Being a Critical and Creative Thinker: A Balanced Thinking Mode

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Abstract

Our society, in fact, is always in a state of flux—conceptually, technologically, and socially. Thus, thinking critically and creatively is necessary for survival in our changing world. The main reason we need to nurture critical and creative thinking is because both abilities are beneficial for personal, educational, and economic development. This paper examines the literature on critical and creative thinking and suggests that both types of thinking play equal roles in fulfilling a better andragogy. First, the concepts of critical and creative thinking are reviewed. Then a protocol is proposed to implement a full cycle of learning experiences in adult classrooms. The proposed protocol is the five Es: (a) Expand the horizon, (b) Explore the possibilities, (c) Exchange the ideas, (d) Evaluate the assumptions, and (e) Enact the solutions. Finally, suggestions and implications are discussed.

Keywords: Thinking mode; Critical thinking; Creative thinking; Adult learners.

1. Introduction

The main reason we need to nurture critical and creative thinking is because both abilities are beneficial for personal, educational, and economic development (Brookfield, 1987; Torrance, 1995). Our society, in fact, is always in a state of flux—conceptually, technologically, and socially. Thus, thinking critically and creatively is necessary for survival in our changing world. But do these thinking processes differ? To some extent it is quite true that critical and creative thinking require different cognitive processes. Nickerson (1999) observed the following:

Creative thinking and critical thinking are often contrasted. Creative thinking is expansive, innovative, inventive, unconstrained thinking. It is associated with exploration and idea generation.... Critical thinking is focused, disciplined, logical, constrained thinking. It is down to earth, realistic, practical, staid, dependable, and conservative. Sometimes creativity and criticalness are seen as polar opposites. (p. 397)

As the literature suggests, involving two thinking processes might lead to some difficulties. However, it is also believed that combining two thinking processes could contribute to being a better thinker. More specifically, it is argued that a thinker with critical and creative thinking abilities could possess a full cycle of thinking mode, which in turn attains momentum. The biggest challenge, however, for higher education to produce better thinkers is, as Halpern (2010) recognized, that "the enhancement of critical and creative thinking is still more of a desirable vision than an empirical outcome" (p. 381). This is probably due to a lack of institutional support.

This paper examines the literature on critical and creative thinking and suggests that both types of thinking play equal roles in fulfilling a better andragogy. First, the concepts of critical and creative thinking are reviewed. Then a protocol is proposed to implement a full cycle of learning experiences in adult classrooms. Finally, suggestions and implications are discussed.

1.1 The Needs of Critical Thinking

The old Greek adage "Know yourself" reflects that critical thinking may be the first step in challenging

the assumptions and recognizing biases within oneself. Kong (2007) argued that "critical thinking is a multifaceted and multi-dimensional cognitive ability" (p. 304) for the following reason:

Critical thinking is a mental process that seeks to clarify as well as evaluate the action and activity that one encounters in life. The mental processes of clarification and evaluation are essential in the problem-solving and decision-making processes, which encompasses our entire daily activities. (p. 307)

Halpern (2010) believed: Critical thinking is the use of cognitive skills and strategies that] increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned, and goal directed--the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions, when the thinker is using skills that are thoughtful and effective for the particular context and type of thinking task. (p. 382)

The major benefit of critical thinking is that, as Brookfield (1987) wrote, "when we think critically we become aware of the diversity of values, behaviors, social structures, and artistic forms in the word" (p. 5). Thus, critical thinkers are more involved in life and appreciate diverse aspects of values. Because of this attitude, they are innovators and praise creativity for the exploration of possibilities. Most importantly, "the ability to imagine alternatives... is one that often entails a deliberate break with rational modes of thought in order to prompt forward leaps in creativity" (Brookfield, 1987, p. 12).

Brookfield (1987) recognized five key characteristics of critical thinking: (a) it is a productive and positive activity, (b) it is an ongoing process not an outcome, (c) it varies according to the contexts, (d) it is triggered by positive and negative episodes, and (f) it is an emotive and rational activity (pp. 5-7). Brookfield (2012) also highlighted critical thinking because it serves not only as a survival tool but also as a map for living and loving well. He described the critical thinking process as encompassing the following four stages: (a) hunting assumptions, where we deliberately discover what assumptions we hold; (b) checking assumptions, where we evaluate the validity and reliability of these assumptions; (c) seeing things from different perspectives, where we reconsider the different roles we play and our subsequent actions; and (d) taking informed action, where evidence may justify our actions (pp. 10-13). Furthermore, he identified three different assumptions: (a) paradigmatic assumptions are ones that frame our worldview and are viewed as the most difficult to detect, (b) prescriptive assumptions are ones that are supposed to be happening, and (c) causal assumptions are ones that explain why things happen the way they do (pp. 17-19). Most importantly, he pointed out that the judgment of assumptions is not clear-cut; rather, they are contextually embedded.

Yet, Smith (1990) believed that "critical thinking does not demand a complex array of learned skills, but competence in whatever you are thinking about" (p. 103). In other words, having enough knowledge of something is the prerequisite of being a critical thinker. To be reasonable and judicious to doubt is the qualification of critical thinkers. However, it is not an easy task. As a result, the important role an educator plays is the facilitator and the enabler of developing this learning process.

1.2 The Characteristics of Creative Thinking

Change is the norm for the fabric of today's society. We face various complex issues and challenges that demand creative solutions. Creative thinking becomes a crucial skill as we contrive adaptive strategies to contend with these changes and search for answers. By identifying the fundamental principles of creative thinking, we could be able to hone our mental skills to cope with challenging problems and behave more creatively in a number of arenas (Ward, Finke, &Smith, 1995). Torrance (1995), for example, underscored the importance of creative thinking because it is imperative in "mental health, educational achievement, vocational success, and many other important areas in life" (p. 75). As a result, several scholars have argued that education should value creativity and try to include this ability in the curriculum and classrooms (Jeffrey & Craft, 2004; Mccormack, 1974; Shaheen, 2010). There is also a consensus that creativity can be strengthened by practice in creative thinking exercises (Fasko, 2001).

As a concept, creative thinking has been interpreted in various ways. It has been equated with divergent thinking (Dirkes, 1978; Torrance, 1977), psychic wholeness and integration (Hickson & Housley, 1997), the synthesis of knowledge, emotion, and experience (Sinnott, 1998), the formation of new neurons (Schmidt, 2006), open-mindedness (Fasko, 2006), the intentional production of novelty (Weisberg, 2006), the problem-solving ability (Ruscio & Amabile, 1999), a natural human process motivated by strong needs (Torrance, 1972), personal constructions and the requisite cognitive processes (Runco, 2003), and assimilation and imagination (Piaget, 1962). But, in general, the process of creative thinking is believed to occur in several stages: problem finding, incubation, illumination, verification, and dissemination (Allen & Thomas, 2011; Wallas, 1926). In addition, some scholars believe a whole process of creative thinking should involve divergent ideation and convergent evaluation (Guilford, 1957; Simonton, 1988). Problem finding, the first stage, is viewed as more important and difficult than problem solving (Dillon, 1982; Fontenot, 1993). It is a typical account of the incubation stage operatizing in the unconscious state, where it leaves a problem aside and in turn a useful insight will emerge during this detachment (Simonton, 1999). A meta-analytic review of incubation literature by Sio and Ormerod (2009) indicates that in comparison to high-demand tasks, low-demand tasks play a better role to facilitate creativity during the incubation period. Illumination is the period of "Aha" moment where individuals suddenly receive ideas. This inspiration is closely related to intuition and remote associated thinking (Boden, 1990; Mednick, 1962). From the perspective of practical implementation, researchers believe that convergent and critical thinking play a more important role in verification because new ideas or solutions are now proposed. This evaluation check is necessary to guarantee more appeal to public opinions. The first stage, dissemination, requires persuasion and social influence to reach an audience (Csikszentmihalyi, 1996). This effort is to make others aware of the creator's ideas and expand its popularity. As Sternberg and Lubart (1995) described, this special ability needs thinkers to "buy low and sell high."

Runco and Chand (1995) proposed a two-tier model of creative thinking. The three components in the primary tier are problem finding, ideation, and evaluation. The second tier is the relationships with knowledge and motivation. Boden (2001) differentiated three types of creative thinking: combinational, exploratory, and transformational creativity. Combinational creativity involves new ideas by combining old ideas, whereas exploratory creativity investigates new possibilities by relevant rules and produces unique ideas. In comparison to exploratory creativity, transformational creativity steps further and generates more significant alternations of the current concepts and leads to major breakthroughs. Davis (2006) proposed five components for teaching creative thinking: (a) fostering creativity consciousness and creative attitudes, (b) improving our (and other's) understanding of creativity, (c) exercising creative abilities, (d) learning creative thinking techniques, and (e) becoming more involved in creative activities (p. 246). Kong (2007) pointed out that in relation to critical and creative thinking, problem solving serves a good example to bridge this connection. He described problem solving as the following:

A typical problem-solving process usually involves the following steps: (a) recognize the existence of a problem, (b) define the nature of the problem, (c) explore resources to solve the problem, (d) formulate strategies to solve the problem, (f) evaluate solution, and (g) choose the best solution. (Kong, 2007, pp. 317-318).

Although a number of variables have been identified to affect creativity (Hennessey & Amabile, 2010; Mumford, 2003), fundamentally from the cognitive perspective there is no different operation between creative thinking and noncreative cognition (Gardner, 1988). This assumption suggests that everyone has creative potential. The key is how you use and apply this ability in your daily life when facing any situations. For example, for Piaget, creative thinking lies in the interaction between assimilation and accommodation. This implies that imagination and a playful attitude are important attributes to facilitate creative thinking (as cited in Ayman-Nolley, 1999). As a result, an attempt to view from a different perspective and play with different

possibilities could enhance creative thinking. Opening one's mind and exploring the world is sine qua non for unleashing one's creative seeds!

1.3 The Protocol of Creative and Critical Thinking

Smith (1990) stated that one key difference between creative and critical thinking is that "the generation of alternatives is a creative activity, and the selection among them must be critical" (p. 101). Brookfield (1987) explained that the important attitude toward critical teaching is rooted in the belief that "a willingness to risk experimentation in one's teaching is an important aspect of modeling change and promoting critical openness in learners" (p. 81). The protocol proposed here is adapted from critical thinking (Brookfield, 2012), creative problem solving (Treffinger, 1995; Treffinger & Isaksen, 2005), and Kolb's learning model (Kolb, 1984). The procedure is followed by the five Es: (a) Expand the horizon, (b) Explore the possibilities,(c)Exchange the ideas, (d) Evaluate the assumptions, and (e) Enact the solutions. The following is a further explanation of using this protocol as a teaching and learning tool in the classroom.

1.4 Expand the Horizon

The instructor could provide an inquiry-guided activity to investigate phenomena or problems and then provide possible solutions. In this first stage, a teacher should ask students to observe phenomena qualitatively and interpret what they perceive. For example, "How do you perceive adult learning?" could be a good prompt to teach the theory of adult learning.

Freewrites could be used as a warm-up exercise. Students should write down everything they know about this topic as fast as they can within three minutes. By doing so, they could activate their prior knowledge and experience and generate ideas by free association, disregarding grammar, spelling, punctuation, and the like.

1.5 Explore the Possibilities

After students finish this initial free-writing activity, mind mapping could be used to further extend their ideas from the previous activity. By drawing a mind map, students can transform their ideas into a visual diagram and provide a holistic picture of what they perceive about adult learning. When students practice this activity, the teacher should highly encourage them to discover more ideas and connect more related ideas about this topic. Apart from mind mapping, brainstorming is another possible strategy for this stage.

1.6 Exchange the Ideas

It could take 5 to 10 minutes to complete the mind mapping activity. In this next stage, the instructor should divide the class into groups, with a maximum of five students per group, to discuss and present the individual's diagram and ideas. At the same time, the group members are assigned two roles. When a person presents his or her ideas, that person is the presenter and the others are the detectives. The major role of the detectives is not only to be the passive audience but also to be active listeners. They need to think of "why" questions.

1.7 Evaluate the Assumptions

When the presenter shares his or her ideas to the other team members, the detectives should listen carefully and try to understand why these ideas are proposed. After the presenter completes his or her presentation, the detectives should check the assumptions behind these ideas by asking questions. For example, two possible questions are "Is this idea related to past episodes or knowledge?" or "How does this idea connect to the topic? Please explain" The main purpose of these questions is to ask the individual to think deeper and assess his or her assumptions that might affect his or her ideas. After the individuals recognize their hidden agendas or assumptions, it is important to think of other possible ideas in order to go beyond their personal assumptions. It is expected that this stage will take longer to complete because each person will receive challenges that question their assumptions, and it will take longer to uncover this mental block that prevents them from exploring other alternatives. This group interaction plays a dual role. On the one hand, by reflecting on their assumptions, they may realize that there are other possible outcomes. On the other hand, by listening to other people's ideas, they may experience an "aha" moment and come up with unexpected ideas. In other words, they can expand on their

ideas by inward refection and outward shifting in mental models.

1.8 Enact the Solutions

In this last stage, students can write down their intellectual and emotional reactions to the discussions by writing in their journals. There are several questions students need to address in their journal: (a) "What is new to you about this activity?," (b) "Does any point contradict what you already know or believed?," (c) "After this activity, what questions remain in your mind?,"

(d)"At what moment, did you feel lost or puzzled?," (e) "At what moment, did you obtain some insights?," and (f) "What lesson have you learned and how can you extend this to other scenarios in your life?" In summary, the last stage is about implementation. Teachers should assist students to take advantage of this learning experience and in turn transform their ideas into useful insights.

II. Conclusion

Guilford (1959) supported an idea of balance training in creative thinking (divergent production) and critical thinking (convergent production and evaluation). As Smith (1990) suggested, "critical and creative thinking may be viewed academically as unique mental activities . . . but the elements of thinking critically and creatively are in everyone's behavioral and cognitive repertoire" (p. 102). According to the literature, critical and creative thinking have both a generic and a subject-specific component; it is the responsibility of educators to model these thinking processes and to create a supportive climate to develop, practice, and exhibit these capabilities.

The preceding protocol can be used and combined with other teaching approaches, such as the case study, problem-based learning, experiential learning, and the like. The researcher hopes that this proposed protocol helps students in active learning, self-regulated learning, and deep learning (Houtz & Krug, 1995). Clegg (2008) wrote, "Critical assault on confining ideas, structures and even modes of 'being' is fundamental to creativity. Creativity and critical faculties are intimately linked" (p. 221). From an assessment perspective, Young (2009) stated that,

Teachers who recognize the important role imagination and creativity play in the learning process want to include these high-level thought processes as part of authentic assessment. From creative problem solving to culminating performance events, curriculum design that includes assessment that captures critical thinking skills, problem solving abilities, and imaginative/creative capacities is promoted by educators at all levels. (p. 74)

As an educator, it is important to prize critical and creative thinking and, most importantly, both teaching and learning methods to enhance learning should be included in a teacher's toolbox. The design of this protocol prevents one thinking skill to outshine the other. As the argument suggests in this article, a balance-thinking mode should be considered.

The main purpose of this article was to advocate that adult learners should be encouraged to think critically and creatively. Kong (2007) contended that "critical and creative thinking are often seen as opposites or dichotomous; in which critical thinker is considered serious, analytical, and impersonal, whereas creative thinker is viewed as one who is wild, unstructured, and sometimes eccentric" (p. 319). Nevertheless, the image of critical and creative thinking should not be seen as dualistic. This paper attempted to bridge two thinking processes and proposed an alternative approach to include both types of thinking in the classroom. The researcher's belief is grounded in the fact that being equipped with both thinking skills should be viewed as a balance of thinking mode. Most importantly, students could benefit from both thinking modes in their academic as well as their personal lives. They can have a basis for understanding and check their assumptions and realize that their habitual thinking can block their chances of thinking outside the box. By exploring alternatives, it is possible for individuals to obtain useful insights to deal with the various challenges they may face during their life's journey.

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