Innovativeness of Creative Thinking for Value Creation

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Abstract

The increasing demand to foster creativity in order to enhance value creation has become a global issue. This is because the innovativeness of creative thinking aid the implementing of a new knowledge that supports learning practices. As such, creative thinking is central to innovation leading to value creation. Although there are several issues that confronts creativity from learning to practice, this paper specifically reported the innovativeness associated with creative thinking and provided a structural analogue of the keys to creativity. Furthermore, diversities of creativity were reviewed and the classes of knowledge leading to value creation were reported. Findings showed that a variety of concept possess serious analytical task limiting value creation spurred by innovative creativity. Creative thinking was found to be fundamental to educational processes and serves as an empowerment to value creation.

Key Words: Creativity, Organizational competitiveness, Knowledge, Learning, innovation.

1. Introduction

Knowledge and creativity development has gone a long way throughout the history of human development notably, from primitive to a profound and comprehensive understanding of its existence. This path travelled by knowledge and creativity reflects significant innovations depicting that the possibilities of human cognition are limitless based on knowledge. Human knowledge is a highly complex system, and a social memory that passes on from generation to generation (Turnheim & Geels, 2012, p.46). However, almost all human activity requires specific knowledge. Acquisition of knowledge and creativity helps in skills development. In other words knowledge needs to fundamentally focus on creativity and innovation if the impact of academic learning is to be transformed into knowledge-filled society. Therefore to make knowledge more productive information is critically needed to allow learners to be creative and re-invent ideas. World cognition especially in educational setting expresses the creative aspirations of knowledge development and comprises different level of achievement corresponding to level of innovation (Kivimaa & Virkamäki, 2014; Weber & Rohracher, 2012).

Difficulty impose in the path of knowledge and creativity has led to the building of an extremely complex scientific innovation constituting highly sophisticated sphere of achievements that is based on modern technology to aid learning at various level of study (Turnheim & Geels, 2013). Because knowledge and creativity contribute to the developing of professional skills needed for innovation in different field of learning. However, humanity has constantly striven towards the acquisition of new knowledge to support ever changing challengers of technological advancement. The process of mastering the secrets of existence continues unceasingly with attention more on creativity (Borrás & Edquist, 2013; Flanagan et al., 2011; Magro & Wilson, 2013; Quitzow, 2014). The pace and scale of cognitive activity are constantly increasing. Every day is marked by intellectual

advances in a constant quest, which ever more widely and vividly illuminates the remote horizons of innovation through creative thinking.
This study

2. Creativity through Knowledge Acquisition

Recurring concepts of knowledge acquisition from previous literature tends to broaden the challenges that underlies academic creativity and innovation (Borras & Edquist, 2013; Quitzow 2014). This appears to be complex because of the multi-faceted nature of creativity which takes many forms and can be found within a variety of contexts. Individually, creativity is embodied with a broad range of personal characteristics and backgrounds depicting that it cannot be confined under a specific context as its sources. Creativity arises from the confluence of knowledge, creative thinking and motivation.

Knowledge acquisition as used in the context of this paper with regards to learning encompasses relevant understanding used towards creative effort (Amabile, 1998). From a broader perspective, knowledge acquisition encompasses all relevant process through which information impacted on individual of group of people are utilized to bear on a problem (Amabile, 1998). Howard Gardner further explained that knowledge is fundamental to creativity (Howard Gardner). Therefore the increasing need to embed creativity and innovation especially in the academic setting necessitated for a comprehensive review on the innovativeness of creative thinking especially for value creation (Turnheim & Geels, 2012, p.46)

2.1 Creativity from Learning to Practice

Prior studies have shown that an in-depth experience and long-term focus on specific area of learning supports the development of technical expertise. This could serve as a foundational platform for creativity within any domain of interest. From a practical perspective, creativity depends on the ability to combine disparate elements in new ways that are essentially different depicting a need for a broader focus and interrelated interests. However, there is a need to understand the disparity between knowledge of different people in order to maximize learner's creative potential (Ritala et al., 2009). A possible way to improve creativity therefore is to develop a team comprising people with different knowledge. The educational implications of this recommendation confine in the realm of exercising greater focus on interdisciplinary study and having students collaborate on group projects with team members of varied interests.

A successfully quantified test cases that attempted to develop differential social backgrounds using theories of creativity showed that individuals must develop an in-depth expertise to be creative (Simonton & Song, 2009). Therefore the confidence to embark on creative thinking is linked to how actively a person engaged in developing a creative knowledge. Thus, creativity appears to be a function of skill development leading to innovation. In other words, creativity increases with experience (Simonton, 2008). Howard Gardner's research work establishes a "ten-year rule": in approximating time required to develop knowledge and expertise needed to spur creative successes (Gardner, 1993). This was based on the fact that many creative individuals seem to have breakthroughs in ten year intervals through creative thinking. Creative thinking relates to how people approach problems and depends on personality and thinking/working style.

Amabile & Gardner (1998) asserted that thinking is a key aspect of the creative process and suggested that creative thinking should incorporate the capability to disagree with other people views by trying out solutions that depart from the status quo; combining knowledge from previously disparate fields; ability to step away from an effort and return later with a fresh perspective (Kivimaa & Virkamäki, 2014; Meelen & Farla, 2013; Weber & Rohracher, 2012). Creativity provides an overview concerning the relationship between knowledge and innovation. Ultimately, "triarchic theory", promotes three key of creativity comprising synthetic, analytical and practical.

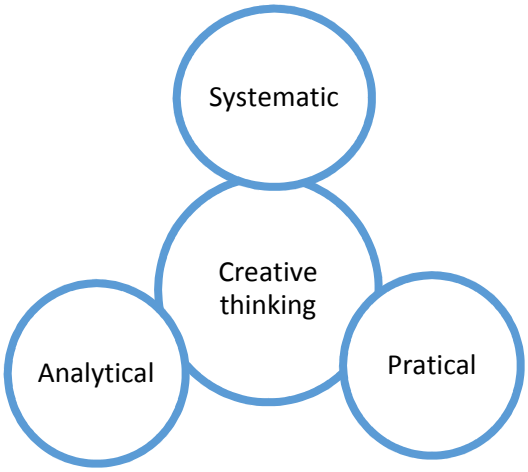

Fig.1 Structural analogue of three keys of creativity

1. *Synthetic* referring to "creative" entails the ability to generate ideas that are novel, high quality and task appropriate. A notable aspect of this is capability is to redefine problems effectively and to think insightfully. The basis for insightful thinking involves knowledge acquisition in three forms such as;

a) *Selective encoding*: distinguishes relevant from irrelevant information.

b) *Selective combination*: combines bits of relevant information in a novel way.

c) *Selective comparison*: relates new information to old information in a novel way.

2. *Analytical:* Critical/analytical thinking involved in creativity as the ability to judge the value of one's own ideas, to evaluate its strengths and weaknesses and suggests ways to improve them.

3) *Practical*: Depicts the ability to apply intellectual skills in everyday contexts.

"The three forms of synthetic creative thinking has been found to actively improve the intellectual functioning and successful intelligence while analytic and practical are entirely different yet supports synthetic. Studies indicate that when students were taught in a way that emphasized all three abilities, they significantly outperformed students taught in a way that emphasized only analytical abilities (Sternberg & Weihua, 2003). This was because the analytical, synthetic and practical aspects of abilities are weakly related; therefore students are adept in each areas for a particular interest from a particular creativity (Sternberg & Weihua, 2003).

2.2 Innovativeness of Creative Thinking

Although combine existing elements of knowledge or understanding in new ways provides insight into the aspect of the creative thinking processes. Creativity is a stochastic combinatorial process that allows for multiple ideational variations for preservation and execution. This concept was first put for used in 1960 by David Campbell and was illustrated in a work by Simonton and Song (Simonton & Song, 2009). The concept asserts that creativity requires the capacity to think differently. The implication is that creativity requires increase in the creative performance than conventional expectations and random generated variation. Studies have shown that this type of stimulation is possible and remains a key tool to innovativeness (Simonton, 2008, p. 313).

Thus, a creative mind can be enhanced by the environments or efforts that encourage the individual to generate new variations through combinations of new ideas. Studies on creativity have been closely used to

predict the differences in creative productivity. It then implies that creative thinking leading to innovation is generated through motivated.

3. Motivation for Creativity Thinking

Motivation has been generally accepted as key to creative production, and the most important motivators are intrinsic passion and interest to do specific work. Motivation, specifically cognitive abilities, entails set of motivational attributes individuals has been seen as the most important component of creativity. Amabile's (1998) asserted that this form of intrinsic motivation enhances classroom performance as well as workplace efficiency. Fundamentally, creativity is motivated primarily by the interest, satisfaction, and challenge not by external pressures (extrinsic motivation) (Amabile, 1998, p. 78). Studies found that intrinsic motivation enhances creativity. The intrinsically motivated person will explore various pathways and alternatives process. This exploration leads to novel, alternative solutions, some of which turns out to become more appropriate and successful than the traditional path. However, extrinsically motivated person takes shorter path to get to the reward at the finish line.

Synergistic extrinsic motivators can support intrinsic motivation. Findings have shown that each type of motivation plays important role in enhancing creative process. Intrinsic motivation is particularly important when the emphasis is on novelty (Lee, 2009). If emphasis is on persistence, synergistic extrinsic motivators may play a role. Additional, extrinsic motivators sustain an individual in difficult times by motivation to gain skills. Extrinsic motivators serve to bring people in contact with a topic to engage their intrinsic interest depicting the forms of motivation collectively contributes towards providing creative skills needed for innovativeness (Gillies & Boyle, 2004).

High degrees of intrinsic motivation were found in great inventors such as Einstein, Picasso, and Gandhi which supported their holistic involvement and commitment to their work (Rogge & Reichardt, 2013). This leads to gain superior professional attainment neglecting family and social life. However, a question remains to address "what extent some aspects holistic pattern holds for creative individuals.

Creative individuals as reflected on the prior studies can be characterized by disposition to usefully convert individual differences into advantage (Gillies & Boyle, 2005). Creativity can be considered important because it helps one to reflect on goals, analyze their strengths, weaknesses and leverage abilities relative to intrapersonal intelligence. This is considered important in order to understand and guide creative processes and to checks on illusory interferences in the process, (Gardner, 1993, p. 223).

4. Creativity as a Decision

The main challenges of creativity research are to uncover the fact about the characteristics of creative people. Sternberg, (2000) asserts that a consistent attribute of successfully creative people is their explicit decision to pursue creative path. This could be because, people who create first decide how to shape their own route and stick to it. Although creative path impose difficulties, resourceful ideas emerges from creativity and people who defy convention are often not rewarded. Hence, if creativity is to be facilitated especially in decision making, a clear understand of the worth of knowledge leading to innovation must start with a kind of skill with a motivational set of decision (Nickerson, 1998, p. 416). This is because teaching people to become creative requires encouragement to decide for creativity and to impress them with the joys of making decision based on creativity.

Educational systems is responsible for impacting knowledge and skills to students therefore; a need arises to enhance creativity skills directly by teaching students to gain an explicit awareness of creative potential and to understand methods of its enhancement. With this knowledge, students can independently make an informed decision to pursue creative activities with better control and a direct development of their abilities. It

then implies that students are required to acknowledge that creativity is determined by not only motivation but also effort.

There is therefore a need to understand that creativity are seldom generated without intent and effort but a considerable evidence supports the belief that most people have potential they never realize and persistent effort to develop such a potential is likely to be successful in enhancing their creative skills. Thus creativity not only enhances decision making processes but also impact outstanding creative works in various field of learning. Therefore acknowledging the relevance need to understand that if one really wants to be creative in almost all every adventure, creativity can be developed in a substantive way by working at it (Nickerson, 1998. p. 416). Furthermore, creative process should involve managing cognitive resources, learning one's strengths and weaknesses and allocating appropriate time to creative pursuits.

Creative thinking and learning involve such abilities as evaluation (especially the ability to sense problems, inconsistencies, and missing elements); divergent production (e.g., fluency, flexibility, originality, and elaboration); and redefinition. Creative learning is a natural, healthy human process that occurs when people become curious and excited (Schot & Geels, 2008). In contrast, learning by authority requires students to use thinking skills such as recognition, memory, and logical reasoning-the abilities most frequently assessed by traditional tests of intelligence and scholastic aptitude. Children prefer to learn in creative ways rather than just memorizing information provided by a teacher or parents. They also learn better and sometimes faster.

5. Diversities of Creative Knowledge

Knowledge development and understanding about creativity has gone through fundamental changes. Development without any reference to knowledge creation and changes in knowledge assets has no role to play as a force driving specialization and development. The absence of the knowledge creation in the development is missing important points. Knowledge flow as well as the creative use of knowledge are basic drivers of the specialization hence development (Alkemade et al., 2011).

A fundamental difference between the knowledge society and earlier societies is that learning infrastructure in a profound way consisting of many inter-connected layers. What is typical for the modern society is that knowledge and information flows are distributed over many different media and that electronic media increases its market share rapidly.

Diversity appears to be an important aspect of creativity (Jacobs, 1961 & 1969). Other important aspects of creative regions, according to Andersson (1985a), include;

- Flexibility in terms of social conditions, economic activities but also in terms of planning and knowledge management,
- Willingness to overcome political, language, cultural and physical barriers, and
- A socio-cultural milieu marked by great openness and an atmosphere of tolerance.

In dealing with creativity activity primarily need a good intraregional accessibility of knowledge. Knowledge transfer via education or consultation has a somewhat lower need of being located in a large urban region especially in the developing countries. This is because infrastructure for learning is not well distributed especially in the rural areas. Therefore difficulty arises from using helpful learning tools such as the internet, and proximity to experimental lab and research centers.

5. Classes of Knowledge

In the global knowledge based competition, the role of creativity has become tremendously Important especially as individual becomes owners and controllers of most important factor of production. Owners of business decide on skills and intellect needed and direct every efforts based how they are motivated (Alkemade et al., 2011). At present, knowledge has become the key source for business performance and higher efficiency in the creation and transfer of innovation through creativity (Kogut & Zander 1996, 503). The forefront of the recent large-scale changes in academics learning is associated with the increasing role of knowledge and creativity as components of value creation (McFadyen & Cannella, 2004). The relative influences of knowledge, creativity and innovation also have implications for the authority relations within the boundaries of organizational structures and processes.

In the present day, the term knowledge encompasses information that can be transformed into action. Knowledge as a measure of one's capability entails dynamic human process of justifying personal belief toward the truth. However, both knowledge and information share similar concept. More specifically, knowledge depends on individual belief and commitment with respect relative to action. This definition brings human nature of knowledge to the forefront of creativity (Burt, 2004). Therefore, knowledge is tied up to a particular viewpoint of an object and extends to its practical application. In a broader sense, knowledge is essentially related to human action. Therefore, this study found that knowledge based on management perspective is fundamentally a human related issue because it is a product of human activity and as a result are bounded by human limitations of cognitive and psychological capacities.

Information technology systems and other related mediating tools can act as vehicles for transferring knowledge, or as repositories for storing knowledge, but in knowledge management the role of these is secondary compared with knowledgeable human actors.

Table 1 Knowledge types on individual, group, organizational, and network levels

(Kogut & Zander, 1992, 388)

	Individual	**Group**	**Organization**	**Network**
Information	Facts	Who knows what	Profits, accountable data, formal and informal structure	Cost, whom to contact, who has what
Know-how	Skill to communicate,	Recipes of organizing and solve problem	Higher-order organizing principles of groups and transfer	How to co-operate, how how to coordinate to sell and knowledge

The typologies represented in the Table 1 depicted that knowledge exists in many forms and can be shared (Tsoukas, 1996). The notions of collective knowledge and higher-order organizing principles connote that for a firm to be knowledgeable; it is not enough that its individual employees are skilled and educated. The crucial issue is how creative the employees work together, how their tasks interrelate and how their individual knowledge is integrated to produce innovative value. Therefore the scattered, uncoordinated insights of individual organizational members are not enough to produce competitive advantage. In order to be competitive, workers must combine into a synergistic whole.

Implication

Knowledge is fundamentally inter-subjective in that it is embedded and crafted in a continuous social interactions manner among a group. Rather than in individual's minds, the most important type of knowledge is that which is shared between people. Therefore, social psychological concepts such as communication, collaboration and trust are vital elements of knowledge leading to creativity. This does not mean a mechanistic aggregation of individual knowledge pattern and the integration of knowledge cannot be reduced to individual level of actions, but can be analyzed in one own right basically on the level of shared practices.

6. Educational Innovation Creativity

Range of programs, workshops and techniques has been used to enhance creativity and to improve cognitive functions that support it. Most of the attempt was explicitly creative while others promote creativity as a function of other effort and processes. A comprehensive study by McDonough and McDonough using 1,504 colleges found that 76.5% of the colleges offered creativity courses (Arthur, 2001). In the university level, specific creativity training and workshops were organized. Arthur Cropley (2001) further emphasized that Creativity in Education and Training is key to innovativeness.

Sternberg's (2000) reviewed multiple creativity programs and highlighted key issues to creativity. However, there is some speculation that is worth exploring such as the relationship between knowledge, creativity and innovation. This is necessary in order to promote a range of abilities including inventive thinking among learners. Inventive thinking draws clarity towards understanding the functionality of any innovation. Students in the participating group outperformed the control group for all themes (Gibson, 2010). Also, to test the programs impact, students were given an open-ended design problem (to design a table for an apartment that was too small for one of typical size).

Knowledge creation in school environment is essential because classroom instruction positively impact on creative abilities (Garoff & Besancon, 2008). Nickerson et al. (1998) did emphasized that all forms of acquiring idea including divergent thinking and different instructional method increases creativity (Magro & Wilson, 2013). Among others, brainstorming is a popular technique to induce creativity. However, the approach is usually implemented incorrectly. Scott, Leritz and Mumford' (2004) reviewed 156 creativity training programs and grouped them into clusters to determine their effectiveness. Four themes that emerged comprises: 1) idea generation training; 2) imagery training, 3) cognitive training and 4) thinking skills training. Idea generation training was the most commonly used method. However, in terms of effectiveness, it was apparently less effective compared with cognitive training, imagery training and thinking skills training.

However, creative process seeks to develop creative thinking through convergent and divergent thinking. Though it's usually lengthy, it involves practice specifically on realistic exercises accompanied by lecture and discussion. Creative thinking confine to developing skills to problem finding, generation and evaluation of idea as well as brainstorming and meta-cognition (Lin, 2010).

The effectiveness of creativity, such as brainstorming and idea-getting techniques addresses the sources of creativity and modest positive outcomes of holistic approach in an educational program tailored to address or improve creative potential. This necessitates that educational program that focuses on innovation and creativity contributes to skill development as well as problem solving strategy which is of high demand in various organizations. This depicts a positive learning route acquired through higher education as pointed out by Livingston, (2011) standout to enhanced competitiveness of economic practices that transforms knowledge to values creation opportunity.

Based on the findings of this study, learning curriculum can be transformed to become a problem-based learning. This could represent a greater paradigm shift in the traditional learning methods. Innovation and creativity appears to be an enhancement platform for a broad range of thinking skills that effectively improve creativity. Therefore the inclusion of an ill-structured problem in classroom teaching with insufficient information will develop student with the capability to resolve the issues independently. In addition, to be effective requires

the development of an interactive learning environment. This is because; teachers serve as facilitators in learning process and not the authoritative source of knowledge. Maintaining their role as a guide to put students on the right path is a key to their effectiveness (Mierson & Freiert, 2004, p. 1-4).

Typically, in a learning classroom students are provided learning task after relevant information has been taught. Most misleading impression in this context of learning is that problems only arise in circumstances where that necessary information needed for solution has been provided. However, classroom problems with clear paths to solution are sometimes termed well-structured problems, whereas those without clear solution paths are termed ill-structured problems.

In contrary, study have shown that problem solving skills should provide learners with the opportunity to derive appropriate strategies based on their understanding of the situation towards the problem. Therefore it is considerate enough to assume that ill-defined problems enable students to undergo a process of problem finding them in a way that engages them to improve their learning level and style. This approach has been suggested by a study (Greenwald, 2002).

Conventionally, academic intelligence is often measured customarily by the ability to solve well-structured problems, whereas real-world successful intelligence is the ability to solve ill-structured problems. This is an unfortunate feature of educational system of the present day that has affected the quality of assessment of educational progress (Sternberg, 2000). Although students consistently report that providing the entire scenario of the problem before solving it is their favorite part for all courses, the approach can poses great challenges to real world problem solving approach used outside learning environment (Durtschi, 2003).

Therefore a clear understanding of the elements that make ill-structured problem successful can be replicated to enhance the performance of students as well as improving the ability to handle difficult task outside learning environment. This concept of process knowledge creativity could be applied to learning curriculum to ensure students effectiveness. However, problem-based learning for creativity provides students with the skills to address challenges. With knowledge creativity concept, problem solving could address challenge using an integrated package equipped with multiple thinking tools with the capacity suitable for various modes of thinking to problems.

7. Knowledge and Value Creation

It has become a well-known fact that knowledge is fundamental to knowledge creation. This widespread agreement has shown to be the basis of competitiveness in organizational practices. Knowledge creation is the most important factor in the development and creation of economic value as well competitive advantage in organization (Drucker, 1999; Marshall & Drummond, 2006). This is because knowledge is the basic source of revenue and often referred to as a form of capital. The valuable nature of knowledge creation is clearly represented in the concept of intellectual capital (Swaffield & MacBeath, 2006; Gillies & Boyle, 2005; Shaheen, 2010). Therefore, in order to fully benefit from knowledge creation, organizations are expected to adopt a strategic approach of knowledge creation to develop knowledge that supports a desired management practice.

This is a necessity in the educational sectors because knowledge represents a productive resource with distinctive characteristics that set it apart from other forms of intellectual resources. Firstly, there is economies of scale in knowledge creation depicting that its replication costs is less than the original discovery of knowledge creation costs. This clearly noted especially in explicit knowledge creation which is very economical to reproduce (Snowden, 2002). In the other hand, tacit knowledge creation is lower than the costs of its creation and depicts that knowledge does not specifically confine to the production of single service, but rather extends its benefit to other related outcome (Kogut & Zander 1992, Newton & Newton, 2009). It then implies that knowledge that stands to represent a source of sustainable development because of the competitive advantages it provides at different organizational setting.

Faced with the complex demands of knowledge creation of today's businesses necessitating research and technological enhancement learning strategy, there is a need to combine issues relative to dispersed knowledge to use widely dispersed knowledge to extend the span of utilization of resources in a way that exceeds the span of control of an individual mind. This is clearly a question of coordination and patterning of interaction in classroom learning by the integration of a collective knowledge between individuals, groups and units. This form of knowledge creation strategically sustains a centralized competitive dimension of organization through supporting efficient creation and transfer of knowledge within the organizational context. Thus, the processes of knowledge creation depict the heart of every organizational performance that supports value creation.

8. Conclusion

The innovativeness of creation thinking based on knowledge and is fundamental to value creation. Knowledge is developed in shared practices by interacting individuals that combine their efforts while striving towards specific goals. This depicted that knowledge is fundamentally dynamic in nature: it is the subject of constant negotiations, modifications, and alterations. Further, knowledge has shown to enhance performance through its interdependence with innovation. This is because knowledge creation improves the ability for collaborative action even in uncertain and changing situation where fast decisions and actions are needed. This is especially important in the present day knowledge-based environment is prone to technological uncertainty. Thus, the innovativeness of creative thinking provides the capability that underlines knowledge and value creation. Collaboration capability as of knowledge is useful for understanding network activities. However, further studies are needed to understand how creativity can be applied to different settings to improve both educational processes and value creation.

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