical Thinking Skills</th>
<th>Critical Thinking Behaviors</th>
<th>Outcomes</th>
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<tbody>
<tr>
<td>Distinguish fact from opinion</td>
<td>Asks questions that furthers understanding</td>
<td>Well-thought out decisions based on a sound rationale and evidence</td>
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<tr>
<td>Seek multiple perspectives</td>
<td>Doesn’t draw conclusions too hastily</td>
<td>Information, conclusions and decisions are revised as new information comes to light</td>
</tr>
<tr>
<td>Recognize assumptions</td>
<td>Considers all sides of an argument</td>
<td>Decisions reflect a “systems thinking” rather than “silo” approach</td>
</tr>
<tr>
<td>Identify bias and persuasion</td>
<td>Uses criteria to evaluate information</td>
<td>Information evaluated based on evidence, logical inference, and informed guesses</td>
</tr>
<tr>
<td>Evaluate arguments for relevance and accuracy</td>
<td>Can “push back” effectively</td>
<td>Ideas and plans are presented in a coherent and well thought out fashion</td>
</tr>
<tr>
<td>Weigh data appropriately</td>
<td>Recognizes other people’s agendas</td>
<td></td>
</tr>
<tr>
<td>Use multiple sources rather than a single source</td>
<td>Explores multiple perspectives</td>
<td></td>
</tr>
<tr>
<td>Balance logic and emotion</td>
<td>Adjusts assumptions in light of new evidence</td>
<td></td>
</tr>
<tr>
<td>Use diagrams to visually represent processes and thinking</td>
<td>Understands how conclusions were drawn</td>
<td></td>
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