SOFTWARE SUPPORT FOR THE
INNOVATIVE PROCESS IN ORGANIZATIONS

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ABSTRACT

The vast amount of creativity and innovation literature offers numerous definitions and diverse perspectives on what creativity is and how an organization can be innovative. This research defines the link between creativity and innovation. Next it offers a vision on how the process can enhance viable options for innovative success. It is argued that currently there are many software features that can promote a relationship between creativity and innovation, which is necessary to have a positive outcome.

INTRODUCTION

The vast amount of creativity literature offers numerous diverse perspectives (Boden, 2004; Couger, 1996; Gardner, 1993) on what creativity is and how to get it. At its simplest form, creativity occurs anytime a person creates something new that has some kind of value. New products, a solution to a problem, a work of art are just a few ways in which creativity can manifest itself. This research looks at creativity in relationship to innovation and investigates how software tools can support both. The goal of the creative process is to create something new and when linked to an outcome of innovation includes a positive orientation towards making something better. Creativity that has an innovative

outcome can lead to increased productivity and to increased wealth for a firm(Hessels, van Gelderen, & Thurik, 2008). The purpose of this paper is to explore the topic of organizational innovation.

CREATIVITY AND INNOVATION

Many researchers have investigated the creative process. It is well established that it involves numerous phases. The phases are commonly described as first insight, preparation, saturation, incubation, illumination, implementation and verification (Brennan & Dooley, 2005; Cropley, 2006; Rank & Frese, 2008). Illumination is described as the "Ah-Ha!" experience. Saturation or preparation and implementation or verification is easily understood. Saturation or preparation is where you gather information and investigate a topic. The phase of verification or implementation is when you test an idea. Saturation, preparation, implementation and verification require conscious and more manageable actions. The other phases (first insight, incubation, and illumination) are more subconscious and seem somewhat more mysterious. They are unpredictable and less manageable.

In business, creativity is not enough. It must be actionable. Inventions are the manifestation of creative actions. It is something new. Innovation differs from invention in that innovation refers to doing and/or using something in a new way. It is directly related to organizational change. In business and economics, innovation is the catalyst to growth and therefore very important to the survival of the organization.

A FRAMEWORK FOR MEGA-CREATIVITY

After several years of exploration, the genex framework (Carroll, 2002; B. Shneiderman, 2000; Ben Shneiderman, 2002) evolved into the framework for mega-creativity which has four activities:

- **Collect:** Learn from previous works stored in libraries, the Web, and other sources.
- **Relate:** Consult with peers and mentors at early, middle, and late stages.
- **Create:** Explore, compose, and evaluate possible solutions.

- **Donate:** Disseminate the results and contribute to libraries, the Web, and other sources.

THE ORGANIZATIOAL INNOVATION PROCESS

Research frameworks are attempts to capture and explain the complex, interdependent, and dynamic factors and processes that exist in our world. Mackenzie (2000) presents a process approach for the organization sciences that views organizational behavior as fundamentally a physical process, thus it is a sustained phenomenon or one marked by gradual changes through a series of states. This supports Shneiderman (2007) conclusion that creativity is a process. It is important to note that variables are often a form of the outcomes (results) that come from a process and are inherently causal (Mackenzie, 2000). This research proposes that innovation can be the outcome of the creative process(Mattia, 2011a, 2011b). Interestingly enough, factor research models are the most commonly used models in creativity research (Ben Shneiderman, 2007), and although they are useful to researchers, a gap exists in the study of the actual processes that produce the factors.

> "The emphasis on close study of domain experts as they make discoveries has led many researchers to adopt case study, observational, and interview methods with small numbers of users over weeks and months. Their goal is to capture the processes that precede breakthrough incidents and to collect evidence that supports hypotheses about how software design features promote creative moments." (Ben Shneiderman, 2007)

Proposition 1a.. Organizations will be most effective at promoting creativity if they treat it as a process that evolves as gradual changes through a series of states.

Proposition 1b. Organizations will be most effective at innovation if they treat it as an outcome to the creative process.

A DIRECTED PROCESS FOR INNOVATION

After several years of exploration, the genex framework (Carroll, 2002; B. Shneiderman, 2000; Ben Shneiderman, 2002) evolved into the framework for mega-creativity and upon further research this

study adapts the framework into The Directed Process for Creativity and Innovation which has five main activities:

- **Initialization:** Construct a base version of the idea, problem and/or system.
- **Collect:** Learn from previous and associated works on the topics stored in libraries, the Web, and other sources.
- **Relate:** Consult with peers and mentors at early, middle, and late stages.
- **Create:** Explore, compose, and evaluate possible options.
- **Innovate:** implements viable options successfully in practice.

It builds primarily on the mega-creativity framework by extending it with an innovative perspective and includes initialization as the first activity and innovation as the last activity which is defined as an implementation of a process that users work through for themselves successfully. It requires motivation on the organizations part. Software tools and how they are to be used are worked through by the users (Tornatzky & Fleischer, 1992) and directed by the framework. This is important because in a business environment we must manage the processes and ensure that they result in useful outcomes. Indeed, management includes the act of getting people and ideas together to accomplish desired goals and objectives using available resources efficiently and effectively. The problem has been that creativity and innovation activities have not been conducive to efficiencies and effectiveness in the short term.

DISCUSSION AND CONCLUSION

Creativity and innovation should not be caught in the paradigm of the software support tools of the 1990s (word processor, spreadsheet, presentation, email), when there is a need for collaboration, reuse, living documents, and quicker authoring cycles in the twenty-first century. The promotion of creativity can be enhanced by allowing time and assigning the task each week for investigating a software tool. A repository of tools would have templates, wizards and creative examples. Allow an add-on product that focuses on creativity and innovation.

In summary, creativity is a process that has long been seen as a mysterious (Boden, 2004; B. Shneiderman, 2000) Indeed, creative ideas are unpredictable and sometimes they even seem to be impossible. Yet they happen and are important to individuals and organizations. Shneiderman (2007) offers a slight shift in focus and terminology, when compared to Shneiderman (2002), but the goal still remains the same; to enable more people to be more creative more often. Three propositions were deduced from the literature and developed into a process that can strategically promote creativity and innovation. The research design is sound and therefore the prospects that it could actually be implemented are very good. Future research should follow Shneiderman (2007) and take into consideration the opportunity to enrich the research on creativity and innovation with methods that include process research, case studies, and interviews with small numbers of users over weeks and months. As a researcher, my goal (as I move forward) is "…. to capture the processes that precede breakthrough incidents and to collect evidence that supports hypotheses about how software support tools can used to strategically promote creativity and innovation.

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